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Exercise interventions on health-related quality of life for people with cancer during active treatment (Review)

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[Intervention Review]

Exercise interventions on health-related quality of life for people with cancer during active treatment

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ABSTRACT

Background

People with cancer undergoing active treatment experience numerous disease- and treatment-related adverse outcomes and poorer health-related quality of life (HRQoL). Exercise interventions are hypothesized to alleviate these adverse outcomes. HRQoL and its domains are important measures of cancer survivorship, both during and after the end of active treatment for cancer.

Objectives

To evaluate the effectiveness of exercise on overall HRQoL outcomes and specific HRQoL domains among adults with cancer during active treatment.

Search methods

We searched the Cochrane Central Register of Controlled Trials (CENTRAL), PubMed MEDLINE, EMBASE, CINAHL, PsycINFO, PEDRO, LILACS, SIGLE, SportDiscus, OTSeeker, Sociological Abstracts from inception to November 2011 with no language or date restrictions. We also searched citations through Web of Science and Scopus, PubMed's related article feature, and several websites. We reviewed reference lists of included trials and other reviews in the field.

Selection criteria

We included all randomized controlled trials (RCTs) and quasi-randomized controlled clinical trials (CCTs) comparing exercise interventions with usual care or other type of non-exercise comparison intervention to maintain or enhance, or both, overall HRQoL or at least one distinct domain of HRQoL. Included trials tested exercise interventions that were initiated when adults with cancer were undergoing active cancer treatment or were scheduled to initiate treatment.

Data collection and analysis

Five paired review authors independently extracted information on characteristics of included trials, data on effects of the intervention, and assessed risk of bias based on predefined criteria. Where possible, we performed meta-analyses for HRQoL and HRQoL domains for the reported difference between baseline values and follow-up values using standardized mean differences (SMDs) and a random-effects model by length of follow-up. We also reported the SMD at follow-up between the exercise and control groups. Because investigators used

many different HRQoL and HRQoL domain instruments and often more than one for the same domain, we selected the more commonly used instrument to include in the SMD meta-analyses. We also report the mean difference for each type of instrument separately.

Main results

We included 56 trials with 4826 participants randomized to an exercise (n = 2286) or comparison (n = 1985) group. Cancer diagnoses in trial participants included breast, prostate, gynecologic, hematologic, and other. Thirty-six trials were conducted among participants who were currently undergoing active treatment for their cancer, 10 trials were conducted among participants both during and post active cancer treatment, and the remaining 10 trials were conducted among participants scheduled for active cancer treatment. Mode of exercise intervention differed across trials and included walking by itself or in combination with cycling, resistance training, or strength training; resistance training; strength training; cycling; yoga; or Qigong. HRQoL and its domains were assessed using a wide range of measures.

The results suggest that exercise interventions compared with control interventions have a positive impact on overall HRQoL and certain HRQoL domains. Exercise interventions resulted in improvements in: HRQoL from baseline to 12 weeks' follow-up (SMD 0.33; 95% CI 0.12 to 0.55) or when comparing difference in follow-up scores at 12 weeks (SMD 0.47; 95% CI 0.16 to 0.79); physical functioning from baseline to 12 weeks' follow-up (SMD 0.69; 95% CI 0.16 to 1.22) or 6 months (SMD 0.28; 95% CI 0.00 to 0.55); or when comparing differences in follow-up scores at 12 weeks (SMD 0.28; 95% CI 0.11 to 0.45) or 6 months (SMD 0.29; 95% CI 0.07 to 0.50); role function from baseline to 12 weeks' follow-up (SMD 0.48; 95% CI 0.07 to 0.90) or when comparing differences in follow-up scores at 12 weeks (SMD 0.17; 95% CI 0.00 to 0.34) or 6 months (SMD 0.32; 95% CI 0.03 to 0.61); and, in social functioning at 12 weeks' follow-up (SMD 0.54; 95% CI 0.03 to 1.05) or when comparing differences in follow-up scores at both 12 weeks (SMD 0.16; 95% CI 0.04 to 0.27) and 6 months (SMD 0.24; 95% CI 0.03 to 0.44). Further, exercise interventions resulted in a decrease in fatigue from baseline to 12 weeks' follow-up (SMD -0.38; 95% CI -0.57 to -0.18) or when comparing difference in follow-up scores at follow-up of 12 weeks (SMD -0.73; 95% CI -1.14 to -0.31). Since there is consistency of findings on both types of measures (change scores and difference in follow-up scores) there is greater confidence in the robustness of these findings.

When examining exercise effects by subgroups, exercise interventions had significantly greater reduction in anxiety for survivors with breast cancer than those with other types of cancer. Further, there was greater reduction in depression, fatigue, and sleep disturbances, and improvement in HRQoL, emotional wellbeing (EWB), physical functioning, and role function for cancer survivors diagnosed with cancers other than breast cancer but not for breast cancer. There were also greater improvements in HRQoL and physical functioning, and reduction in anxiety, fatigue, and sleep disturbances when prescribed a moderate or vigorous versus a mild exercise program.

Results of the review need to be interpreted cautiously owing to the risk of bias. All the trials reviewed were at high risk for performance bias. In addition, the majority of trials were at high risk for detection, attrition, and selection bias.

Authors' conclusions

This systematic review indicates that exercise may have beneficial effects at varying follow-up periods on HRQoL and certain HRQoL domains including physical functioning, role function, social functioning, and fatigue. Positive effects of exercise interventions are more pronounced with moderate- or vigorous-intensity versus mild-intensity exercise programs. The positive results must be interpreted cautiously because of the heterogeneity of exercise programs tested and measures used to assess HRQoL and HRQoL domains, and the risk of bias in many trials. Further research is required to investigate how to sustain positive effects of exercise over time and to determine essential attributes of exercise (mode, intensity, frequency, duration, timing) by cancer type and cancer treatment for optimal effects on HRQoL and its domains.

PLAIN LANGUAGE SUMMARY

Can exercise interventions enhance health-related quality of life among people with cancer undergoing active treatment?

People with cancer undergoing treatment often have many psychological and physical adverse effects as a result of their cancer and the treatment for it. They also experience poorer quality of life because of the disease and its treatment. Some studies have suggested that exercise may be helpful in reducing negative outcomes and improving the quality of life of people with cancer who are undergoing treatment. Also, a better quality of life may predict longer life. This review looked at the effect of exercise on health-related quality of life and areas of life that make up quality of life (e.g. tiredness, anxiety, emotional health) among people with cancer who are undergoing treatment.

The review included 56 trials with a total of 4826 participants. The results suggest that exercise may improve overall quality of life right after the exercise program is completed. Exercise may also improve the person's physical ability and the way the person can function in society. Exercise also reduced tiredness at different times during and after the exercise program. The positive effects of exercise were greater when the exercise was more intense. No effects of exercise was found in the way a person views his or her body, on the person's ability to think clearly, the person's mood, feeling of pain, and on the way the person views his or her spiritual health.

However, these findings need to be viewed with caution because this review looked at many different types of exercise programs, which varied by type of setting, length of the program, and how hard the trial participants had to exercise. Also, the investigators used a number of different ways to measure quality of life.

There is a need for more research to understand how to maintain the positive effects of exercise over a longer period of time after the exercise program is completed, and to determine which parts of the exercise program are necessary (i.e. when to start the program, type of exercise, length of the program or exercise session, how hard to exercise). It is also important to find out if one type of exercise is better for a specific cancer type than another for the maximum effect on quality of life.

SUMMARY OF FINDINGS

Summary of findings 1. Summary of findings

Exercise compared with usual care on HRQoL and HRQoL domains for people with cancer during active treatment

Patient or population: people who are undergoing active treatment for cancer

Settings: varied

Intervention: exercise interventions (varied)

Comparison: usual care

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Comparison group	Exercise group				
Overall QoL change score - up to 12 weeks' follow-up	The standardized mean change from baseline to up to 12 weeks' follow-up in overall QoL in the control groups ranged from -0.65 to 0.70 standard deviation units	The standardized mean change from baseline to up to 12 weeks' follow-up in overall QoL was 0.47 standard deviation units higher (0.16 to 0.79 standard deviation units higher) in the exercise groups		806 (11 studies)	⊕⊝⊝⊝ **very low[1,2,5]**	(SMD 0.47; 95% CI 0.16 to 0.79) A standard deviation unit is equivalent to about a 14.8-point change using the FACT-G HRQoL form
Overall QoL follow-up values - up to 12 weeks' follow-up	The standardized mean follow-up values at up to 12 weeks' follow-up in anxiety in the control groups ranged from -0.96 to 10.87 standard deviation units	The SMD in follow-up values at up to 12 weeks' follow-up in overall QoL was 0.33 standard deviation units higher (0.12 to 0.55 standard deviation units higher) in the exercise groups		1166 (20 studies)	⊕⊝⊝⊝ **very low[1,2,5]**	(SMD 0.33; 95% CI 0.12 to 0.55)

Overall anxiety follow-up values - up to 12 weeks' follow-up	The standardized mean follow-up values at up to 12 weeks' follow-up in anxiety in the control groups ranged from 0.70 to 12.2 standard deviation units	The SMD in follow-up values at up to 12 weeks' follow-up in anxiety was -0.46 standard deviation units higher (-0.81 to -0.11 standard deviation units higher) in the exercise groups		1010 (12 studies)	⊕⊝⊝⊝ **very low[1,2,5]**	(SMD -0.46; 95% CI -0.81 to -0.11) A standard deviation unit is equivalent to about a 2.7-point change using the anxiety subscale of the HADS form or about 11.8 points using the STAI form
Overall anxiety follow-up values - 6 months' follow-up	The standardized mean follow-up values at 6 months' follow-up in anxiety in the control groups ranged from 0.10 to 0.40 standard deviation units	The SMD in follow-up values at 6 months' follow-up in anxiety was -0.44 standard deviation units higher (-0.71 to -0.17 standard deviation units higher) in the exercise group		286 (3 studies)	⊕⊕⊝⊝ **low[1,3]**	(SMD -0.44; 95% CI -0.71 to -0.17)
Overall depression follow-up values - up to 12 weeks' follow-up	The standardized mean follow-up values at up to 12 weeks' follow-up in depression in the control groups ranged from 0.79 to 8.08 standard deviation units	The SMD in follow-up values at up to 12 weeks' follow-up in depression was -0.55 standard deviation units higher (-0.87 to -0.22 standard deviation units higher) in the exercise groups		1250 (15 studies)	⊕⊝⊝⊝ **very low[1,2,5]**	(SMD -0.55; 95% CI -0.87 to -0.22) A standard deviation unit is equivalent to about an 8.86-point change using the CES-D form or a 2.29-point change using the depression subscale of the HADS form
Overall depression follow-up values - 6 months' follow-up	The standardized mean follow-up values at up to 12 weeks' follow-up in depression in the control groups ranged from 1.07 to 1.44 standard deviation units.	The SMD in follow-up values at up to 12 weeks' follow-up in depression was -0.29 standard deviation units higher (-0.48 to -0.09 standard deviation units		452 (4 studies)	⊕⊕⊝⊝ **low[1,3]**	(SMD -0.29; 95% CI -0.48 to -0.09)

		higher) in the exercise groups			
Overall fatigue change score - up to 12 weeks' follow-up	The standardized mean change from baseline to up to 12 weeks' follow-up in fatigue in the control groups ranged from -073 to 1.48 standard deviation units	The standardized mean change from baseline to up to 12 weeks' follow-up in fatigue was -0.73 standard deviation units higher (-1.14 to -0.31 standard deviation units higher) in the exercise groups	971 (12 studies)	⊕⊖⊖⊖ **very low[1,2,5]**	(SMD -0.73; 95% CI -1.14 to -0.31) A standard deviation unit is equivalent to about an 11-point change using the fatigue subscale of the FACT form
Overall fatigue follow-up values - up to 12 weeks' follow-up	The standardized mean follow-up values at up to 12 weeks' follow-up in fatigue in the control groups ranged from -7.42 to 6.75 standard deviation units	The SMD in follow-up values at up to 12 weeks' follow-up in depression was -0.38 standard deviation units higher (-0.57 to -0.18 standard deviation units higher) in the exercise groups	1721 (23 studies)	⊕⊖⊖⊖ **very low[1,2,5]**	(SMD -0.38; 95% CI -0.57 to -0.18)
Overall physical function change score - up to 12 weeks' follow-up	The standardized mean change from baseline to up to 12 weeks' follow-up in physical function in the control groups ranged from -26.3 to 0.33 standard deviation units	The standardized mean change from baseline to up to 12 weeks' follow-up in physical function was 0.69 standard deviation units higher (0.16 to 1.22 standard deviation units higher) in the exercise groups	540 (8 studies)	⊕⊖⊖⊖ **very low[1,2,3,5]**	(SMD 0.69; 95% CI 0.16 to 1.22) A standard deviation unit is equivalent to about a 5.4-point change using the PWB subscale of the FACT form
Overall physical function change score - 6 months' follow-up	The standardized mean change from baseline to up to 12 weeks' follow-up in physical function in the control groups ranged from -0.26 to 0.24 standard deviation units	The standardized mean change from baseline to 6 months' follow-up in physical function was 0.28 standard deviation units	305 (4 studies)	⊕⊖⊖⊖ **very low[1,2,5]**	(SMD 0.28; 95% CI -0.00 to 0.55)

		higher (-0.00 to 0.55 standard deviation units higher) in the exercise groups			
Overall role function change score - up to 12 weeks' follow-up	The standardized mean change from baseline to up to 12 weeks' follow-up in role function in the control groups ranged from -2.11 to -0.26 standard deviation units	The standardized mean change from baseline to up to 12 weeks' follow-up in role function was 0.48 standard deviation units higher (0.07 to 0.9 standard deviation units higher) in the exercise groups	437 (7 studies)	⊕⊝⊝⊝ **very low**[1,2,3,5]	(SMD 0.48; 95% CI 0.07 to 0.90) A standard deviation unit is equivalent to about a 5.5 point change using the functional subscale of the FACT form
Overall role function follow-up values - up to 12 weeks' follow-up	The standardized mean change from baseline to up to 12 weeks' follow-up in role function in the control groups ranged from -0.89 to 7.44 standard deviation units	The SMD in follow-up values at up to 12 weeks' follow-up in role function was 0.17 standard deviation units higher (0.00 to 0.34 standard deviation units higher) in the exercise groups	1100 (15 studies)	⊕⊕⊝⊝ **low**[1,5]	(SMD 0.17; 95% CI 0.00 to 0.34)
Overall social function change score - up to 12 weeks' follow-up	The standardized mean change from baseline to up to 12 weeks' follow-up in social function in the control groups ranged from -0.71 to 0.11 standard deviation units	The standardized mean change from baseline to up to 12 weeks' follow-up in social function was 0.54 standard deviation units higher (0.03 to 1.05 standard deviation units higher) in the exercise groups	378 (5 studies)	⊕⊝⊝⊝ **very low**[1,2,3,5]	(SMD 0.54; 95% CI 0.03 to 1.05) A standard deviation unit is equivalent to about a 5.4 point change using the social well-being subscale of the FACT form
Overall social function follow-up values - up to 12	The standardized mean change from baseline to up to 12 weeks' follow-up in social function in the control groups ranged from -0.41 to 8.00 standard deviation units	The SMD in follow-up values at up to 12 weeks' follow-up in social	1164 (16 studies)	⊕⊕⊝⊝ **low**[1,5]	(SMD 0.16; 95% CI 0.04 to 0.27)

weeks' follow-up			function was 0.16 standard deviation units higher (0.04 to 0.27 standard deviation units higher) in the exercise groups

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CES-D: Centers for Epidemiological Studies - Depression Scale; CI: confidence interval: FACT: Functional Assessment of Cancer Therapy; FACT-G; Functional Assessment of Cancer Therapy - General; HADS: Hospital Anxiety and Depression Scale; HRQoL: health-related quality of life; PWB: physical well-being; QoL: quality of life; SMD: standardized mean difference; STAI: State-Trait Anxiety Scale.

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1] It was not possible to blind study participants or people administering treatment
[2] Statistical heterogeneity was moderate to high
[3] The small total population sample size (< 500) represents a small effect
[4] Random sequence generation was unclear in half or more of the trials
[5] Allocation concealment was unclear in half of more of the trials

BACKGROUND

There is a steady increase in the number of cancer survivors, that is people diagnosed with cancer (Aziz 2003), worldwide. This is because of, in a large part, the dramatic advances in cancer treatment and management (Aziz 2002; Aziz 2003), growing attention to multidisciplinary post-treatment care (Demark-Wahnefried 2000; Stull 2007), and healthier lifestyles (Demark-Wahnefried 2005; Stull 2007). There are approximately 22 million cancer survivors worldwide (Stewart 2003); 11.7 million of whom are estimated to be present in the US alone (Rowland 2011).

Description of the condition

People with cancer undergoing active treatment experience numerous disease- or treatment-related adverse outcomes, or both (physiologic and psychosocial) (Aziz 2002; Aziz 2003; Aziz 2007; Aziz 2008; Cramp 2008) and poorer health-related quality of life (HRQoL) (Ganz 2004; Lee 2007b). Some of the adverse outcomes include cardiotoxicity, neurotoxicity, lymphedema, premature menopause, sexual dysfunction, infertility, and fatigue (Aziz 2002; Aziz 2003; Aziz 2007; Cramp 2008), all with a negative impact on HRQoL. Exercise interventions are particularly relevant because they influence both the physiologic and psychosocial adverse outcomes, including HRQoL (Courneya 2007b; Ingram 2007; Schmitz 2005; Warburton 2006). Further, HRQoL and its domains are important measures for cancer survivorship as they provide prognostic (Gotay 2008) and predictive (Efficace 2006; Osoba 1999; Osoba 2007) information and the survivors'' subjective experiences (Bottomley 2002) to therapeutic and lifestyle interventions.

Although HRQoL has no commonly accepted definition, there is broad consensus that it is a patient-reported, multidimensional construct. Ferrans provided a comprehensive review of definitions of HRQoL and concluded that, "the literature contains a bewildering array of characterizations" (Ferrans 2005). Nonetheless, the review indicated that there is broad consensus among experts (Bottomley 2002; Gotay 1992; Lipscomb 2007; Osoba 1994) regarding the major domains of HRQoL. These domains comprise subjective assessments of physical, psychological, economic, social, and spiritual wellbeing. Physical function includes performance of self-care activities, mobility, and physical activities. Psychological functions include EWB, anxiety, body image, and depression. Social and economic functions include work or household responsibilities and social interactions. Spiritual wellbeing includes perspectives on one's life as a whole. HRQoL also encompasses the negative aspects of the disease or treatment such as sexual functioning, neuropathy or cognitive changes, and chronic fatigue. Lastly, the importance of also assessing positive aspects of HRQoL has been stressed (Diener 2000). Our selection of the primary outcomes for this review reflects these theoretical perspectives, in that we included both all the well-agreed upon domains of HRQoL and positive aspects of wellbeing.

Description of the intervention

The benefits of exercise on health status, length of survival, promotion of HRQoL, and mitigating premature death are gaining wide attention (Warburton 2006). There is some evidence suggesting that participation in exercise by people with cancer undergoing active treatment increases physical functioning (Courneya 2009; Griffith 2009; McNeely 2006; Stevinson 2004), reduces fatigue (Adamsen 2009; Cramp 2008), reduces pain (Griffith 2009), reduces treatment-related toxicity (Kapur 2009), and facilitates positive physiologic and psychological benefits (Galvao 2005; Knols 2005; Schmitz 2005). In addition, evidence suggests that exercise enhances HRQoL during active treatment in people with breast (McNeely 2006; Mustian 2009; Valenti 2008), prostate (Galvao 2010; Mustian 2009; Segal 2009; Thorsen 2008), head and neck (Rogers 2006), and colorectal (Courneya 2003b) cancer, and multiple myeloma (Jones 2004). Further, exercise leads to improvements in physical functioning and a reduction in fatigue symptoms during active treatment in people with breast (McNeely 2006; Mustian 2009) and prostate (Galvao 2010; Mustian 2009; Segal 2009; Thorsen 2008) cancer. Despite the growing body of literature documenting the beneficial effects of exercise (Courneya 2007b), several studies have documented lower levels of exercise behavior among people diagnosed with cancer (Blanchard 2003; Valenti 2008; Vallance 2005).

How the intervention might work

There is tremendous interest in the association between exercise and physiologic and psychological wellbeing in general and HRQoL in particular. Systematic reviews on the effects of exercise interventions on people with cancer during active treatment have documented improvements in cardiorespiratory fitness (McNeely 2006; Schmitz 2005), physical function (McNeely 2006; Stevinson 2004; Thorsen 2008), psychological wellbeing (Galvao 2005; Knols 2005; Speck 2010), overall HRQoL (Knols 2005; Speck 2010), fatigue (Cramp 2008; McNeely 2006; Mustian 2007; Velthuis 2010a), and physiologic outcomes (Galvao 2005; Knols 2005; Schmitz 2005).

Why it is important to do this review

There is no systematic review examining the effect of exercise on: (a) overall HRQoL or HRQoL domains, or both (e.g. physical, psychological, economic, social, and spiritual wellbeing); and (b) disease- or treatment-related symptoms (or both) (e.g. sexual functioning, neuropathy or cognitive changes, and chronic fatigue) among adults with cancer during active treatment. This review is different from previous systematic reviews in the number of databases searched (Galvao 2005; Schmitz 2005) and on the inclusion criteria for the trials. Several of the previous reviews included trials with non-randomized controlled trial (non-RCT) designs (Galvao 2005; Schmitz 2005; Stevinson 2004; Thorsen 2008), people with cancer during active treatment and in the immediate post-treatment phase (Cramp 2008; Galvao 2005; Knols 2005; McNeely 2006; Schmitz 2005; Stevinson 2004), and site-specific cancers (McNeely 2006; Thorsen 2008). This lack of documentation and evidence coupled with limitations of the previous reviews necessitated a systematic review to determine the effectiveness of exercise on HRQoL among adults with cancer during active treatment. This review complements a previously published protocol that described a systematic review determining the effectiveness of exercise interventions on HRQoL among adult cancer survivors who were beyond the active treatment period (Mishra 2009).

OBJECTIVES

To evaluate the effectiveness of exercise on overall HRQoL outcomes and specific HRQoL domains (e.g. physical, psychological, economic, social, and spiritual wellbeing, and key disease or treatment (or both) symptoms such as sexual functioning, neuropathy or cognitive changes, and chronic fatigue)

among adults with cancer who are undergoing active treatment (excluding those who are terminally ill and receiving hospice care).

A secondary objective examined, where data were available, the effectiveness of exercise on HRQoL outcomes among adults with cancer who were undergoing active treatment stratified by the following:

1. age at diagnosis (i.e. less than 65 years or greater than or equal to 65 years);
2. Age at trial enrolment (i.e. less than 65 years or greater than or equal to 65 years);
3. Sex;
4. Type of prescribed exercise (i.e. aerobic, anaerobic, combination);
5. Intensity of exercise (i.e. mild, moderate, vigorous);
6. Format of exercise (i.e. individual or group, professionally led or not, home or group facility);
7. Type of treatment regimen (i.e. radiation, surgery, chemotherapy, or combination); and
8. Specific chemotherapeutic agents.

METHODS

Criteria for considering studies for this review

Types of studies

We included only randomized controlled trials (RCTs) and quasi-randomized controlled clinical trials (CCTs). The included trials assessed exercise interventions that were initiated when people with cancer were undergoing active cancer treatment (i.e. surgery, chemotherapy, radiation therapy, or hormone therapy) or were scheduled to initiate treatment.

Types of participants

Included trials evaluated the effect of exercise on HRQoL among people with cancer undergoing active treatment who were diagnosed as adults (18 years and over) regardless of age, sex, tumor site, tumor type, tumor stage, and type of anticancer treatment received. We excluded trials including participants who were terminally ill or receiving hospice care, or both, and trials in which fewer than one-third of participants were undergoing active treatment for either the primary or a recurrent cancer.

Types of interventions

We included trials that evaluated and reported the effects of exercise, excluding dance, on HRQoL outcomes. We excluded trials only evaluating dance as an intervention because there is a Cochrane review on dance movement therapy for improving psychological and physical outcomes in patients with cancer (Bradt 2011). Included trials compared exercise with no exercise, another intervention, or usual care (e.g. with no specific exercise program prescribed).

We defined exercise as any physical activity causing an increase in energy expenditure, and involving a planned or structured movement of the body performed in a systematic manner in terms of frequency, intensity, and duration, and designed to maintain or enhance health-related outcomes (American College of Sports Medicine 1998; American College of Sports Medicine 2005). The primary exercise intervention included prescribed, active exercise formats of aerobic, anaerobic, or aerobic and anaerobic combinations focused upon cardiopulmonary, musculoskeletal, neuromuscular conditioning, or a combination: active or active-assisted range of motion (ROM), stretching exercises, and strengthening or resistance exercises. The specific prescribed, active exercise included but was not limited to the following methods: walking programs, aquatic exercise, running, sports, resistance training, yoga, tai chi, and pilates. The prescribed, active exercise program was individual or group, professionally led or not, and home or facility based. Exercise intensity was based on the rate of perceived exertion (RPE) or heart rate (HR), or both, with mild exercise defined as RPE of six to 11 or HR at 30% to 54% of maximum HR, or both; moderate exercise was defined as RPE of 12 to 13 or HR at 55% to 70% of maximal HR, or both; and vigorous exercise was defined as RPE of 14 to 19 or HR at 71% to 95% of maximal HR, or both (American College of Sports Medicine 1998). We classified the intensity of the exercise based on RPE or HR, or both, or when a quantitative measure of intensity of the exercise intervention was not available, we used the authors' classification of an intervention as mild, moderate, or vigorous.

Types of outcome measures

The included trials measured self-reported participant measures of HRQoL as primary or secondary end points.

Primary outcomes

1. Overall HRQoL, at four follow-up intervals: up to 12 weeks; more than 12 weeks but less than six months, six months, and more than six months following the exercise intervention.
2. HRQoL domains, at the four time intervals described above including, but not limited to:
   a. physical function (e.g. performance of self-care activities, mobility, physical activities);
   b. psychological function (e.g. EWB, anxiety, body image, depression, negative affect);
   c. social and economic role function (e.g. performance of work or household responsibilities, social interactions);
   d. spiritual well-being;
   e. pain;
   f. vitality (e.g. energy and fatigue);
   g. general health perceptions; and
   h. positive attributes (e.g. positive affect, sense of coherence, interpersonal relationships, philosophy of life, spirituality).
3. Disease- or treatment-related symptoms (or both) (e.g. sexual functioning, neuropathy or cognitive changes, chronic fatigue).

The adverse outcomes of interest included:

1. any harm associated with the exercise intervention; and
2. decrease in overall HRQoL or HRQoL domain.

Search methods for identification of studies

Electronic searches

We used, at the minimum, the following databases and searches to obtain relevant trials for this review. We searched all databases from inception to the present. There were no language or date restrictions in the electronic search for trials. We utilized the search strategy for MEDLINE for the review using text and indexing terms in each database, combined with filters for RCT and CCT, and

human studies (Glanville 2006). The MEDLINE search strategy was developed for precision and sensitivity and was then appropriately modified for the other databases.

1. MEDLINE (Appendix 1)
2. The Cochrane Central Register of Controlled Trials (CENTRAL) (Appendix 2)
3. EMBASE (Appendix 3)
4. CINAHL (Appendix 4)
5. PsycINFO (Appendix 5)
6. PEDRO (Appendix 6)
7. LILACS (Appendix 6)
8. SIGLE (Appendix 6)
9. SportDiscus (Appendix 6)
10. OTSeeker (Appendix 6)
11. Sociological Abstracts (Appendix 6)

We also searched citations of key authors through Web of Science and Scopus, and searched PubMed's related article feature.

The review author team developed and executed the search strategies.

Searching other resources

We performed an expanded search in order to identify additional trials for this review, including unpublished trials and references in the "gray literature". This included the following:

1. review of the reference list of all retrieved articles and other reviews on the topic;
2. contacting experts in the field of exercise and HRQoL in order to identify unpublished research;
3. searching the following websites:
   a. World Health Organization (WHO) International Clinical Trials Registry Platform (www.who.int/ictrp/en)
   b. Current Controlled Trials (www.controlled-trials.com)
   c. CenterWatch (www.centerwatch.com)
   d. ClinicalTrials.gov (www.clinicaltrials.gov)
4. We did not handsearch any journals specifically for this review.

Data collection and analysis

Selection of studies

Assessment of search results

Two review authors (SM, RS), working independently, screened all the titles and abstracts resulting from the searches and excluded articles that were clearly irrelevant. We retrieved full-text copies of all trials if either review author determined that a trial possibly or definitely met the inclusion criteria. We translated into English, where possible, all non-English language articles. Paired review authors (SM, RS, CS, PG, OT) independently reviewed the retrieved full-text articles and, using the defined eligibility criteria, determined their eligibility for inclusion. We did not randomly assign articles to review authors neither did we mask trial details such as trial authors, journal of publication, trial location, and institutional affiliations of the trial authors. If there was a need for clarification of any detail of a trial, we contacted the trial authors to obtain such clarification for a complete assessment of the trial's relevance for the review. We resolved by consensus any disagreement between review authors on classification of an article, either between the two review authors or through use of a third review author.

Data extraction and management

Extraction of study characteristics

For each trial, we extracted:

1. Characteristics of the studies:
   a. the study sponsors and the authors' affiliations;
   b. trial methods: study design, method of sequence generation, method of allocation concealment, masking (participant, researcher, outcome), exclusions after randomization, selective outcome reporting, loss to follow-up and compliance.
2. Characteristics of study population:
   a. country where participants enrolled;
   b. trial inclusion and exclusion criteria;
   c. number randomized in each arm;
   d. type of control group;
   e. demographic characteristics, including age at trial enrolment, sex, ethnicity, socioeconomic status;
   f. type of cancer, including primary site, stage at diagnosis, and hormone dependency;
   g. age at diagnosis;
   h. time since diagnosis;
   i. primary or secondary cancer;
   j. type of treatment regimen (i.e. radiation, surgery, chemotherapy, or combination)
   k. specific chemotherapeutic agents.
3. Characteristics of the intervention:
   a. type of exercise intervention in each intervention group: aerobic, anaerobic, combination;
   b. description/details of the exercise intervention: frequency, duration, intensity, total number of exercise sessions, duration of follow-up, exercise format (i.e. individual or group, professionally led or not, home or facility based);
   c. description/details of control/comparison intervention;
   d. adherence and contamination;
   e. co-intervention (e.g. medication use).
4. Characteristics of the outcomes:
   a. self-reported HRQoL measure or HRQoL domain measures, or both (e.g. physical, psychological, economic, social, and spiritual well-being, pain, vitality, health perceptions, positive attributes);
   b. disease or treatment symptoms, or both (e.g. sexual functioning, neuropathy or cognitive changes, and chronic fatigue);
   c. length of time between end of intervention and outcome measurement;
   d. adverse outcomes (e.g. exercise-associated harm, noncompliance with exercise program, trial attrition);
   e. economic data on cost and cost-benefit of the exercise intervention.

Data extraction and entry

Paired review authors (SM, RS, CS, PG, OT) independently extracted data, using a standardized form, from each article. Disagreements between the review authors on the data abstracted were resolved through consensus or, when necessary, there was a meeting with a third review author not involved in the particular extraction (SM, RS). In addition, we attempted to contact all trial authors (using e-mail, letter, fax, or a combination) to search for additional articles, seek clarity and additional information about trials, confirm data extraction, and obtain missing data using a structured instrument with standardized questions. If the trial authors could not provide the requested information or were unable to comply with the request within two weeks, we proceeded with the review without the information. If available, we extracted similar data for each outcome from each trial included in the review. For the primary and secondary HRQoL outcomes, if more than two time points were reported during a single interval, the one closest to 12 weeks (for the follow-up time point), or the longest time interval (for the other follow-up time points) was selected for analyses. We also collected information on any harm reported in the included trials. We collected data, if reported, on cost and cost-benefit of the exercise interventions. The unit of analysis was individuals, people with cancer undergoing active treatment randomized to each arm of the trial. We entered and combined the trial data using Review Manager, version 5.1 (RevMan 2011). One review author (RS) entered the data into RevMan 5.1, and another review author (SM) worked independently to verify the data entry.

Assessment of risk of bias in included studies

Two review authors (SM, RS) assessed the risk of bias of all the included trials by evaluating the parameters listed on the RevMan 5.1 'Risk of bias' table (RevMan 2011). For RCTs and CCTs this included assessment of sequence generation, allocation concealment, masking or blinding (of participants, researchers/ healthcare providers, and outcome assessors), methods of addressing incomplete outcome data, selective reporting of outcomes, and other possible sources of bias including attrition from, and adherence with, the exercise intervention. We assessed and graded each trial quality parameter as high risk, low risk, or unclear risk based on recommendations for judging risk of bias provide in Chapter 8 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011).

Comparability of treatment groups

Using RCTs and CCTs, by definition, ensures comparability of the treatment groups. However, it is likely that randomization (or quasi-randomization) may not work as desired. We looked at the baseline characteristics (i.e. demographic characteristics and attributes of the cancer and its treatment) of the treatment groups for any differences between the groups or whether the differences were controlled for during the analyses. In particular, we recorded:

1. yes, there were differences between the treatment groups on one or more baseline characteristic and the reported differences were controlled for;
2. no, there were differences between the treatment groups on one or more baseline characteristic and the reported differences were not controlled for;
3. unclear, differences between the treatment groups were not reported and unclear whether they were controlled for.

Measures of treatment effect

Trials reported data on HRQoL or HRQoL domains, or both in different ways or used different instruments to measure the same construct, but all reported continuous (versus dichotomous) outcomes. If necessary, we planned to transform outcome data to achieve consistency of results, but did not need to do so for this review. We combined data using a weighted mean difference (WMD) and a random effect model when trials measured HRQoL or HRQoL domains using the same measurement method or scale to generate continuous data. We used a standardized mean difference (SMD) analysis and random-effects model to combine data from different instruments measuring the same domain. When there was significant clinical or statistical heterogeneity, we performed subgroup analyses or provided a qualitative analysis rather than a quantitative analysis of HRQoL or HRQoL domains.

Authors did not report any dichotomous data, such as presence or absence of an HRQoL outcome, but if they had, we would have expressed the treatment effect as risk ratio (RR) together with 95% confidence interval (CI).

Whenever possible, we conducted subgroup analysis of treatment effect based on:

1. Grouping of the exercise intervention on:
   a. type (i.e. aerobic, anaerobic, combination);
   b. intensity (i.e. mild, moderate, vigorous); and
   c. format (i.e. individual or group, professionally led or not, home or facility based).
2. Grouping of people with cancer on:
   a. sex;
   b. cancer type;
   c. age at trial enrolment (i.e. less than 65 years or greater than or equal to 65 years);
   d. age at diagnosis (i.e. less than 65 years or greater than or equal to 65 years);
   e. type of treatment regimen (i.e. radiation, surgery, chemotherapy, or combination); and
   f. specific chemotherapeutic agents.

Assessment of heterogeneity

We evaluated clinical heterogeneity by examining diversity in the people with cancer undergoing active treatment, and differences in cancers, the exercise interventions, and overall HRQoL or HRQoL domains, or both among trials. We did not pool clinically heterogeneous trials. We also checked for statistical heterogeneity by visual inspection of forest plots and by using the Chi square (Chi^2) and the I^2 tests.

Assessment of reporting biases

To investigate publication bias, we prepared funnel plots and visually examined them for signs of asymmetry. We followed the recommendations in Chapter 10 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Sterne 2011) for any statistical testing for funnel plot asymmetry. If there was statistically significant asymmetry, we considered interpretations other than publication bias.

Data synthesis

Measurement of intervention intensity

We reported the authors' classification of the intensity of the exercise based on RPE, HR, or both, or on authors' classification of the intensity of the exercise intervention as mild, moderate, or vigorous.

We combined data from trials in a meta-analysis when appropriate to pool for a meta-analysis, that is, those data showing no clinical heterogeneity. When there was moderate clinical heterogeneity, we conducted prespecified subgroup analyses (i.e. type of cancer, intensity of exercise, etc. as mentioned above). When there was significant heterogeneity as demonstrated by a statistically significant Chi^2 test or I^2 above 50%, we investigated source of heterogeneity and if possible, conducted a quantitative meta-analysis by subgroups only. We pooled all studies (or all similar studies) for a random-effects meta-analysis to determine the pooled intervention effect estimate (odds ratio (OR) and 95% CI).

Sensitivity analysis

We also conducted sensitivity analysis to assess the effects of including trials with a high risk of bias.

RESULTS

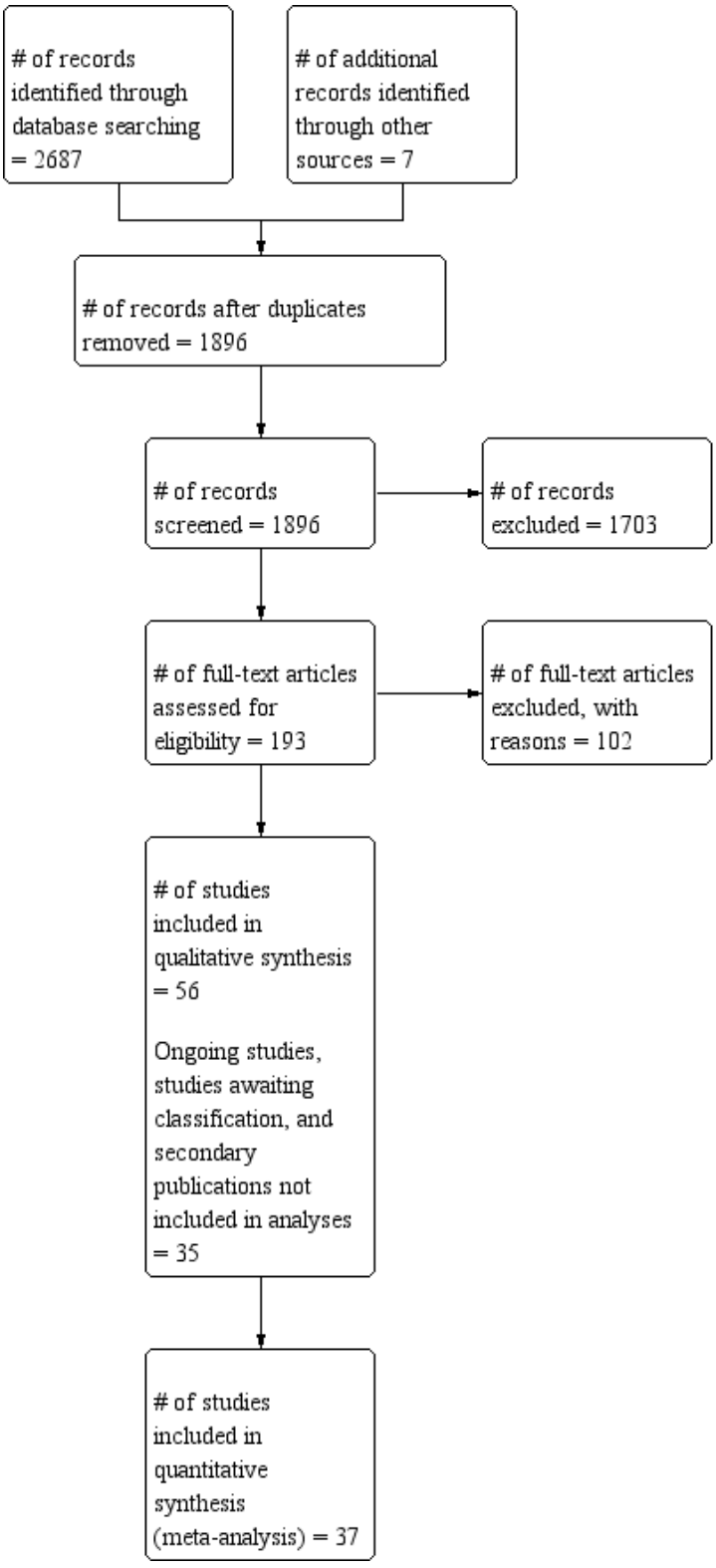
Description of studies

Results of the search

See: Characteristics of included studies; Characteristics of excluded studies; Characteristics of studies awaiting classification; Characteristics of ongoing studies

Through a comprehensive literature search, we identified and screened for retrieval 1896 nonduplicate potentially relevant references. We excluded a total of 1703 references based on the title and abstract and retrieved 193 references for more detailed evaluation. From these, we excluded 102 trials as they did not meet the inclusion criteria and 56 trials were appropriate for inclusion in the current review. In addition, six trials (Christensen 2011; Galvao 2009; Haseen 2010; Newton 2009; van Waart 2010; Velthuis 2010) were ongoing and four trials (Courneya 2001; Harandi 2010; Sun 2009; Utz-Billing 2010) were awaiting classification and these trials were not included in the analysis presented below but will be considered in future updates of this review. Twenty-five eligible trials were also not included in the analysis as these trials were classified as secondary publications for some of the 56 trials included in the current review. All searches were completed in November 2011. See Figure 1 for a flowchart of the search process based on the PRISMA template (Moher 2009).

Figure 1. Study flow diagram.



Included studies

The final selection based on consensus resulted in 56 trials being included in this review (Adamsen 2009; Arbane 2009; Banerjee 2007; Battaglini 2008; Bourke 2011; Brown 2006; Cadmus 2009; Caldwell 2009; Campbell 2005; Chandwani 2010; Chang 2008; Cheville 2010; Cohen 2004; Courneya 2003a; Courneya 2007a; Courneya 2008; Courneya 2009; Crowley 2003; Culos-Reed 2010; Danhauer 2009; de Oliveira 2010; Dimeo 1999; DiSipio 2009;

Donnelly 2011; Galvao 2010; Gomes 2011; Griffith 2009; Hacker 2011; Haddad 2011; Headley 2004; Hwang 2008; Jarden 2009; Lanctot 2010; Moadel 2007; Mock 1994; Mock 1997; Mock 2001; Mock 2005; Monga 2007; Moros 2010; Mustian 2009; Mutrie 2007; Oh 2008; Oh 2010; Raghavendra 2007; Rogers 2009; Segal 2001; Segal 2003; Segal 2009; Tang 2010; Targ 2002; Vadiraja 2009b; Wang 2010; Windsor 2004; Wiskemann 2011; Yang 2011). We also reviewed and included information on study characteristics and outcomes related data from an additional 25 publications that were secondary publications to several of the 56 trials. For seven trials, there were limited data available for extraction and quantitative analysis (Brown 2006; DiSipio 2009; Gomes 2011; Haddad 2011; Headley 2004; Mock 1997; Oh 2008) and for two trials there were no data available for extraction and use in the quantitative analyses (Battaglini 2008; Mock 2001). We corresponded with, and requested additional data from, these nine trial authors and an additional 13 trial authors (Arbane 2009; Campbell 2005; Cheville 2010; Crowley 2003; Culos-Reed 2010; Griffith 2009; Jarden 2009; Lanctot 2010; Mock 1994; Raghavendra 2007; Segal 2001; Tang 2010; Yang 2011), and five of the 22 trial authors contacted were able to provide additional data. Of the remaining 17 trials for which we requested additional data, we were unable to contact the primary author for seven trials, received no response from six trial authors, and four trial authors either did not have access to their database or were unable to provide additional information for some other reasons. For trial characteristics and outcomes see the Characteristics of included studies table.

Overall study characteristics

Of the 56 included trials, 54 were RCTs, although one trial (Courneya 2003a) used a variation of the RCT design in that it randomized clusters, where clusters were psychotherapy classes. Two trials (Dimeo 1999; Mock 1997) used a quasi-randomized design to allocate participants to treatment. All trials, except for four (Courneya 2007a; Haddad 2011; Segal 2001; Segal 2009), randomized eligible participants to either the exercise or comparison arm. The other four trials included more than two study arms. The additional study arm comprised variations in the exercise arm, such as aerobic exercise or resistance exercise group (Courneya 2007a; Segal 2009), yoga exercise or stretching exercise group (Haddad 2011), and home-based exercise or supervised exercise group (Segal 2001). In all, 4826 (range 14 to 337) participants were randomized to an exercise intervention (n = 2286; range 9 to 135) or a comparison group (n = 1985; range 5 to 134). Six trials (Battaglini 2008; DiSipio 2009; Gomes 2011; Headley 2004; Mock 2001; Monga 2007) did not report the number of participants assigned to the exercise and control groups. In five trials (Chandwani 2010; Hacker 2011; Hwang 2008; Mock 1997; Yang 2011), the number of participants randomized to the exercise and comparison arms did not add up to the number of participants randomized in the trial. For detailed information on overall study characteristics see Characteristics of included studies table.

Participants

Participants enrolled in the trials had various cancer diagnoses including breast, prostate, gynecologic, hematologic, and other. Thirty trials investigated participants with breast cancer only (Banerjee 2007; Battaglini 2008; Cadmus 2009; Caldwell 2009; Campbell 2005; Chandwani 2010; Courneya 2007a; Crowley 2003; Danhauer 2009; de Oliveira 2010; DiSipio 2009; Gomes 2011; Haddad 2011; Headley 2004; Hwang 2008; Lanctot 2010; Moadel 2007; Mock 1994; Mock 1997; Mock 2001; Mock 2005; Moros 2010; Mutrie 2007; Raghavendra 2007; Rogers 2009; Segal 2001; Targ 2002; Vadiraja 2009b; Wang 2010; Yang 2011) and an additional seven trials investigated participants with prostate cancer only (Bourke 2011; Culos-Reed 2010; Galvao 2010; Monga 2007; Segal 2003; Segal 2009; Windsor 2004). Twelve trials investigated participants with a range of cancer diagnoses (Adamsen 2009; Brown 2006; Cheville 2010; Courneya 2003a; Courneya 2008; Dimeo 1999; Donnelly 2011; Griffith 2009; Mustian 2009; Oh 2008; Oh 2010; Tang 2010).

Thirty-six trials were conducted among participants who were currently undergoing active treatment for their cancer (Adamsen 2009; Arbane 2009; Banerjee 2007; Bourke 2011; Cadmus 2009; Campbell 2005; Chang 2008; Cheville 2010; Courneya 2007a; Courneya 2008; Crowley 2003; de Oliveira 2010; Dimeo 1999; DiSipio 2009; Galvao 2010; Gomes 2011; Griffith 2009; Hacker 2011; Haddad 2011; Lanctot 2010; Mock 1994; Mock 1997; Mock 2001; Mock 2005; Monga 2007; Moros 2010; Mustian 2009; Mutrie 2007; Raghavendra 2007; Rogers 2009; Segal 2001; Segal 2009; Vadiraja 2009b; Wang 2010; Wiskemann 2011; Yang 2011), 10 trials were conducted among participants both during and post active cancer treatment (Cohen 2004; Courneya 2003a; Courneya 2009; Danhauer 2009; Donnelly 2011; Moadel 2007; Oh 2008; Oh 2010; Tang 2010; Targ 2002), and the remaining 10 trials were conducted among participants scheduled for active cancer treatment (Battaglini 2008; Brown 2006; Caldwell 2009; Chandwani 2010; Culos-Reed 2010; Headley 2004; Hwang 2008; Jarden 2009; Segal 2003; Windsor 2004). One of the trials (Moadel 2007) conducted among participants both during and post active treatment reported data separately on participants who had completed treatment and those who were undergoing treatment, and we included only data on those undergoing treatment in this review. Eleven trials reported the time since cancer diagnosis and it ranged across the trials from about a mean of 11 weeks to about a mean of 3.5 years (Adamsen 2009; Cadmus 2009; Courneya 2003a; Courneya 2009; Danhauer 2009; Donnelly 2011; Moadel 2007; Mutrie 2007; Segal 2003; Tang 2010; Targ 2002). Twenty-nine trials were conducted among females (Banerjee 2007; Battaglini 2008; Cadmus 2009; Campbell 2005; Chandwani 2010; Courneya 2007a; Crowley 2003; Danhauer 2009; de Oliveira 2010; DiSipio 2009; Donnelly 2011; Gomes 2011; Hacker 2011; Haddad 2011; Headley 2004; Hwang 2008; Moadel 2007; Mock 1994; Mock 1997; Mock 2001; Mock 2005; Moros 2010; Mutrie 2007; Raghavendra 2007; Rogers 2009; Segal 2001; Targ 2002; Vadiraja 2009b; Wang 2010), nine trials among men (Arbane 2009; Bourke 2011; Caldwell 2009; Culos-Reed 2010; Galvao 2010; Monga 2007; Segal 2003; Segal 2009; Windsor 2004), 17 trials included a mixed sample of males and females (Adamsen 2009; Brown 2006; Chang 2008; Cheville 2010; Cohen 2004; Courneya 2003a; Courneya 2008; Courneya 2009; Dimeo 1999; Griffith 2009; Jarden 2009; Mustian 2009; Oh 2008; Oh 2010; Tang 2010; Wiskemann 2011; Yang 2011), with one trial not reporting on the gender of the participants (Lanctot 2010). The mean age of participants ranged between 40 and 71 years, with two trials reporting an age range rather than mean age of participants (Moros 2010; Oh 2008) and six trials not reporting on the age of the participants (Brown 2006; Crowley 2003; de Oliveira 2010; DiSipio 2009; Lanctot 2010; Raghavendra 2007). Twenty-one trials reported the ethnicity of the participants and 33 trials reported the education level of the participants. Eleven trials reported on the socio-demographic status of the participants and 23 trials reported on the employment status of the participants. Eighteen trials reported the past exercise history of the participants (Adamsen 2009; Bourke 2011; Campbell 2005;

Chandwani 2010; Cohen 2004; Courneya 2003a; Courneya 2007a; Courneya 2008; Courneya 2009; Danhauer 2009; Jarden 2009; Mustian 2009; Segal 2001; Segal 2003; Targ 2002; Vadiraja 2009b; Wang 2010; Wiskemann 2011). For detailed information on trial characteristics see Characteristics of included studies table.

Interventions

Mode of exercise differed across trials. Twenty-two trials prescribed walking by itself (Chang 2008; Courneya 2003a; Griffith 2009; Mock 1994; Mock 1997; Mock 2001; Mock 2005; Monga 2007; Rogers 2009; Segal 2001; Tang 2010; Wang 2010; Windsor 2004; Yang 2011) or in combination with cycling, resistance training, or strength training (Courneya 2007a; Crowley 2003; Culos-Reed 2010; Donnelly 2011; Galvao 2010; Hwang 2008; Mustian 2009; Wiskemann 2011). Ten trials prescribed resistance training in combination with cycling, walking, stretching, strength training, or various other exercise modalities (Adamsen 2009; Battaglini 2008; Bourke 2011; Brown 2006; Courneya 2007a; Culos-Reed 2010; Galvao 2010; Jarden 2009; Mustian 2009; Segal 2009) and two additional trials prescribed resistance training by itself (Hacker 2011; Segal 2003); and eight trials prescribed cycling by itself (Courneya 2008; Courneya 2009; Dimeo 1999) or in combination with resistance training, walking, stretching, or strength training (Courneya 2007a; Galvao 2010; Hwang 2008; Jarden 2009; Wiskemann 2011). Eight trials prescribed yoga by itself (Banerjee 2007; Chandwani 2010; Cohen 2004; Danhauer 2009; Lanctot 2010; Moadel 2007; Raghavendra 2007; Vadiraja 2009b) and one trial prescribed yoga to one intervention arm and stretching exercise to the second intervention arm (Haddad 2011) and two trials incorporated practices of Qigong (Oh 2008; Oh 2010). Thirteen trials incorporated a range of modalities or allowed participants to choose from a range of preferred modalities (Adamsen 2009; Bourke 2011; Brown 2006; Caldwell 2009; Campbell 2005; Cheville 2010; Courneya 2003a; de Oliveira 2010; Griffith 2009; Headley 2004; Mutrie 2007; Segal 2009; Targ 2002). Five trials did not provide details of their exercise program (Arbane 2009; Cadmus 2009; DiSipio 2009; Gomes 2011; Moros 2010).

In the majority of trials (n = 46) the comparison arm did not receive an exercise prescription (i.e. 'usual care' or 'no intervention') during the course of the trial. For 15 of these trials (Cadmus 2009; Chang 2008; Donnelly 2011; Galvao 2010; Griffith 2009; Hacker 2011; Headley 2004; Hwang 2008; Mock 1997; Mock 2001; Mock 2005; Rogers 2009; Segal 2009; Windsor 2004; Yang 2011), participants in the control arm were instructed to either continue their customary physical activity, requested not to exercise, received written materials about physical activity, advised to rest, or received visits or telephone call from trial staff for attention control; and, for an additional ten trials (Chandwani 2010; Cohen 2004; Courneya 2007a; Courneya 2009; Culos-Reed 2010; Danhauer 2009; Haddad 2011; Moadel 2007; Segal 2003; Tang 2010), the comparison arm was a 'waiting list' control where participants were offered either a portion or the full exercise program at the completion of the trial. The comparison group in seven trials received an intervention that included group therapy (Courneya 2003a); brief supportive therapy (Vadiraja 2009b); psychodynamic supportive-expressive therapy with coping preparation (Raghavendra 2007); psycho-educational support group (Targ 2002); informed that moderate physical activity was beneficial and told to wear a pedometer (Wiskemann 2011); and advised on the benefits of exercise (Segal 2001) coupled with suggestions to exercise (Banerjee 2007; Segal 2001). Three trials did not either provide sufficient information (Battaglini 2008; Lanctot 2010) or report on care received (DiSipio 2009) by the comparison arm.

Thirty-two trials implemented an aerobic exercise program and three trials implemented an anaerobic exercise program. Fourteen trials implemented a combined (aerobic and anaerobic) exercise program and an additional three trials had two exercise arms which implemented either an aerobic or anaerobic exercise program (Courneya 2007a; Haddad 2011; Segal 2009). The nature of the exercise program for four trials was unclear (Arbane 2009; Cadmus 2009; DiSipio 2009; Lanctot 2010).

Length of the exercise intervention varied greatly between trials with a range from three weeks (Chang 2008; Cheville 2010) to 26 weeks (Segal 2001) or six months (Cadmus 2009), with a modal exercise intervention period of 12 weeks (n = 14 trials). For 11 trials length of the exercise intervention varied with duration of the treatment with radiation, chemotherapy, or a combination (Courneya 2007a; de Oliveira 2010; Dimeo 1999; Griffith 2009; Jarden 2009; Mock 1994; Mock 2001; Mock 2005; Raghavendra 2007; Windsor 2004; Wiskemann 2011). The majority of trials (n = 33) had no follow-up period between the end of the exercise intervention and the postexercise assessment. Among the 22 trials with a follow-up period, this period ranged from one to two weeks postintervention (Courneya 2008; Moros 2010) to 12 months postintervention (Culos-Reed 2010), with a modal length of six months from the end of the intervention (n = 10). Length of the follow-up for one trial was unclear (DiSipio 2009).

The intensity of the exercise varied substantially between trials, as did the methods used to measure and monitor intensity. Methods used to measure intensity of the exercise included relatively objective measures such as percentage of the maximum HR, percentage of maximum oxygen consumption, HR, and ratings of perceived exertion, and perceived effort to reach a value on the Borg scale (Adamsen 2009; Battaglini 2008; Bourke 2011; Cadmus 2009; Campbell 2005; Chang 2008; Courneya 2003a; Courneya 2007a; Courneya 2008; Courneya 2009; Crowley 2003; Dimeo 1999; Galvao 2010; Griffith 2009; Hwang 2008; Jarden 2009; Mock 2005; Moros 2010; Mutrie 2007; Segal 2001; Segal 2003; Segal 2009; Tang 2010; Windsor 2004; Wiskemann 2011). Sixteen trials used a relatively subjective assessment of intensity by documenting a rating of mild, low- to moderate, mild- to moderate, moderate, or somewhat hard (Caldwell 2009; Chandwani 2010; Cohen 2004; Culos-Reed 2010; Danhauer 2009; Donnelly 2011; Hacker 2011; Headley 2004; Moadel 2007; Mustian 2009; Oh 2008; Oh 2010; Rogers 2009; Targ 2002; Wang 2010; Yang 2011). Fifteen trials did not report intensity of the exercise program.

The frequency and duration of individual exercise sessions, and the total number of exercise sessions varied greatly across the trials. Frequency of the exercise program ranged between once per week and daily. Duration of exercise sessions ranged from 12 to 120 minutes, with a modal duration of 90 minutes (n = 6; and 3 additional trials provided duration as a range between 30 and 90 minutes or 60 and 90 minutes). In some trials the frequency of the exercise program and duration of each exercise session increased during the course of the trial. The total number of exercise sessions varied greatly, ranging from a low of 7 sessions (Cohen 2004) to a high of more than 275 sessions (Bourke 2011; Culos-Reed 2010).

The exercise program was implemented at a facility or the participant's home or at both locations, and the location of

implementation determined in the most part the format (individual or group) of the exercise program and whether it was professionally led or not. Eighteen trials implemented the exercise program in a facility such as a university or hospital facility, community center, or yoga studio (Adamsen 2009; Battaglini 2008; Brown 2006; Campbell 2005; Chang 2008; Courneya 2007a; Courneya 2008; Courneya 2009; Danhauer 2009; de Oliveira 2010; Dimeo 1999; Galvao 2010; Jarden 2009; Monga 2007; Moros 2010; Segal 2003; Segal 2009; Targ 2002), 18 trials implemented the exercise program at both a facility and the participant's home (Banerjee 2007; Bourke 2011; Chandwani 2010; Cheville 2010; Cohen 2004; Culos-Reed 2010; Hacker 2011; Lanctot 2010; Moadel 2007; Mustian 2009; Mutrie 2007; Oh 2008; Oh 2010; Raghavendra 2007; Rogers 2009; Segal 2001; Vadiraja 2009b; Wiskemann 2011), and 16 trials implemented the exercise program only at the participant's home (Cadmus 2009; Caldwell 2009; Courneya 2003a; Crowley 2003; Donnelly 2011; Gomes 2011; Griffith 2009; Headley 2004; Mock 1994; Mock 1997; Mock 2001; Mock 2005; Tang 2010; Wang 2010; Windsor 2004; Yang 2011), and four trials either did not report the location of implementation of the exercise program (DiSipio 2009; Hwang 2008) or the description of the location was not clear (Arbane 2009; Haddad 2011). In terms of the format of implementing the exercise program, 32 trials used an individual format (Bourke 2011; Cadmus 2009; Caldwell 2009; Chang 2008; Courneya 2003a; Courneya 2007a; Courneya 2008; Crowley 2003; de Oliveira 2010; Dimeo 1999; Donnelly 2011; Gomes 2011; Griffith 2009; Hacker 2011; Headley 2004; Jarden 2009; Mock 1994; Mock 1997; Mock 2001; Mock 2005; Moros 2010; Mustian 2009; Raghavendra 2007; Segal 2001; Segal 2003; Segal 2009; Tang 2010; Vadiraja 2009b; Wang 2010; Windsor 2004; Wiskemann 2011; Yang 2011), 12 trials used a group format (Adamsen 2009; Banerjee 2007; Battaglini 2008; Brown 2006; Campbell 2005; Cheville 2010; Courneya 2009; Danhauer 2009; Galvao 2010; Moadel 2007; Rogers 2009; Targ 2002), six trials used both an individual and group format (Chandwani 2010; Cohen 2004; Culos-Reed 2010; Mutrie 2007; Oh 2008; Oh 2010), and for six trials the format was either not reported (DiSipio 2009; Haddad 2011; Hwang 2008; Lanctot 2010) or not clearly described (Arbane 2009; Monga 2007). The majority of exercise programs (n = 37) were either supervised or professionally led by yoga instructors, sports trainers, exercise physiologists, or other professionals.

For detailed information on interventions see Characteristics of included studies table.

Outcome measures

See Table 1 for a summary of instruments, the HRQoL domains assessed, and trials using each scale.

HRQoL assessment included a wide range of measures including, for example, the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30 (EORTC QLQ), Functional Assessment of Cancer Therapy (FACT), and Medical Outcomes Study Short Form (MOS-SF). In addition to measuring overall HRQoL, trials measured HRQoL domains including anxiety, body image/self-esteem, cognitive function, depression, emotional function/mental health, fatigue, general health perspective, pain, physical well-being (PWB), role function, sleep, social functioning, and spiritual function. Similar to the assessment of overall HRQoL, HRQoL domains were assessed using a plethora of measures. Table 1 provides a summary of instruments, the HRQoL domains assessed, and trials using each scale.

Twenty-two trials measured only HRQoL outcomes (Adamsen 2009; Brown 2006; Cadmus 2009; Campbell 2005; Chandwani 2010; Cheville 2010; Cohen 2004; Courneya 2003a; Courneya 2007a; Courneya 2009; Danhauer 2009; Dimeo 1999; DiSipio 2009; Donnelly 2011; Gomes 2011; Haddad 2011; Headley 2004; Lanctot 2010; Moadel 2007; Mock 1994; Tang 2010; Targ 2002) and 34 trials measured both HRQoL and non-HRQoL outcomes (Arbane 2009; Banerjee 2007; Battaglini 2008; Bourke 2011; Caldwell 2009; Chang 2008; Courneya 2008; Crowley 2003; Culos-Reed 2010; de Oliveira 2010; Galvao 2010; Griffith 2009; Hacker 2011; Hwang 2008; Jarden 2009; Mock 1997; Mock 2001; Mock 2005; Monga 2007; Moros 2010; Mustian 2009; Mutrie 2007; Oh 2008; Oh 2010; Raghavendra 2007; Rogers 2009; Segal 2001; Segal 2003; Segal 2009; Vadiraja 2009b; Wang 2010; Windsor 2004; Wiskemann 2011; Yang 2011). The most frequently measured non-HRQoL outcomes included physical function or activity (n = 15), strength training (n = 9), and fitness (n = 7). Other non-HRQoL outcomes assessed included flexibility, exercise level, physiologic measures, anthropometric measures, functional capacity, ROM, micronutrient intake, caloric intake, biomarkers, nausea and vomiting, and treatment toxicity. Among the 34 trials that measured both HRQoL and non-HRQoL outcomes, nine trials each identified HRQoL outcome(s) (Caldwell 2009; Courneya 2008; Mock 2005; Mutrie 2007; Oh 2008; Oh 2010; Segal 2003; Segal 2009; Wiskemann 2011) and non-HRQoL outcome(s) (Battaglini 2008; Crowley 2003; Culos-Reed 2010; de Oliveira 2010; Galvao 2010; Griffith 2009; Jarden 2009; Raghavendra 2007; Segal 2001) as primary outcome measure(s), and the remaining 16 trials did not identify any primary outcome measure(s) (Arbane 2009; Banerjee 2007; Bourke 2011; Chang 2008; Hacker 2011; Hwang 2008; Mock 1997; Mock 2001; Monga 2007; Moros 2010; Mustian 2009; Rogers 2009; Vadiraja 2009b; Wang 2010; Windsor 2004; Yang 2011).

For detailed information on outcome measures see the Characteristics of included studies table.

Excluded studies

The 102 trials retrieved and subsequently excluded did not meet the inclusion criteria for the following reasons: 26 trials included only participants who had completed active cancer treatment for either their primary or recurrent cancer and the exercise intervention was initiated after completion of active treatment (Banasik 2011; Bourke 2011a; Cho 2006; Daley 2004; Daley 2007; Daley 2007a; Daubenmier 2006; Dimeo 2004; Frattaroli 2008; Galantino 2003; Hayes 2011; Heim 2007; Heim 2011; Houborg 2006; Jones 2010; Kampshoff 2010; Knols 2011; Latka 2009; Mehnert 2011; Penttinen 2009; Persoon 2010; Pinto 2003; Pinto 2005; Sekse 2011; Thorsen 2005; Vardy 2010); 20 trials did not compare exercise with no exercise, another intervention, or usual care (Baumann 2011; Carmack Taylor 2004; Carmack Taylor 2006; Carmack Taylor 2007; Demark-Wahnefried 2008; Haines 2010; Hartmann 2007; Henderson 2012; John 2007; Koller 2006; Korstjens 2008; Lau 2010; Le Vu 1997; Manassero 2007; McClure 2010; Mina 2010; Patel 2005; Roscoe 2005; Stephenson 2000; von Gruenigen 2009); 12 trials focused on complications owing to treatment (e.g. menopause, lymphedema, shoulder dysfunction) rather than on improving whole body function or HRQoL (Aaronson 2011; Beurskens 2007; Bloom 2011; Duijts 2009; Duijts 2009a; Duijts 2010; Duijts 2010a; Kilbreath 2006a; Lee 2007a; McKenzie 2003; Todd 2008; Xie 2010); four trials were not RCTs or CCTs (Aghili 2007; Baumann 2008; Cho 2004; Park 2006); four trials did not measure overall HRQoL or an HRQoL domain as a study outcome (Dimeo 1997; MacVicar 1989;

Pickett 2002; Schwartz 2009); and one trial included participants below 18 years of age (Marchese 2004). The remaining 35 trials were excluded for meeting more than one of the reasons for exclusion. For detailed information on reasons for exclusion of retrieved studies see Characteristics of excluded studies table.

Risk of bias in included studies

The included studies were assessed for risk of bias using the 'Risk of Bias' assessment tool and recommendations for judging risk of bias provided in Chapter 8 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). For each trial the risk of bias is detailed in the 'Risk of bias' tables included with the Characteristics of included studies and the 'Risk of bias' summary (Figure 2). In addition, an overall assessment of risk of bias is presented in Figure 3.

Figure 2.

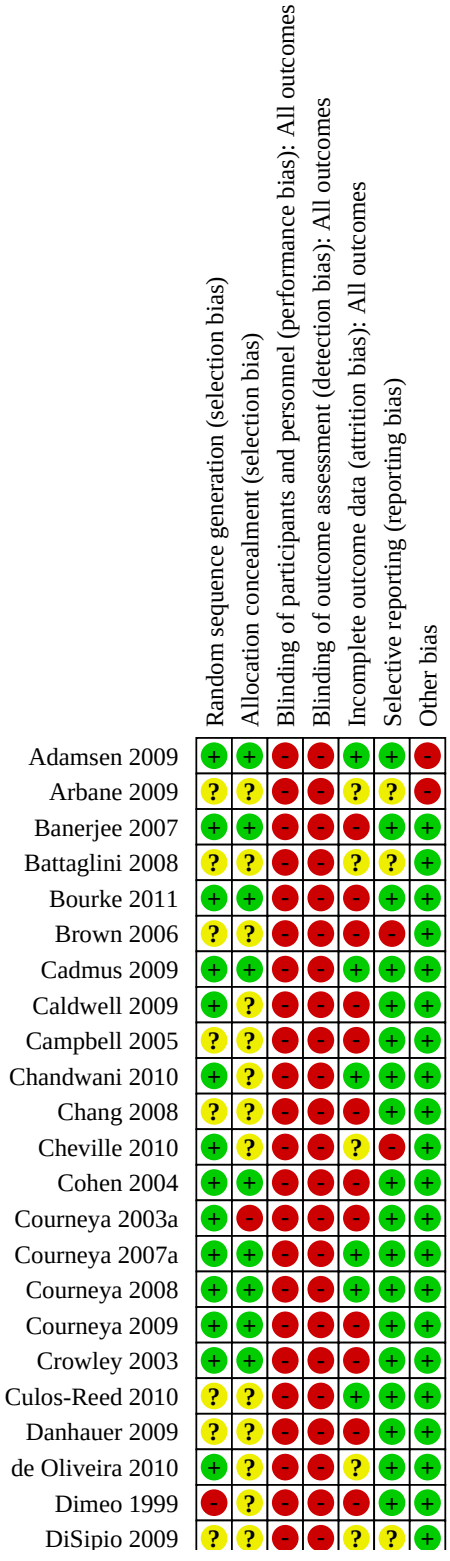


Figure 2. (Continued)

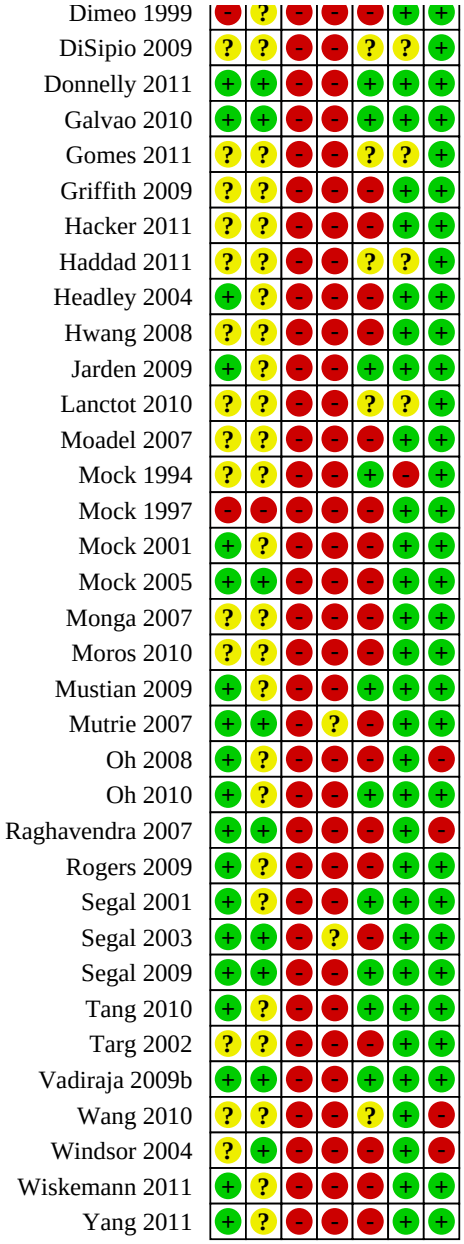
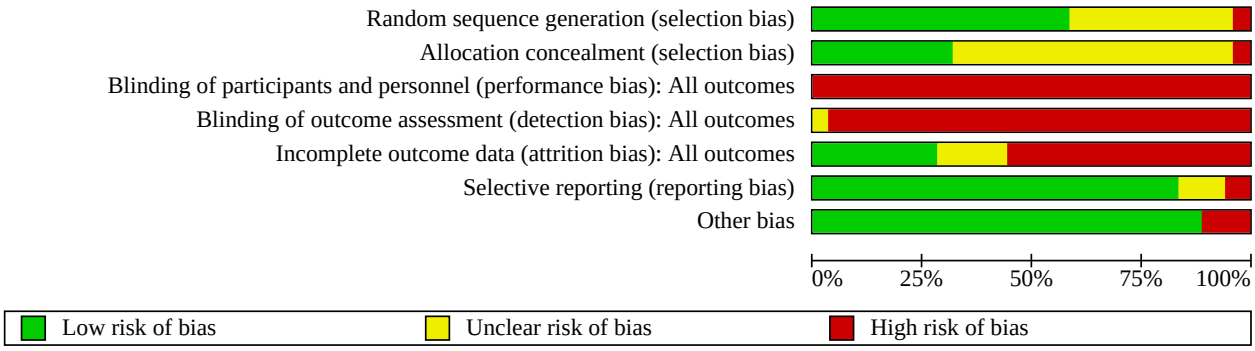


Figure 3. Risk of bias graph: review authors' judgments about each 'Risk of bias' item presented as percentages across all included studies.



Allocation

Thirty-three trials were at a low risk of selection bias owing to adequate generation of the randomized sequence as the trials used a random component to generate their sequence. Two trials had a high risk of selection bias as they used a nonrandom component to generate their sequence (Dimeo 1999; Mock 1997). Twenty-one trials were considered to have an unclear risk of selection bias, largely because the generation of the random sequence was not described (Arbane 2009; Battaglini 2008; Brown 2006; Campbell 2005; Chang 2008; Culos-Reed 2010; Danhauer 2009; DiSipio 2009; Gomes 2011; Griffith 2009; Hacker 2011; Haddad 2011; Hwang 2008; Lanctot 2010; Moadel 2007; Mock 1994; Monga 2007; Moros 2010; Targ 2002; Wang 2010; Windsor 2004).

Eighteen trials were at a low risk of selection bias owing to adequate concealment of allocation to the intervention as the participants and investigators could not foresee assignment to the study groups. Two trials had a high risk of selection bias as the participants or investigators might foresee assignment to the study groups (Courneya 2003a; Mock 1997). Thirty-six trials were considered to have an unclear risk of selection bias owing to allocation concealment, largely because the method of concealment either was not described or not described in detail to allow a definite judgment (Arbane 2009; Battaglini 2008; Brown 2006; Caldwell 2009; Campbell 2005; Chandwani 2010; Chang 2008; Cheville 2010; Culos-Reed 2010; Danhauer 2009; de Oliveira 2010; Dimeo 1999; DiSipio 2009; Gomes 2011; Griffith 2009; Hacker 2011; Haddad 2011; Headley 2004; Hwang 2008; Jarden 2009; Lanctot 2010; Moadel 2007; Mock 1994; Mock 2001; Monga 2007; Moros 2010; Mustian 2009; Oh 2008; Oh 2010; Rogers 2009; Segal 2001; Tang 2010; Targ 2002; Wang 2010; Wiskemann 2011; Yang 2011).

Blinding

All trials included in this review were at high risk for performance bias because, owing to the nature of the intervention (exercise), it was not possible to blind the study personnel and participants.

With the exception of two trials that were considered to have unclear risk for detection bias (Mutrie 2007; Segal 2003), the remaining 54 trials were at high risk for detection bias.

Incomplete outcome data

Sixteen trials were at a low risk of attrition bias owing to the amount, nature, or handling of incomplete outcome data (Adamsen 2009; Cadmus 2009; Chandwani 2010; Courneya 2007a; Courneya 2008; Culos-Reed 2010; Donnelly 2011; Galvao 2010; Jarden 2009; Mock 1994; Mustian 2009; Oh 2010; Segal 2001; Segal 2009; Tang 2010; Vadiraja 2009b) and nine trials were considered to have an unclear risk for attrition bias (Arbane 2009; Battaglini 2008; Cheville 2010; de Oliveira 2010; DiSipio 2009; Gomes 2011; Haddad 2011; Lanctot 2010; Wang 2010). Thirty-one trials were at high risk for attrition bias.

Selective reporting

Forty-seven trials were at a low risk of reporting bias as, based on the information provided by the trial authors, there was no reason to believe that there was selective reporting of the primary and secondary outcomes. Three trials were considered at high risk (Brown 2006; Cheville 2010; Mock 1994) and six trials were considered as unclear risk (Arbane 2009; Battaglini 2008; DiSipio 2009; Gomes 2011; Haddad 2011; Lanctot 2010) for reporting bias.

Other potential sources of bias

Fifty trials were at a low risk for other biases such as description of the sample, generalizability of findings, and sample size and six trials were considered to be at high risk for other biases (Adamsen 2009; Arbane 2009; Oh 2008; Raghavendra 2007; Wang 2010; Windsor 2004).

Effects of interventions

See: **Summary of findings 1** Summary of findings

Authors reported trial results either as change in score from baseline to follow-up or follow-up values. We completed meta-analyses for both types of outcomes and for each follow-up time period, categorizing follow-up as: up to 12 weeks, more than 12 weeks to less than 6 months, 6 months, and more than 6 months. If authors reported results in another manner (e.g. to end of chemotherapy treatment) where the length of follow-up differed for each trial participant, we classified the follow-up time by the average follow-up time, if reported. If not, we determined the mid-point of the extremes for follow-up and used that as an “average”. In cases where authors included more than one measurement within a time period (e.g. 6 week and 12 weeks) we

included measures from the longer time point. Because the change in scores from baseline to follow-up takes into account baseline variability, we preferentially pooled results for change scores. However, authors frequently only reported follow-up values, and so we also pooled results of follow-up values. We combined data using a WMD and a random-effects model when trials measured HRQoL or HRQoL domains using either the same measurement method or scale to generate continuous data. We used a SMD analysis and random-effects model to combine data from different instruments measuring the same domain. If we found heterogeneity in an analysis, we investigated subgroups by cancer type, intensity of the exercise intervention, or by inclusion of participants who had completed all therapy. All trials showed a relatively high risk of bias, so we conducted sensitivity analysis of trials where the allocation concealment scored as low risk of bias versus unclear or with a high risk of bias. We did not complete subgroup analyses when there was only one trial in a subgroup.

For detailed information on HRQoL and HRQoL domain outcomes, number of trials reporting the outcomes, number of participants on whom the outcomes were reported, statistical methods used for analysis, and effect estimates see the Data and analyses table.

Overall health-related quality of life

Change in HRQoL from baseline following an exercise intervention showed a significant improvement compared with control in 806 study participants at 12 weeks (SMD 0.47; 95% CI 0.16 to 0.79), no difference at follow-up between 12 weeks and 6 months in 442 participants (SMD 1.25; 95% CI -0.03 to 2.53), and no difference in 282 participants at 6 months' follow-up (SMD 0.14; 95% CI -0.11 to 0.39) (Analysis 1.1). At 12 weeks' follow-up, subgroups by cancer type resulted in breast cancer (SMD 0.40; 95% CI -0.11 to 0.92) not showing a significant effect of exercise in contrast to all other types of cancer (SMD 0.55; 95% CI 0.19 to 0.92). At follow-up time of more than 12 weeks to less than 6 months, we observed no significant effect by cancer type (breast cancer, SMD 0.25; 95% CI -0.01 to 0.50) versus all other types of cancer (SMD 2.95; 95% CI -2.21 to 8.12). At 12 weeks' follow-up, trials in which the investigators described the exercise as moderate or vigorous showed a positive effect (SMD 0.51; 95% CI 0.13 to 0.89) compared with those described as mild (SMD 0.45; 95% CI -0.30 to 1.19); this effect was also observed at follow-up from 12 weeks to 6 months (SMD 1.57; 95% CI 0.01 to 3.12), but not at 6 months' follow-up. The effect of exercise was still significant when we excluded trials that included participants who had completed treatment at 12 weeks' follow-up (SMD 0.52; 95% CI 0.16 to 0.88) but not at longer follow-up time periods.

All trials showed a relatively high risk of bias, so we conducted a sensitivity analysis of trials where the allocation concealment scored as low risk of bias versus unclear or with a high risk of bias. We found that the effect of exercise on the change from baseline to 12 weeks' follow-up resulted in a nonsignificant effect at 12 weeks (SMD 0.33; 95% CI -0.02 to 0.68) when we included only trials scoring as low risk of bias for allocation concealment.

Because there was significant clinical and statistical heterogeneity when combining all trials in an SMD model, we also examined the treatment effect by individual HRQoL instrument. The most commonly used instruments included those in the FACT series; including FACT-An (anemia), FACT-B (breast), FACT-G (general), FACT-P (prostate), and Functional Assessment of Chronic Illness Therapy (FACIT); and the QLQ-C30. A significant change in the HRQoL score from baseline to 12 weeks compared with change in the control group was seen at 12 weeks' follow-up with the FACT-G (MD 5.70; 95% CI 2.30 to 9.09) and FACT-P (MD 8.55; 95% CI 0.45 to 16.65), but not the FACT-An (MD -6.90; 95% CI -21.73 to 7.93), FACT-B (MD 6.81; 95% CI -5.81 to 19.43), FACIT (MD 1.55; 95% CI -6.37 to 9.48), or QLQ-C30 (MD -5.14; 95% CI -15.97 to 5.69). Additional instruments were used in only a single trial or only a few trials. Similar results were seen at longer follow-up periods.

We found similar results when we looked at the follow-up values reported rather than the differences between baseline and follow-up (Analysis 1.2). Again, we found a significant effect at 12 weeks (SMD 0.33; 95% CI 0.12 to 0.55), and follow-up at more than 12 weeks to less than 6 months (SMD 0.25; 95% CI 0.07 to 0.43), but not at 6 months (SMD 0.13; 95% CI -0.09 to 0.35). Subgroup analyses at 12 weeks' follow-up did not show a significant effect for breast cancer (SMD 0.31; 95% CI -0.03 to 0.65), but did for other types of cancer (SMD 0.34; 95% CI 0.15 to 0.53). Including only studies in which authors reported that the exercise was moderate to vigorous did not show a significant effect (SMD 0.16; 95% CI -0.07 to 0.40). Limiting the analyses to trials with a low risk of bias for allocation concealment continued to show a significant effect of exercise at 12 weeks (SMD 0.29; 95% CI 0.03 to 0.55).

Looking at the treatment effect by the individual instrument administered, we found significant effects with FACT-G (MD 6.89; 95% CI 0.44 to 13.35), FACT-P (MD 7.36; 95% CI -1.59 to 16.31), and QLQ-C30 (MD 7.31; 95% CI 1.99 to 12.63), but not with the FACT-An (MD 4.50; 95% CI -4.31 to 13.32), FACT-B (MD 0.73; 95% CI -8.23 to 9.69), or FACIT (MD 13.30; 95% CI -3.16 to 29.76). Again, few trials contributed to each analysis and there were insufficient trials to complete subgroup analyses or look at longer times of follow-up.

Trials for which we were unable to extract data and that measured HRQoL included Brown 2006, DiSipio 2009, Gomes 2011, Headley 2004, and Oh 2008. All but one trial reported a higher HRQoL in the exercise group compared with the control group, although this difference was typically manifested as less of a decrease in HRQoL during active treatment (Brown 2006; DiSipio 2009; Gomes 2011; Headley 2004).

Cancer-specific health-related quality of life

Although we observed a significant effect of exercise compared to control in change in scores from baseline to 12 weeks' follow-up for prostate cancer concerns (SMD 0.41; 95% CI 0.15 to 0.67), we did not observe a significant improvement at longer follow-up times for either breast cancer or prostate cancer concerns (Analysis 2.1). Similar findings were obtained when we examined differences in follow-up scores rather than the difference between baseline and follow-up, with a single significant observation at 6 months for breast cancer (MD 1.45; 95% CI 0.08 to 2.81).

Anxiety

We did not observe a significant reduction in change scores in instruments assessing anxiety in the group exposed to exercise compared with the control group at 12 weeks (SMD -0.17; 95% CI -0.41 to 0.06) or at longer time periods such as more than 12 weeks to less than 6 months (SMD -0.16; 95% CI -0.44 to 0.12), and at 6 months' follow-up (SMD -0.18; 95% CI -0.49 to 0.12) (Analysis 3.1). There were insufficient trials to examine subgroups within the comparison of change scores.

A larger number of authors reported follow-up values rather than looking at the change from baseline to follow-up, and we observed a significant effect of exercise on anxiety when we looked at the difference in follow-up scores after 12 weeks (SMD -0.46; 95% CI -0.81 to -0.11) or 6 months' follow-up (SMD -0.44; 95% CI -0.71 to -0.17), but not when follow-up was between 12 weeks and 6 months (SMD -0.20; 95% CI -0.57 to 0.17). There was statistical heterogeneity across studies, however, and examining subgroups, we found a significant effect at follow-up for breast cancer at all time points (12 weeks: SMD -0.90; 95% CI -1.68 to -0.11; more than 12 weeks to less than 6 months: SMD -0.27; 95% CI -0.52 to -0.02; 6 months: SMD -0.40; 95% CI -0.70 to -0.10), but not for other types of cancer. When we compared subgroup by the intensity of the exercise intervention, we found a modest effect of exercise reported as moderate to vigorous on anxiety at 12 weeks (SMD -0.18; 95% CI -0.32 to -0.03) but not at longer times of follow-up. Examining the effect of exercise compared with control on anxiety in trials with a low risk of bias for allocation concealment resulted in these results becoming significant at all time points (12 weeks: SMD -0.72; 95% CI -1.41 to -0.03; more than 12 weeks to less than 6 months: SMD -0.27; 95% CI -0.52 to -0.02; 6 months: SMD -0.40; 95% CI -0.70 to -0.10).

Examination by individual instruments assessing anxiety showed a significant effect at six months' follow-up only when the anxiety subscale of the Hospital Anxiety and Depression Scale (HADS; MD -2.50; 95% CI -4.89 to -0.11) or the State-Trait Anxiety Scale (STAI) (MD -2.12; 95% CI -3.44 to -0.81) were used to assess anxiety at six months' follow-up, but not shorter times of follow-up.

In addition to these results, a single trial (Mock 1997) reported a significant difference between exercise and control groups at 6 weeks on anxiety assessed using the Symptom Assessment Scale.

Body image

No significant effect of exercise was observed on body image when comparing an exercise with a control intervention and looking at differences in scores except for a single trial of 223 breast cancer participants that reported change at approximately 3 months in the Rosenberg Self-esteem Instrument (MD 1.30; 95% CI 0.51 to 2.09) (Analysis 4.1). This significant effect was not maintained through six months in this trial and no other significant differences were observed in body image or self-esteem.

Mock 1997 also assessed dissatisfaction with body using the Symptom Assessment Scale and reported a significant difference between scores at 6 weeks as reported by the exercise and control groups.

Cognitive function

We observed no significant effect of exercise on any measure of cognitive function, except for a modest effect when looking at the follow-up scores in cognitive functioning at 12 weeks (SMD -0.16; 95% CI -0.31 to -0.01) (Analysis 5.1). When we examined this effect by subgroup, the effect was not significant by type of cancer (breast (SMD -0.22; 95% CI -0.47 to 0.02) or other (SMD -0.15; 95% CI -0.45 to 0.14)) or by level of exercise intensity (moderate to intense (SMD -0.20; 95% CI -0.41 to 0.02)).

One trial whose data were not extracted reported a significant effect on cognitive function with exercise without a corresponding effect in the control group (Oh 2008).

Depression

We observed no significant effect of exercise on depression in 418 participants looking at the change in score across instruments from baseline to follow-up (Analysis 6.1). Because there was heterogeneity, we examined results by subgroup including cancer type (breast versus other) and observed a significant effect for other types of cancer (SMD -0.45; 95% CI -0.70 to -0.20) but not in the single trial that looked at breast cancer (Targ 2002). No differences were noted when we looked at trials by reported intensity of exercise (vigorous to moderate versus mild to moderate), but we did see a significant effect of exercise after excluding two trials that included patients who had completed therapy (Oh 2010; Targ 2002) (SMD -0.55; 95% CI -0.87 to -0.22).

When we looked at follow-up values (Analysis 6.2), we observed a significant effect of the exercise intervention at 12 weeks (SMD -0.55; 95% CI -0.87 to -0.22) and 6 months' follow-up (SMD -0.29; 95% CI -0.48 to -0.09), but not at follow-up between these two time points (SMD -0.21; 95% CI -0.43 to 0.01). This effect was still significant at both 12 weeks (SMD -0.67; 95% CI -1.13 to -0.22) and 6 months (SMD -0.26; 95% CI -0.51 to -0.01) after excluding trials that included individuals who had completed treatment. Subgroup analysis by cancer type continued to be significant at both 12 weeks (SMD -0.98; 95% CI -1.64 to -0.32) and 6 months' follow-up (SMD -0.27; 95% CI -0.47 to -0.07) for trials of breast cancer, as it was for other types of cancer for 12 weeks' follow-up (SMD -0.28; 95% CI -0.44 to -0.11) and more than 12 weeks but less than 6 months (SMD -0.58; 95% CI -1.10 to -0.06). There was only a single trial of cancer other than breast at six months' follow-up and it did not show a significant effect of exercise on depression (Jarden 2009). There was improvement in depression when the exercise intervention was noted to be moderate to vigorous at 12 weeks' follow-up (SMD -0.26; 95% CI -0.39 to -0.13), but not when it was reported to be mild (SMD -0.31; 95% CI -0.91 to 0.28), although this latter subgroup included only two trials (Chandwani 2010; Danhauer 2009). When we performed a sensitivity analysis including only trials with a low risk of bias for allocation concealment, there was a significant effect of exercise on depression at 12 weeks' follow-up (SMD -0.76; 95% CI -1.24 to -0.28) and at 6 months' follow-up (SMD -0.27; 95% CI -0.47 to -0.07), but not when follow-up was more than 12 weeks to less than 6 months (SMD -0.08; 95% CI -0.32 to 0.17).

We also looked at the effect of the exercise intervention by individual instrument, and observed a significant treatment effect looking at change at 12 weeks in the Centers for Epidemiological Studies - Depression Scale (CES-D; MD -2.40; 95% CI -4.05 to -0.75) and follow-up values in the Beck Depression Inventory at 12 weeks (MD -3.36; 95% CI -5.87 to -0.85) and at 6 months' follow-up (MD -2.40; 95% CI -4.57 to -0.23).

We were unable to extract data from two trials that reported on depression, with one trial reporting a significant difference in depression between treatment groups (Mock 1997) and the second showing no difference (Haddad 2011).

Emotional well-being

Meta-analyses of the change in score from baseline to follow-up and comparing exercise with control intervention did not show a significant improvement in EWB at any follow-up time point (Analysis 7.1). When we looked at the effect of exercise by type of cancer or by excluding studies that included participants who had completed treatment, we found no significant effect of exercise

on change in emotional status. Similarly, there was no significant difference when we looked at subgroups by reported exercise intensity.

By comparing the differences in follow-up values, we observed a significant effect of exercise compared with control at follow-up of more than 12 weeks but less than 6 months (SMD 0.59; 95% CI 0.12 to 1.07) but not at either 12 weeks (SMD 0.05; 95% CI -0.18 to 0.28) or 6 months' follow-up (SMD 0.25; 95% CI -0.08 to 0.57). However, when we looked at trials by type of cancer, we found a significant effect for types of cancer other than breast cancer (between 12 weeks' and 6 months' follow-up: SMD 0.86; 95% CI 0.28 to 1.44; 6 months' follow-up: SMD 1.16; 95% CI 0.36 to 1.95), but no effect for breast cancer trials. Including only trials where all trial participants were undergoing active treatment resulted in a nonsignificant effect of exercise on emotional state at all follow-up times. A sensitivity analysis including only trials with a low risk of bias for allocation concealment also did not show a significant effect at 12 weeks' follow-up (SMD -0.31; 95% CI -0.86 to 0.25).

Looking at each type of instrument separately, we found a significant difference between the exercise and the control interventions in QLQ-C30 follow-up values at longer follow-up periods (more than 12 weeks to less than 6 months: MD 13.33; 95% CI 5.19 to 21.47; 6 months: MD 19.10; 95% CI 6.39 to 31.81), change in the Profile of Mood Scale (POMS) total mood disturbance score from baseline to 12 weeks' follow-up (MD -8.92; 95% CI -10.81 to -7.03), follow-up scores in the POMS total mood (MD -7.16; 95% CI -12.64 to -1.69), and the positivity subscale of the Positive and Negative Affect Scale (PANAS) at 6 months' follow-up (MD 3.80; 95% CI 0.98 to 6.62). We did see significant results in some additional individual instruments (Brief Symptom Inventory, Symptom Checklist (SCL), National Comprehensive Cancer Network Distress Scale, M.D. Anderson Symptom Inventory (MDASI) subscales), but these included only a single trial in each case.

Two trials without extractable data reported no change over time in EWB in either the exercise or control group (Headley 2004; Oh 2008).

Fatigue

We observed a significant effect of exercise on change in fatigue at follow-up of 12 weeks (SMD -0.73; 95% CI -1.14 to -0.31), although this effect was not present at follow-up between 12 weeks and 6 months (SMD -0.11; 95% CI -0.37 to 0.14) (Analysis 8.1). Although we observed no treatment difference within a subgroup of breast cancer trial participants, we found that a positive effect of exercise was present in participants with other types of cancer at 12 weeks (SMD -0.72; 95% CI -1.23 to -0.20). A subgroup analysis looking at trials where the exercise intervention was reported as moderate to vigorous provided an effect at 12 weeks' follow-up (SMD -0.93; 95% CI -1.60 to -0.26) but not at longer time periods. Only two trials reported that the exercise was mild (Oh 2010; Targ 2002) and in these two trials the exercise intervention showed a significant effect compared with control on change in fatigue at 12 weeks (SMD -0.82; 95% CI -1.16 to -0.48). The effect of exercise remained significant when we excluded trials with participants who had completed treatment (SMD -0.78; 95% CI -1.29 to -0.27). A sensitivity analysis including only trials with a low risk of bias for allocation concealment resulted in a nonsignificant effect of exercise on fatigue compared with control at all time points.

We continued to observe a positive effect of exercise on fatigue compared with a control intervention when we completed meta-analyses looking at differences in follow-up scores at all follow-up time points (12 weeks' follow-up: SMD -0.38; 95% CI -0.57 to -0.18; more than 12 weeks to less than 6 months' follow-up: SMD -0.19; 95% CI -0.33 to -0.05; 6 months' follow-up: SMD -0.18; 95% CI -0.35 to -0.00) (Analysis 8.2). This effect was present in trial participants with breast cancer at 12 weeks (SMD -0.32; 95% CI -0.57 to -0.07), but not at longer time points. We continued to find a significant effect at all three follow-up time points for trials that enrolled participants with other types of cancer (12 weeks' follow-up; SMD -0.43; 95% CI -0.75 to -0.12; more than 12 weeks' to less than 6 months' follow-up: SMD -0.25; 95% CI -0.45 to -0.04; 6 months' follow-up: SMD -0.49; 95% CI -0.93 to -0.05). We also continued to see a significant effect of exercise compared with a control intervention after excluding trials that included participants who had completed treatment. Including only trials with a low risk of bias for allocation concealment showed a positive effect of exercise at 12 weeks (SMD -0.35; 95% CI -0.67 to -0.03), but not at longer follow-up times.

Comparing results by individual instruments showed mixed effects in that analyses for some instruments showed a significant effect of exercise at some follow-up times, while others did not. We observed a significant improvement in fatigue from baseline to follow-up when we combined trials at 12 weeks for the FACT-F subscale and the Piper Fatigue Scale (PFS). We observed a significant effect of exercise on differences between follow-up scores at 12 weeks when pooling results from trials using the FACT fatigue subscale, FACIT, the POMS fatigue scale or vitality subscales, the PFS, the MOS SF-36 vitality subscale, and the Multidimensional Fatigue Inventory (MFI) at various times of follow-up.

We were unable to extract data from a number of trials reporting on the differences in fatigue between exercise and control groups. Four of these trials reported a significant difference between the exercise and control groups (Brown 2006; Gomes 2011; Haddad 2011; Mock 1997) and two reported no difference (Headley 2004; Oh 2008).

General health perspective

We only observed a single significant effect of exercise on general health perspective by looking at the difference in follow-up scores at 12 weeks (SMD 0.33; 95% CI 0.01 to 0.64) (Analysis 9.1). Neither change from baseline to follow-up nor any other measure of difference in scores at any time point or for any single instrument showed an effect of exercise on general health perspective.

A single trial without extractable data reported a significant difference in general health as measured by the MOS SF-36 between a yoga exercise group with either a waiting list control or stretching control group (Haddad 2011).

Pain

Few trials reported on pain or change in pain related to the exercise intervention. No significant effect was obtained when pooling trials that reported change in pain from baseline to follow-up (Analysis 10.1). We did not observe a significant effect when looking at follow-up scores either, although a single trial reported a significant reduction in pain at six months (Jarden 2009). When we looked at the comparison of exercise with control on pain by individual instrument, although we sometimes observed a significant effect, but only when a single trial was included in the analysis.

One small trial for which we could not extract data also reported on pain (Oh 2008), finding a significant difference between the exercise and control groups.

Physical functioning

A significant effect of an exercise intervention on physical function appeared relatively consistently at 12 weeks across most measures (Analysis 11.1). We observed a significant difference from baseline to 12 weeks' follow-up (SMD 0.69; 95% CI 0.16 to 1.22) and at 6 months follow-up (SMD 0.28; 95% CI -0.00 to 0.55) but not when follow-up was between 12 weeks and 6 months (SMD -0.18; 95% CI -0.53 to 0.17) (Analysis 11.1). Trials that included only breast cancer participants did not show a significant effect of exercise on physical functioning (SMD 0.96; 95% CI -0.26 to 2.17) at 12 weeks; neither did trials that only included other types of cancer (SMD 0.46; 95% CI -0.04 to 0.97) or trials where the author reported moderate to vigorous-intensity exercise (SMD 0.96; 95% CI -0.26 to 2.17). However, a significant effect at 12 weeks was observed when we only looked at trials that had all participants undergoing active treatment (i.e. when we excluded trials that included participants who had completed treatment) (SMD 1.00; 95% CI 0.26 to 1.74).

A similar pattern emerged when we looked at difference in follow-up scores, with significant effects seen at 12 weeks (SMD 0.28; 95% CI 0.11 to 0.45), and 6 months' follow-up (SMD 0.29; 95% CI 0.07 to 0.50), but not at follow-up of more than 12 weeks to less than 6 months (SMD 0.33; 95% CI -0.17 to 0.82) (Analysis 11.2). Subgroup analyses by type of cancer showed no effect at 12 weeks for trials of breast cancer participants, but a significant effect for trials examining participants with other types of cancer (SMD 0.37; 95% CI 0.19 to 0.55), as did including only trials that did not include any participants who had completed treatment (SMD 0.38; 95% CI 0.17 to 0.58). Looking at trials that reported moderate to vigorous intensity of exercise also showed a significant effect of exercise at 12 weeks' follow-up (SMD 0.41; 95% CI 0.17 to 0.64). A sensitivity analysis that included only trials at a low risk of bias for allocation concealment also showed a positive effect at 12 weeks (SMD 0.24; 95% CI 0.07 to 0.40). We could not perform sensitivity analyses for longer times of follow-up because there were too few trials at a low risk of bias for allocation concealment.

Looking at individual instruments, a significant effect of exercise compared with control was observed in change from baseline to 12 weeks' follow-up in the FACT physical well-being subscale (MD 2.31; 95% CI 0.65 to 3.98). Difference in scores at follow-up was observed at 6 months in the FACT physical well-being subscale (6 months: MD 1.17; 95% CI 0.14 to 2.19); the QLQ-C30 physical functioning subscale (12 weeks' follow-up: MD 3.72; 95% CI 0.61 to 6.84; more than 12 weeks' to less than 6 months' follow-up: MD 3.72; 95% CI 0.61 to 6.84); and the MOS-SF 36 physical component scale (PCS) (12 weeks' follow-up: MD 3.96; 95% CI 0.99 to 6.94), physical functioning subscale (12 weeks' follow-up: MD 4.04; 95% CI 0.63 to 7.46), and physical role subscale (12 weeks' follow-up: MD 11.24; 95% CI 3.10 to 19.39). In addition, single trials reported a significant effect on physical functioning using a variety of other instruments, including the WHO QOL BREF, MDASI, and the Quality of Life Symptom Inventory.

There were four trials whose investigators measured physical functioning in trial participants assigned to exercise and control groups. Of these, three found a significant difference between treatment groups (Haddad 2011; Mock 1997; Oh 2008) and one reported no difference (Headley 2004).

Role function

Results for role function showed a significant effect of exercise on role function compared with control when we pooled results for change from baseline to follow-up at 12 weeks (SMD 0.48; 95% CI 0.07 to 0.90) or differences in follow-up scores at 12 weeks (SMD 0.17; 95% CI 0.00 to 0.34) and 6 months (SMD 0.32; 95% CI 0.03 to 0.61), but not at other time points (Analysis 12.1). Subgroup analyses of the change from baseline to follow-up at 12 weeks in role function showed a significant effect for trials examining types of cancer other than breast (SMD 0.58; 95% CI 0.04 to 1.12), and when excluding trials that included participants who had completed treatment (SMD 0.75; 95% CI 0.14 to 1.36), but not when the investigators reported that the exercise was moderate to vigorous in intensity (SMD 0.61; 95% CI -0.40 to 1.62). In contrast, there was no significant effect for any subgroup when observing differences in follow-up scores of the exercise compared with the control groups at 12 weeks. Results using individual instruments infrequently showed significant effects, including only the FACT functional well-being (FWB) subscale at 12 weeks' and 6 months' follow-up, the QLQ-C30 role function at 6 months, and three different subscales on the MDASI.

Role function was reported by two trial investigators who found no change in role function in either the exercise or control group (Headley 2004; Oh 2008).

Sleep disturbance

We observed no significant effect of exercise on any reported measure of sleep problems when we looked at the change from baseline to follow-up scores, but did see a significant effect showing improvement when comparing follow-up values by comparison group at 12 weeks (SMD -0.40; 95% CI -0.67 to -0.14), but not at longer follow-up time points (Analysis 13.1). We observed a significant effect when the analyses included only trials with participants who had cancers other than breast cancer (SMD -0.43; 95% CI -0.79 to -0.07) or included only participants who were all undergoing active treatment (SMD -0.42; 95% CI -0.75 to -0.09). Including only trials where the investigators reported that the exercise was moderate to vigorous in intensity approached significance (SMD -0.36; 95% CI -0.72 to 0.00). We also observed an improvement in sleep disturbance when follow-up values were reported using the Pittsburgh Sleep Quality Index (PSQI) (MD -1.67; 95% CI -2.88 to -0.46), but only at 12 weeks, In addition, a single trial reported a significant effect on the MDASI disturbed sleep subscale (Yang 2011).

Two additional trials reported on sleep disturbances, finding a significant difference between the exercise and control groups (Mock 1997; Oh 2008).

Social functioning

Pooling results of trials evaluating change from baseline to follow-up in HRQoL instruments assessing social functioning showed significant improvement following an exercise intervention compared with a control intervention in 378 trial participants at 12 weeks (SMD 0.54; 95% CI 0.03 to 1.05), but no effect was observed at 6 months' follow-up (Analysis 14.1). We also observed a significant effect of exercise when comparing follow-up scores

obtained with those from the control group at both 12 weeks' follow-up (SMD 0.16; 95% CI 0.04 to 0.27) and 6 months' follow-up (SMD 0.24; 95% CI 0.03 to 0.44). A positive treatment effect was still present after excluding results from trials that included participants who had completed treatment when comparing differences in scores at follow-up between the exercise and control groups at 12 weeks (SMD 0.16; 95% CI 0.01 to 0.31) and whether the trial participants only included individuals with breast cancer or other types of cancer. No effect of exercise was present at 12 weeks when we included only trials with a low risk of bias for allocation concealment (SMD 0.10; 95% CI -0.06 to 0.27).

Results obtained when pooling by individual instruments showed mixed results with positive findings observed only when the FACT instrument was used to measure social function.

From trials whose data were not extracted, one reported no difference on social functioning between the exercise and control groups (Headley 2004) and a second reported a significant effect on social functioning with exercise without a corresponding effect in the control group (Oh 2008).

Spirituality

Few trials evaluated spirituality as a HRQoL domain while comparing an exercise with a control intervention. A significant effect was seen in 172 trial participants enrolled in 3 trials at 12 weeks' follow-up (SMD 0.46; 95% CI 0.14 to 0.77) (Analysis 15.1).

A single trial without extractable data also reported no difference in spirituality between exercise and control groups (Haddad 2011).

DISCUSSION

Summary of main results

We included 56 trials with 4826 participants randomized to an exercise (n = 2286) or comparison (n = 1985) group. Cancer diagnoses in trial participants included breast, prostate, gynecologic, hematologic, and other. Thirty-six trials were conducted among participants who were currently undergoing active treatment for their cancer, 10 trials were conducted among participants both during and post active cancer treatment, and the remaining 10 trials were conducted among participants scheduled for active cancer treatment. Mode of exercise interventions differed across trials and included walking by itself or in combination with cycling, resistance training, or strength training; resistance training; strength training; cycling; yoga; or Qigong. HRQoL and its domains were assessed using a wide range of measures.

The results suggest that exercise interventions compared with control interventions have a positive impact on overall HRQoL and certain HRQoL domains. Exercise interventions resulted in improvements in: HRQoL from baseline to 12 weeks' follow-up or when comparing difference in follow-up scores at 12 weeks' follow-up; physical functioning from baseline to 12 weeks' follow-up and 6 months' follow-up or when comparing differences in follow-up scores at 12 weeks' follow-up or 6 months' follow-up; role function from baseline to 12 weeks' follow-up or when comparing differences in follow-up scores at 12 weeks and 6 months; and in social functioning at 12 weeks' follow-up or when comparing differences in follow-up scores at both 12 weeks' follow-up and 6 months' follow-up. Further, exercise interventions resulted in a decrease in fatigue from baseline to 12 weeks' follow-up or when comparing difference in follow-up scores at follow-up of 12 weeks. Since there is consistency of findings on both types of measures (change scores and difference in follow-up scores) there is greater confidence in the robustness of these findings.

Exercise interventions also resulted in improvements in: prostate cancer concerns at 12 weeks' follow-up; breast cancer concerns when examining differences in follow-up scores at 6 months; EWB at follow-up more than 12 weeks but less than 6 months; and, in general health perspective when comparing differences in follow-up scores at 12 weeks' follow-up. Further, exercise interventions resulted in a decrease in anxiety at 12 weeks' follow-up and at 6 months' follow-up; depression at 12 weeks' follow-up and at 6 months' follow-up; and, in sleep disturbances at 12 weeks' follow-up. These findings, however, need to be interpreted cautiously as their robustness is uncertain given the fact that the positive effects were observed not on the change scores but in the difference in follow-up scores. These findings could be because of the different number (or type) of trials reporting results in this manner or it could be that there really is not a difference because trial authors did not account for differences in baseline values.

When examining exercise effects by subgroups, exercise interventions had significantly greater reduction in anxiety for survivors with breast cancer than those with other types of cancer. Further, there was greater reduction in depression, fatigue, and sleep disturbances, and improvement in HRQoL, EWB, physical functioning, and role function for cancer survivors diagnosed with cancers other than breast cancer but not for breast cancer. There were also greater improvement in HRQoL and physical functioning, and reduction in anxiety, fatigue, and sleep disturbances when prescribed a moderate or vigorous versus a mild exercise program.

There were positive trends and impact of exercise interventions for body image and self-esteem, cognitive functioning, depression based on exercise program intensity, fatigue based on exercise program intensity, general health perspective, pain, and spiritual well-being. No conclusions can be drawn based on these trends since few trials measured these outcomes or reported on the intensity of the exercise program.

The positive results must be interpreted cautiously owing to the heterogeneity of exercise programs tested, measures used to assess HRQoL and HRQoL domains, and the risk of bias in many trials. Further research is required to investigate how to sustain positive effects of exercise over time and to determine essential attributes of exercise (mode, intensity, frequency, duration, timing) by cancer type and cancer treatment for optimal effects on HRQoL and its domains.

The Summary of findings 1 provides a summary of the main results with associated risks.

Overall completeness and applicability of evidence

This systematic review included 56 trials, 54 of which were RCTs and two trials used a quasi-randomized design to allocate participants to treatment. These trials allocated 4826 participants to either the exercise or comparison groups. Participants enrolled in the trials had various cancer diagnoses including breast, prostate, gynecologic, hematologic, and other. All trials included participants who were undergoing active cancer treatment; however, 10 trials also included participants who had completed

active cancer treatment. Exercise interventions tested in the trials greatly varied and included walking by itself or in combination with cycling, resistance training, or strength training; resistance training; strength training; cycling; yoga; or Qigong. HRQoL and HRQoL domains were assessed using a wide range of measures. The Characteristics of included studies table provides detailed information on the trial attributes.

The review draws upon studies from across the globe. The comprehensive search strategy obtained information from several electronic databases, citations through Web of Science and Scopus, PubMed's related article feature, and several websites; and review of reference list of other reviews in the field and reference list of all included trials. There were no language or date restrictions in the search strategy. See Search methods for identification of studies for details on the search strategy.

In terms of applicability of evidence, the majority of trials were conducted among women. Further, many trials did not provide sociodemographic information of participants (race/ethnicity, education level, employment status, annual income, social and health benefits) that would enable comparisons between trials and assess generalizability of findings. Based on sociodemographic data presented in trials, participants were generally white and with more than 'high school' level of education. These characteristics would limit applicability of evidence to a broader cancer survivor population. Further, the majority of trials measured effects of the intervention at the end of the intervention. Thus it is unclear about how sustainable the positive effects of the intervention would be.

The exercise programs varied greatly in their mode and in their frequency, duration, and intensity. These variations and the lack of understanding about important elements of exercise programs (mode, frequency, duration of sessions and programs, and intensity) for optimal effects on HRQoL and HRQoL domains would preclude informed decision-making in clinical settings and limit applicability of findings.

The HRQoL and HRQoL domains were assessed using a diverse range of instruments with varying psychometric properties. Further, reliance on self-report measures, without triangulation of findings with objectively measured outcomes, can open interpretation of findings to bias.

Because of the variability across interventions, outcome measures, and follow-up times, we looked for treatment effects that were consistent across time and different instruments used to assess a specific domain. Although we found some significant effects, they tended to be in subgroups or only at one time point, undermining our confidence in the observed effect. When we observed a significant effect, it was usually at the 12-week follow-up period, which typically equates to the end of the intervention. We frequently found that a positive effect at 12 weeks was not observed at later time periods (i.e. improvement in global HRQoL, improvements in physical function, reduction in fatigue, etc.), but it is unclear if this finding is because of lack of effect of the exercise intervention at later times, or because there were so few trials measuring outcomes at longer times of follow-up.

The trials provided no data on cost or cost-effectiveness of exercise program on HRQoL and HRQoL domains among cancer survivors undergoing treatment for their cancer.

Quality of the evidence

Results of the review need to be interpreted cautiously owing to the risk of bias. All the trials reviewed were at high risk for performance bias because blinding of participants is not possible in exercise intervention unless more rigorously controlled comparative designs are utilized to test the effects of exercise interventions. Performance bias becomes accentuated in trials where participants are asked to provide subjective assessments of outcomes such as HRQoL and HRQoL domains. In addition, the majority of trials were at high risk for detection bias as the outcome assessors were not blinded, were at high risk for attrition bias owing to inadequate handling of incomplete data, and were at high or unclear risk for selection bias because of inadequate concealment of allocation to the intervention.

The Summary of findings 1, Figure 2, and Figure 3 provide a summary on the quality of evidence.

Potential biases in the review process

The strength of this review is the comprehensive search strategy that included a search of 11 electronic databases, citations through Web of Science and Scopus, PubMed's related article feature, and several websites; and, review of reference lists of other reviews in the field and reference lists of all included trials. The comprehensive search strategy was designed and implemented to ensure the identification and retrieval of the maximum number of available published trials and trials in the gray literature. The search strategy also ensured no language restrictions. Trials published in non-English language were assessed for eligibility and, if eligible, had data abstracted by native speakers of the language in which the trial was published. In spite of such a comprehensive search, it is still possible that this review may have a publication bias. We prepared funnel plots to assess publication bias for change from baseline to follow-up and for follow-up values for outcomes such as global QoL (Figure 4; Figure 5), fatigue (Figure 6; Figure 7), and physical functioning (Figure 8; Figure 9). Visually these figures showed some slight asymmetry indicating that there is some publication bias in this area of research. We did not complete funnel plots for the other outcomes because too few studies contributed to the outcome measures. It is possible this review missed some potentially eligible trials in the gray literature, but given the study results, it is unclear whether the addition of trials only in the gray literature would have a significant impact on results of the review if, as has been suggested, trials reported only in the gray literature includes trials that have small sample sizes and inconclusive results (McAuley 2000).

Figure 4. Funnel plot of comparison: 1 Health-related quality of life, outcome: 1.1 Overall quality of life change score.

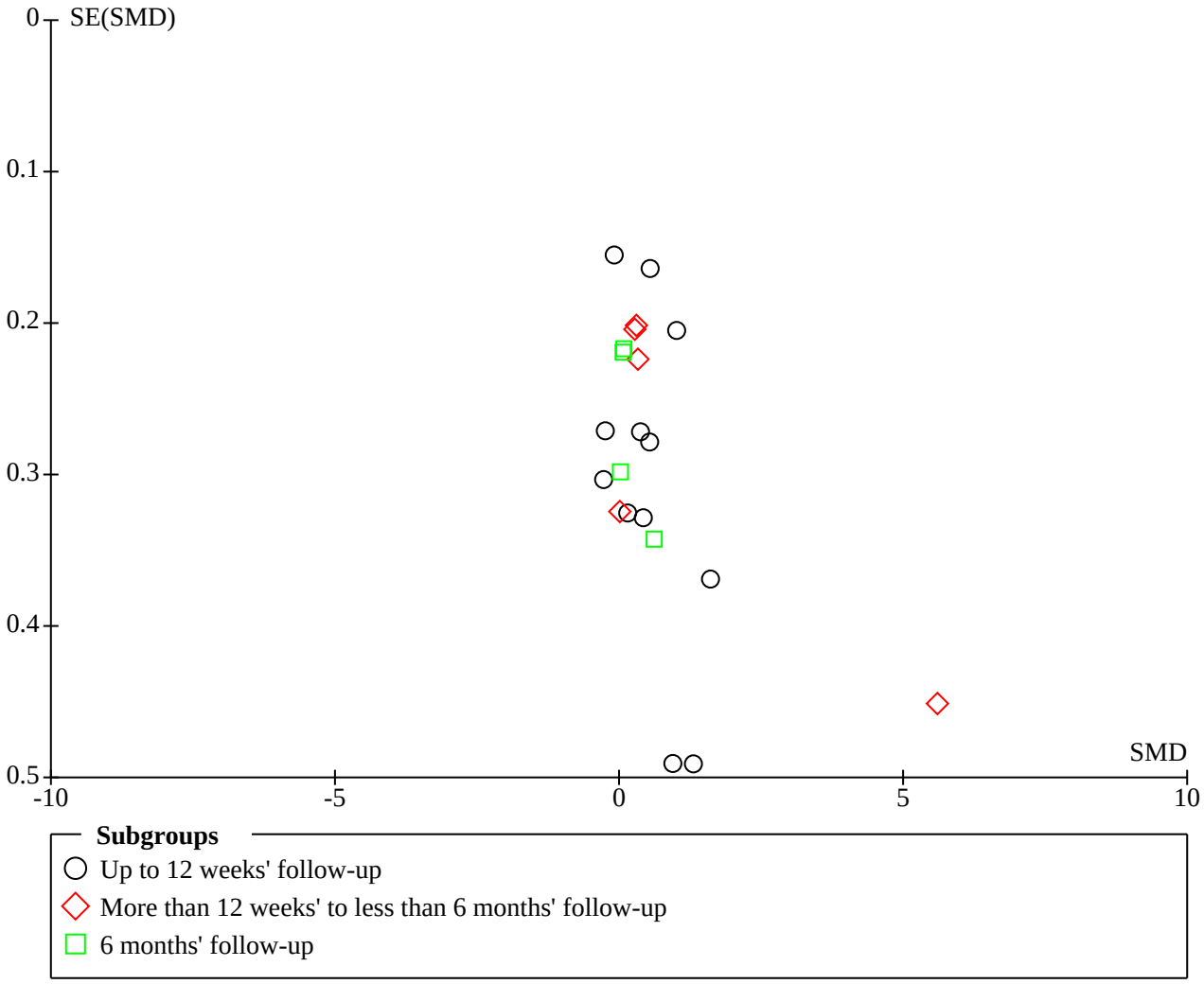


Figure 5. Funnel plot of comparison: 1 Health-related quality of life, outcome: 1.2 Overall quality of life follow-up values.

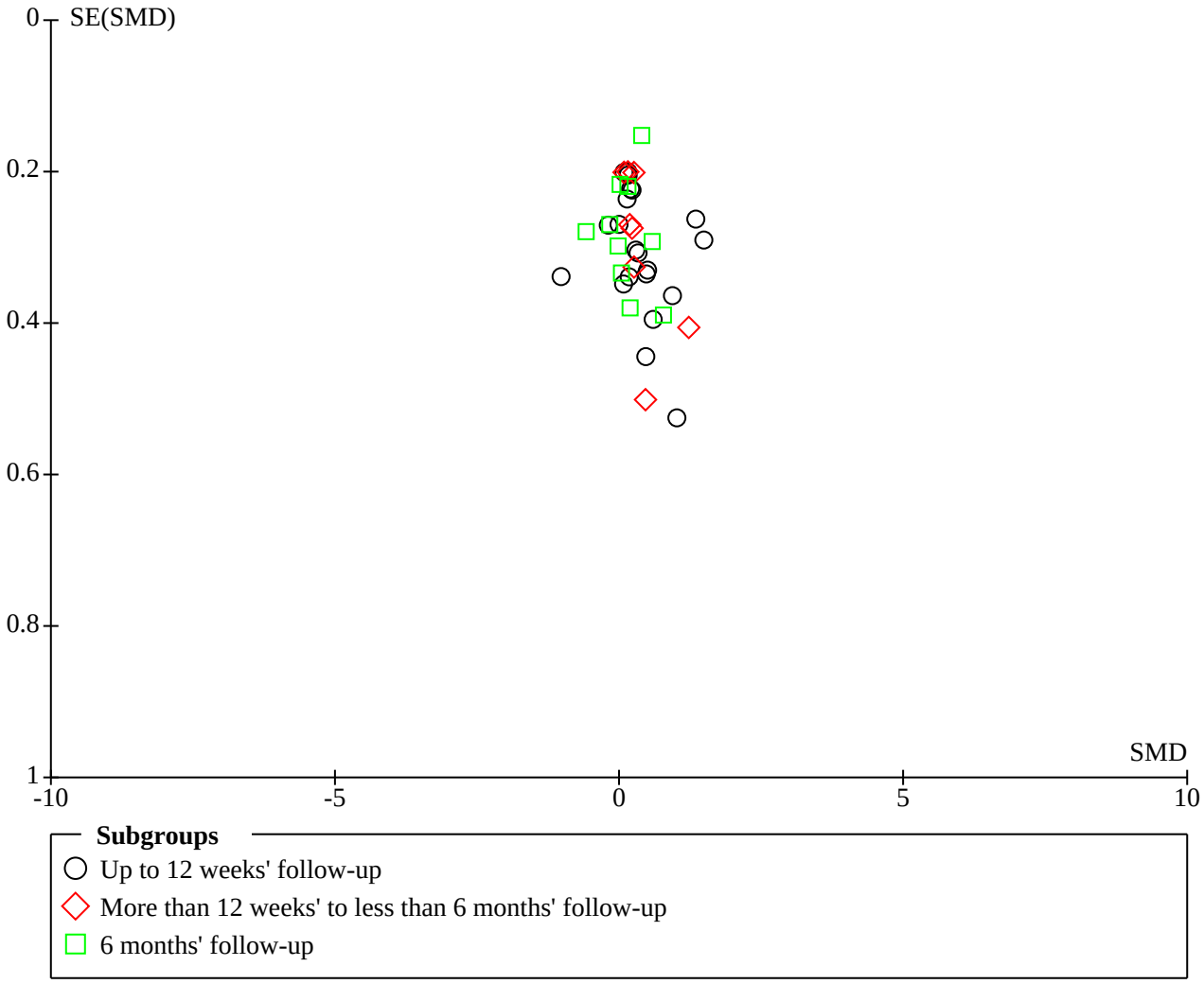


Figure 6. Funnel plot of comparison: 8 Fatigue, outcome: 8.1 Overall fatigue change.

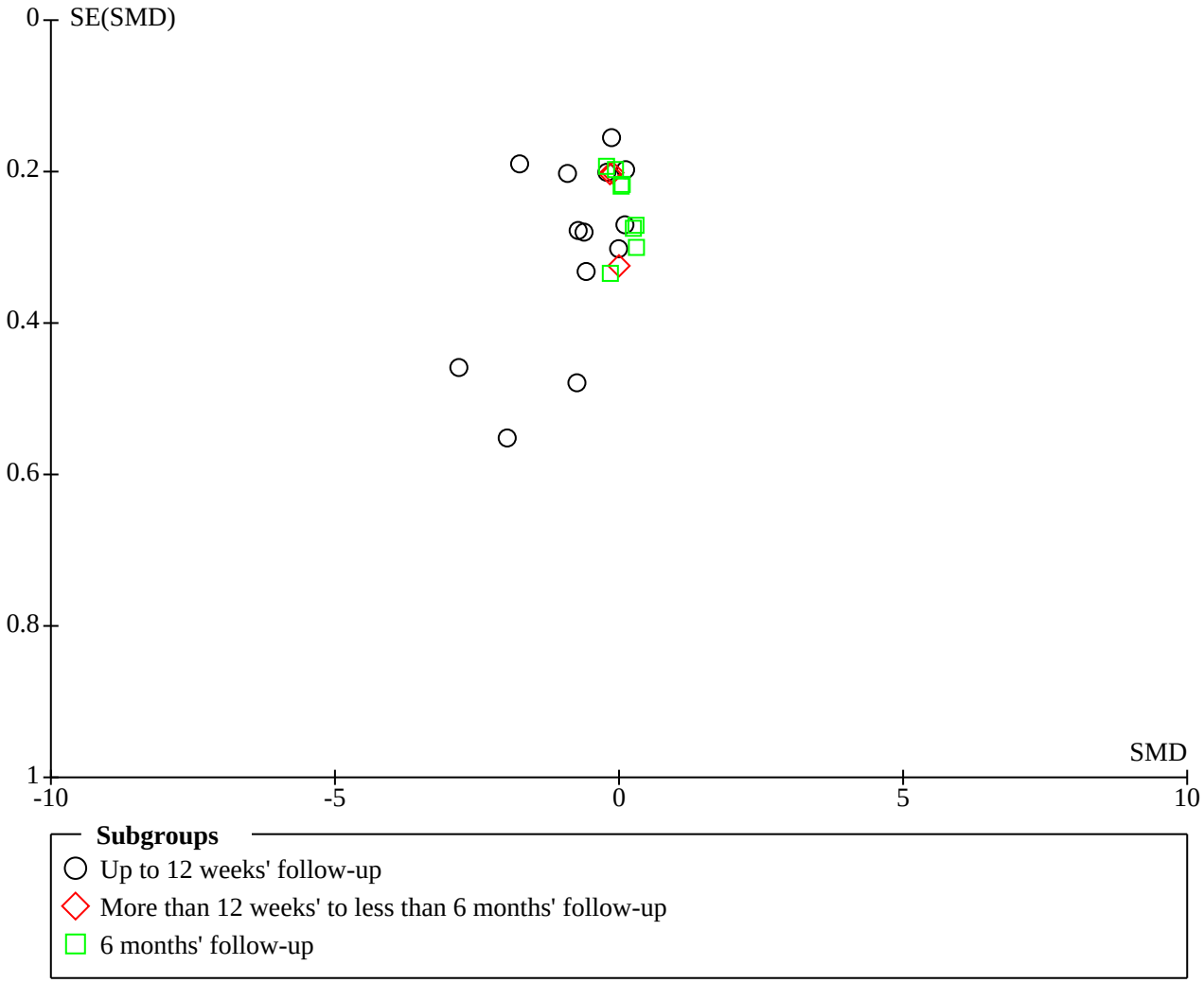


Figure 7. Funnel plot of comparison: 8 Fatigue, outcome: 8.2 Overall fatigue follow-up values.

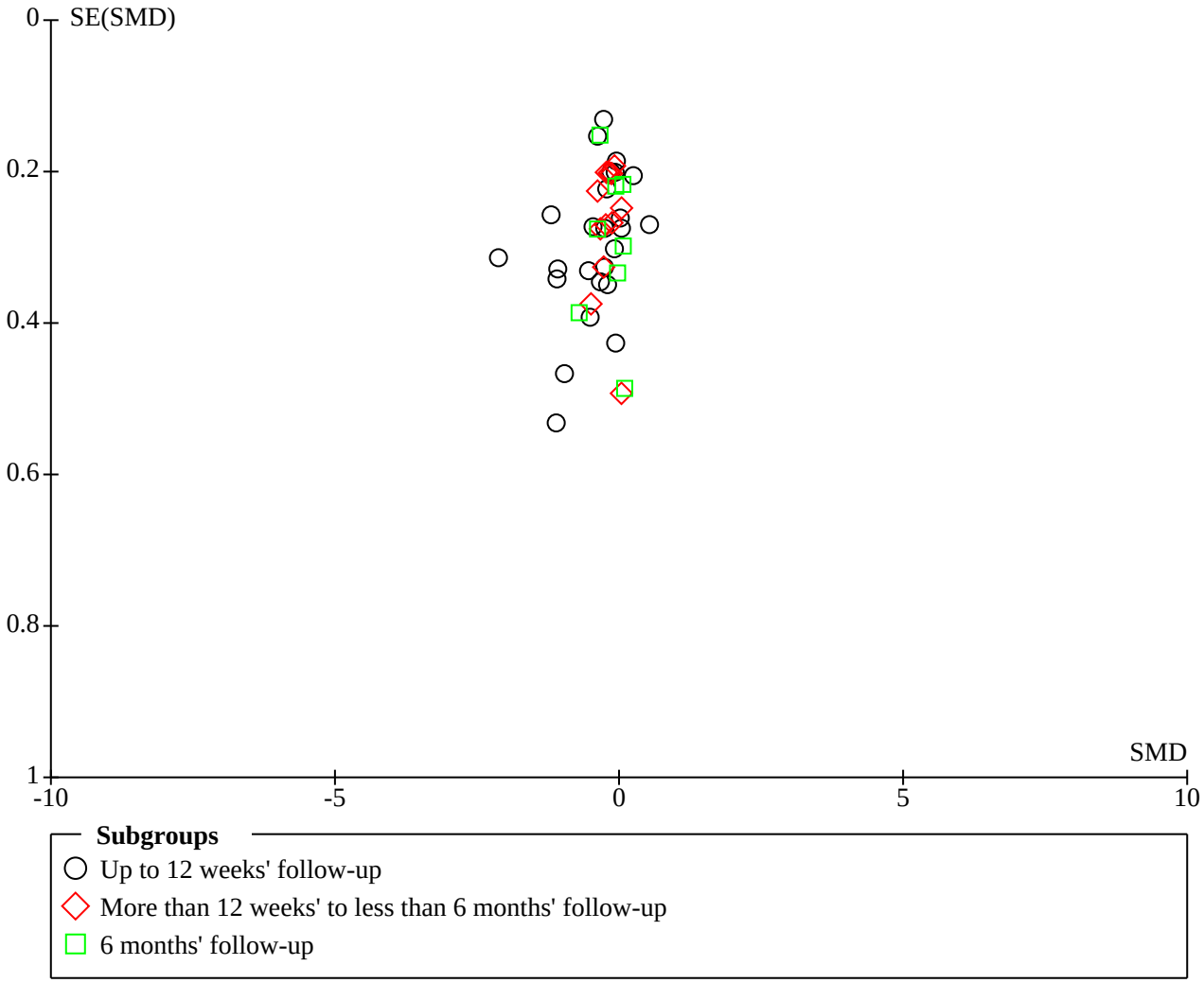


Figure 8. Funnel plot of comparison: 11 Physical functioning, outcome: 11.1 Overall physical function change.

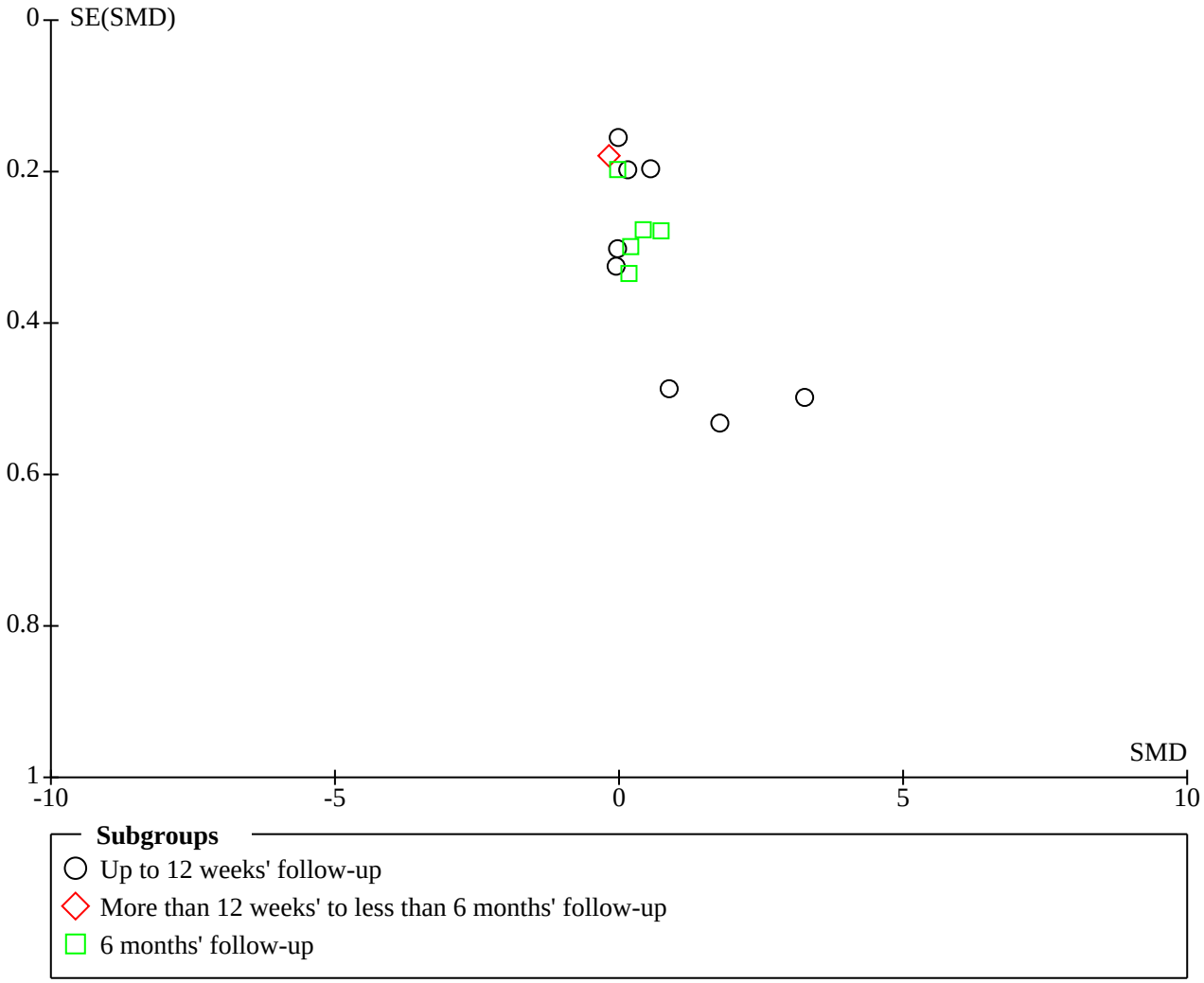
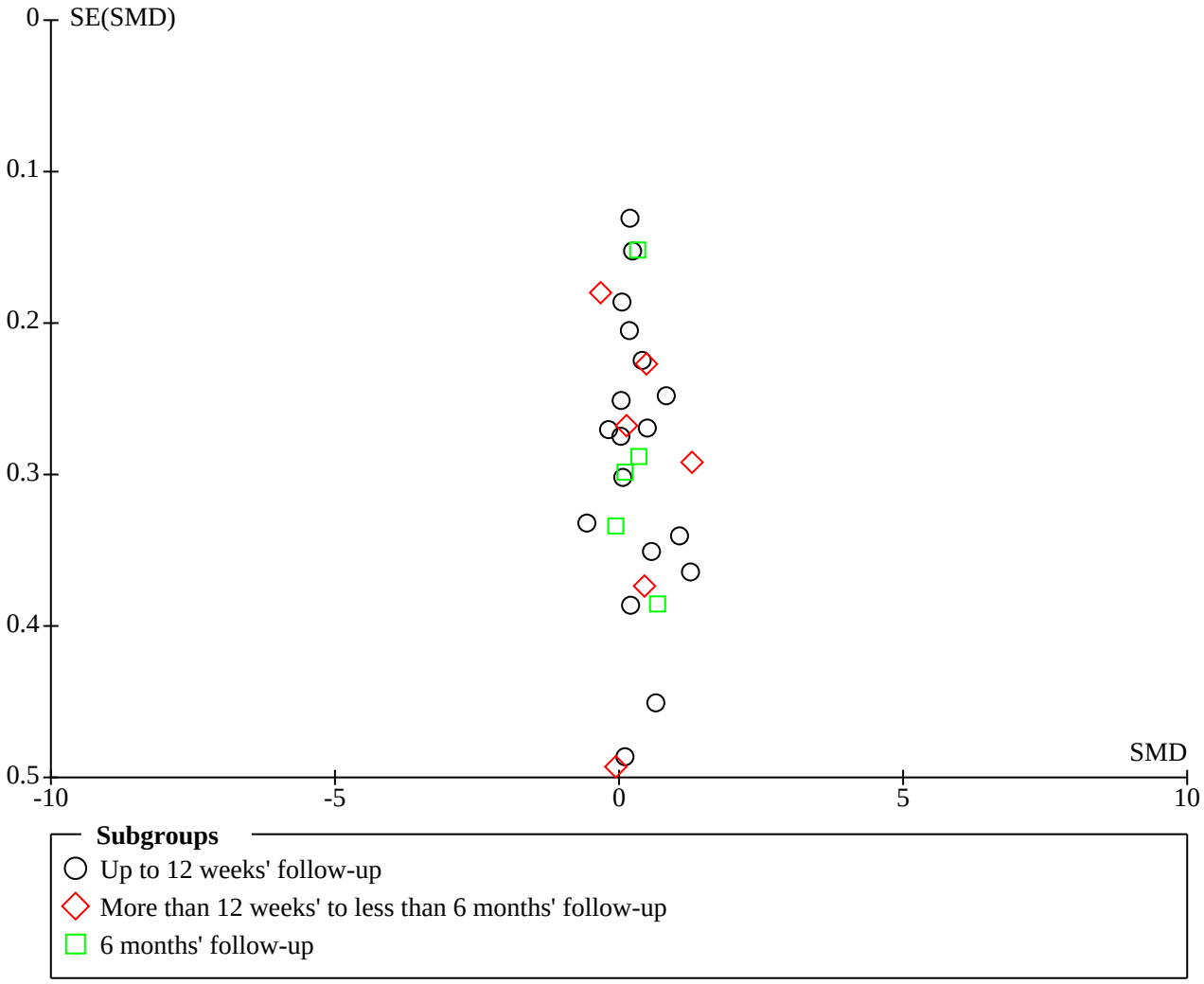


Figure 9. Funnel plot of comparison: 11 Physical functioning, outcome: 11.2 Overall physical function follow-up values.



We corresponded with and requested additional data from 22 trial authors (Arbane 2009; Battaglini 2008; Brown 2006; Campbell 2005; Cheville 2010; Crowley 2003; Culos-Reed 2010; DiSipio 2009; Gomes 2011; Griffith 2009; Haddad 2011; Headley 2004; Jarden 2009; Lanctot 2010; Mock 1994; Mock 1997; Mock 2001; Oh 2008; Raghavendra 2007; Segal 2001; Tang 2010; Yang 2011), and five of these trial authors (Arbane 2009; Griffith 2009; Lanctot 2010; Segal 2001; Yang 2011) contacted were able to provide additional data. Of the remaining 17 trials for which we requested additional data, we were unable to contact the primary author for seven trials, received no response from six trial authors, and four trial authors either did not have access to their database or were unable to provide additional information for some other reason. Obtaining additional data allowed inclusion of these trials in the quantitative meta-analyses, which made the analyses and findings more robust and complete.

Agreements and disagreements with other studies or reviews

Several systematic reviews (Craft 2011; Cramp 2008; Cramp 2010; Duijts 2011; Ferrer 2011; Speck 2010a) evaluated the effectiveness of exercise interventions on HRQoL or HRQoL domains. All of these reviews included people both during and after active cancer and only one review (Speck 2010a) presented findings by treatment status. Cramp 2008 examined the effect of exercise on cancer-related fatigue and reported that overall exercise was beneficial in the management of cancer-related fatigue and that exercise was beneficial in the management of cancer-related fatigue among breast cancer survivors during and after active cancer treatment, a finding that is similar to what we report here. In a more recent review, Cramp 2010, based on a review of the effect of resistance (strength) training on HRQoL, reported no significant benefit of resistance training on global HRQoL and on anxiety and depression. In contrast, we found an effect of exercise on global HRQoL, but not a consistent effect on depression. Two of the four trials reviewed by Cramp 2010 reported a significant improvement

in fatigue. Duijts 2011 evaluated the effects of exercise (and behavioral) interventions on fatigue, depression, body-image, stress, and HRQoL in breast cancer survivors both during and after cancer treatment. Physical exercise interventions had moderate statistically significant effects for fatigue, depression, body-image, and HRQoL but the effect on anxiety, although in the expected direction, was not statistically significant. Again, these findings are generally consistent with those presented here although we did not find a consistent effect on depression and anxiety, and no effect on body image. Ferrer 2011, based on a meta-analysis of the efficacy of exercise interventions in improving HRQoL in cancer survivors during and after cancer treatment, documented increased HRQoL scores but the effect was more pronounced for interventions that had intense aerobic exercises and which targeted women. Speck 2010a evaluated the effects of physical activity across the cancer control continuum (including during and after cancer treatment). Physical activity interventions among people who had completed active treatment for their cancer had moderate effects on fatigue and breast cancer-specific concerns and had small to moderate effects on overall HRQoL. Craft 2011 reviewed the effects of exercise on depression and documented that exercise had a modest positive effect on depressive symptoms. Our review did not find a consistent effect on depression in contrast to these reviews, but our findings are congruent with respect to global HRQoL and fatigue observed by other reviewers. These differences may be because of differences in the trial population in that our review only included individuals who were undergoing active cancer treatment, although some of the trials included in this review also included participants who had completed active cancer treatment.

AUTHORS' CONCLUSIONS

Implications for practice

This systematic review finds that exercise interventions may have beneficial effects at varying follow-up periods on overall HRQoL and certain HRQoL domains including physical functioning, role function, social functioning, and fatigue among cancer survivors undergoing active cancer treatment for their primary or recurrent cancer. Since there is consistency of findings on both types of measures (change scores and difference in follow-up scores) there is greater confidence in the robustness of these findings. Positive effects of exercise interventions are more pronounced with moderate or vigorous-intensity versus mild-intensity exercise programs. Exercise programs could be considered as an integral component for the management of HRQoL among cancer survivors undergoing active cancer treatment.

Exercise interventions also resulted in improvements at varying follow-up periods in prostate cancer concerns, breast cancer concerns, EWB, general health perspective, anxiety, depression, and sleep disturbances. These findings, however, need to be interpreted cautiously as their robustness is uncertain given the fact that the positive effects were observed not on the change scores but in the difference in follow-up scores. These findings could be because of the different number (or type) of trials reporting results in this manner or it could be that there really is not a difference because trial authors did not account for differences in baseline values.

There were positive trends and impact of exercise interventions for body image and self-esteem, cognitive functioning, depression based on exercise program intensity, fatigue based on exercise program intensity, general health perspective, pain, and spiritual well-being. No conclusions can be drawn based on these trends since few trials measured these outcomes or reported on the intensity of the exercise program.

The positive results must be interpreted cautiously owing to the heterogeneity of exercise programs tested and measures used to assess HRQoL and HRQoL domains, and the risk of bias in may trials. Further, a lack of understanding about important elements of exercise programs (mode, frequency, duration of sessions and programs, and intensity) for optimal effects on HRQoL and HRQoL domains would preclude informed decision-making in clinical settings and limit practical applicability of findings.

From a practice perspective, it would be important to understand whether certain exercise attributes have more or less optimal effects on HRQoL and HRQoL domains among survivors of certain types of cancers undergoing active treatment for their cancer. Further, it would be important to understand which mode of exercise program (e.g. strength, resistance, Tai Chi, yoga, aerobic, anaerobic) coupled with what levels of essential attributes (frequency of program, duration of program and each session) is optimal for which cancer type and cancer treatment.

Implications for research

This systematic review and meta-analysis of 56 trials on the effects of exercise on HRQoL and HRQoL domains for cancer survivors undergoing active treatment for their cancer provides evidence that exercise interventions may have beneficial effects at varying follow-up periods on overall HRQoL and certain HRQoL domains, including physical functioning, role function, social functioning, and fatigue, among cancer survivor undergoing active cancer treatment for their primary or recurrent cancer. Positive effects of exercise interventions are more pronounced with moderate- or vigorous-intensity versus mild-intensity exercise programs. Further, findings of this review suggests that exercise interventions may have minimal or no effects on HRQoL domains such as body image and self-esteem, cognitive functioning, depression based on exercise program intensity, fatigue based on exercise program intensity, general health perspective, pain, and spiritual well-being among cancer survivors undergoing active treatment for their cancer.

Further research is required to investigate whether the effect of an exercise intervention can be maintained beyond the active intervention period, and if so, how to sustain changes in exercise behaviors and positive effects of exercise on HRQoL and HRQoL domains. Empirical evidence is also needed to determine the optimal follow-up period from end of the intervention. To further this understanding, rigorous RCTs could include qualitative research components in trials to benefit from the contextually rich insights gained from engaging participants about their experiences in exercise interventions.

More research is needed to determine essential attributes of exercise (mode, intensity, frequency, duration, timing) by cancer type and cancer treatment for optimal effects on HRQoL and its domains.

HRQoL and HRQoL domains are important measures of cancer survivorship. However, the heterogeneous range of measures

used to assess HRQoL and HRQoL domains, make comparisons of findings between trials extremely difficult. Efforts such as the Patient-Reported Outcomes Measurement Information System (PROMIS) may help address these issues (Cella 2010; National Cancer Institute 2012).

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Adamsen 2009

Study characteristics	
Methods	Study design: RCT Number randomized: 269; 135 to the exercise group and 134 to the control group Study start and stop dates: participants recruited from March 2004 to March 2007 Length of intervention: 6 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: various Participants had 21 different cancer diagnoses, including 17 solid tumors (i.e. cancer of the breast, bowel, ovaries, testes, esophagus, brain, cervix, pharynx, pancreas, stomach, and other), and 4 hema-

Adamsen 2009 *(Continued)*

tologic malignancies (i.e. Hodgkin lymphoma, NHL(Non-Hodgkin's lymphoma), acute leukemia, and chronic leukemia)

Time since cancer diagnosis, median (range) days:

- exercise group: 83 (34 to 280) days
- control group: 89.5 (31 to 271) days

Time beyond active treatment: not reported

Inclusion criteria:

- had received at least 1 cycle of chemotherapy for advance disease or as adjuvant disease
- 18 to 65 years old

Eligibility criteria related to interest, ability to exercise, or both:

- had a WHO performance status of 0 or 1

Exclusion criteria:

- people with brain or bone metastases, thrombocytopenia (< 50 x 10^9/L), myocardial infraction within the past 3 months, or uncontrolled hypertension (diastolic pressure > 95 mm Hg)

Gender, n (%):

- exercise group: male, 34 (25.2%); female, 101 (74.8%)
- control group: male, 39 (29.1%); female, 95 (70.9%)

Current age, mean (SD) years

- exercise group: 47.2 (10.7) years
- control group: 47.2 (10.6) years

Age at cancer diagnosis: not reported

Ethnicity/race: not reported

Education level; completed secondary school or higher, n (%)

- exercise group: 104 (77.0)
- control group: 106 (79.7)

SES: not reported

Employment status: not reported

Comorbidities: not reported

Past exercise history; physical activity level pre-illness, n (%)

- exercise group: sedentary, 10 (7.5%); walking or cycling for pleasure, 40 (30.1%); regular physical exercise (at least 3 hours/week), 74 (55.6%); intense physical activity (> 4 hours/week), 9 (6.8%)
- control group: sedentary, 5 (4.0%); walking or cycling for pleasure, 34 (27.0%); regular physical exercise, 75 (59.5%); intense physical activity 12 (9.5%)

On hormone therapy: not reported

Interventions	135 participants assigned to the exercise intervention, including: • high- and low-intensity activities, including: * high intensity: Mondays, Wednesdays, and Fridays in high-intensity physical training for 90 minutes followed by 30 minutes relaxation training. The program included 90 minutes of body awareness

Adamsen 2009 *(Continued)*

followed by 30 minutes of relaxation training on Tuesdays. The participants received 30 minutes of massage on Mondays and Fridays

* low-intensity physical training comprised 3 psychosocial components: relaxation (30 minutes 4 times per week), body awareness and restorative training (90 minutes once per week), and massage (30 minutes twice per week).

Type exercise (aerobic/anaerobic): aerobic and anaerobic

Intensity of the exercise intervention: the intervention activities were equivalent to a total of 43 metabolic equivalent of task (MET) hours per week

Frequency: 9 hours per week

Duration of individual sessions: 90 minutes for high intensity, 30 minutes for low-intensity exercise

Duration of exercise program: 6 weeks

Total number of exercise sessions: 24 sessions (3 sessions per week for 6 weeks)

Format: group

Facility: facility based

Professionally led: professionally led by trained nurse specialists and physical therapists

Adherence: 70.8%

134 participants assigned to control group, including:

- usual care

Contamination of control group: not reported

Outcomes	Primary outcome included: • fatigue, assessed using the EORTC QLQ-C30 Other outcomes included subscales of the QLQ C-30, including: • global health status/QoL • physical functioning • role functioning • emotional functioning • cognitive functioning • social functioning • pain Additional HRQoL outcomes included subscales from the MOS SF-36, including: • physical functioning • role physical • bodily pain • vitality • social functioning • role emotional • mental health • physical component scale • mental component scale Outcomes were measured at baseline and at 6 weeks: • exercise group: n = 135 at baseline, n = 118 at 6 weeks

Adamsen 2009 *(Continued)*

	• control group: n = 134 at baseline, n = 117 at 6 weeks Subgroup analysis: none conducted or specified Adverse events: not reported
Notes	Country: Denmark Funding: The Lundbeck Foundation, The Novo Nordic Foundation, The Egmont Foundation, The Danish Cancer Society, The Svend Andersen Foundation, The Aase and Ejnar Danielsen Foundation, The Beckett Foundation, The Wedell-Wedellsborg Foundation, The Hede Nielsen Family Foundation, The Gangsted Foundation, Copenhagen University Hospital

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomization was done by computer (CITMAS)
Allocation concealment (selection bias)	Low risk	The allocation sequence was executed by the clinical research unit
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	Low risk	Missing outcome data were assumed to be missing at random
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	High risk	Since the control group was allowed to engage in or increase levels of physical activity, this could bias the effect of the overall intervention. Further, it is unclear whether there was a possibility of contamination of the control group

Arbane 2009

Study characteristics

Methods	Study design: RCT Number randomized: 51; 25 to the exercise group and 26 to the control group Study start and stop dates: not reported Length of intervention: 12 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: lung cancer

Arbane 2009 *(Continued)*

	Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • attending thoracotomy for lung cancer Eligibility criteria related to interest or ability, or both, to exercise: • none reported Exclusion criteria: • none reported Gender: male Current age, mean (range) years: 64 (32 to 82) years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported
Interventions	Number of participants assigned to the exercise intervention: not reported. The intervention included: • twice daily training plus usual care during hospital stay. After discharge monthly home visits and weekly telephone calls Type exercise (aerobic/anaerobic): unclear Intensity of the experimental exercise intervention: not reported Frequency: twice per day at the clinic and monthly home visits Duration of individual sessions: not reported Duration of exercise program: 12 weeks Total number of exercise sessions: not reported Format: unclear, appears to be individual Facility: unclear Professionally led: not reported Adherence: not reported Number of participants assigned to control group: not reported. The control included: • usual care Contamination of control group: not reported

Arbane 2009 *(Continued)*

Outcomes	No primary outcome was identified. QoL outcomes included: • global HRQoL, assessed using QLQ-C30 Other outcomes included: • quadriceps strength, assessed using magnetic stimulation • 6-minute walking distance Outcomes were measured at baseline 5 days and 12 weeks. The number of participants in groups at time points was not reported Subgroup analysis: none Adverse events: not reported
Notes	Country: UK Funding: none reported Published as abstract

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient details provided to determine whether there was any attrition
Selective reporting (reporting bias)	Unclear risk	Insufficient details provided to assess whether there was selective outcome reporting
Other bias	High risk	The small sample size, lack of description of the recruitment and selection of study participants, lack of identification of a primary outcome could give rise to additional biases

Banerjee 2007

Study characteristics

Banerjee 2007 *(Continued)*

Methods	Study design: RCT Number randomized: 68; 35 to the exercise group and 33 to the control group Study start and stop dates: not reported Length of intervention: 6 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer Stage, n (%) • exercise group: Stage II, 16 (46%); Stage III, 19 (54%) • control group: Stage II, 10 (43%); Stage III, 13 (57%) Time since cancer diagnosis: not reported Time in active treatment: all patients received 6 weeks of radiation therapy for a total dosage of 50.4 Gy. Some patients apparently received concurrent chemotherapy but how many is not stated since previous chemotherapy and current concomitant chemotherapy are not distinguished Inclusion criteria: • "recently operated breast cancer" (not further specified) • 30 to 70 years old • Zubrod performance status 0 to 2 (ambulatory > 50% of time) • 'high school' education • treatment plan of radiation therapy or both adjuvant radiation therapy and chemotherapy • consent to participate Eligibility criteria related to interest or ability, or both, to exercise: • none Exclusion criteria: • concurrent medical condition likely to interfere with the treatment • major psychiatric disorder, neurologic illness, or autoimmune disorder • cardiovascular illness • known metastases • exposure to other mutagens, smoking, or alcohol within 3 months of pre-radiation blood donation Gender: female Current age, mean (SD) years: • exercise group: 47 (1.1) years • control group: 43 (1.5) years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: all required to have completed 'high school' SES: not reported Employment status: not reported Comorbidities: not reported

Banerjee 2007 *(Continued)*

	Past exercise history: not reported On hormone therapy: not reported
Interventions	35 participants assigned to the exercise intervention, including: • integrated yoga program • special techniques for cancer patients, including guided imagery of cancer cells, positive thought provocations, and chanting of various sounds Type exercise (aerobic/anaerobic): aerobic and anaerobic Intensity of the experimental exercise intervention: not reported Frequency: not reported Duration of individual sessions: 90 minutes Duration of exercise program: 6 weeks Total number of exercise sessions: not reported Format: group Facility: facility and home practice Professionally led: professionally led by yoga instructors and trainers Adherence: not reported 33 participants assigned to control group, including: • supportive counseling and advised to "take light exercise" - described as going on for 6 weeks but no further information provided Contamination of control group: not reported
Outcomes	No primary outcome identified. Outcomes included: • anxiety, assessed using the HADS • depression, using the HADS • psychological stress, assessed using the Perceived Stress Scale • DNA damage assessed through blood alkaline single-cell gel electrophoresis Outcomes were measured at baseline and at 6 weeks: • exercise group: n = 35 at baseline, n = 35 at 6 weeks • control group: n = 23 at baseline, n = 23 at 6 weeks Subgroup analysis: none Adverse events: not reported
Notes	Country: India Funding: Atomic Energy Radiation Board of India; SVYASA University Bangalore, India; National Medical Research Council, Singapore

Risk of bias

Bias	Authors' judgement	Support for judgement

Banerjee 2007 *(Continued)*

Random sequence generation (selection bias)	Low risk	Computer-generated random number table
Allocation concealment (selection bias)	Low risk	Group assignments sent to clinics of the recruiting hospitals
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	High risk	All 10 attritions experienced in the study were from the control group. The attrition occurred either immediately after random assignment or during the course of the study
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Battaglini 2008

Study characteristics	
Methods	Study design: RCT Number randomized: 20, but the numbers assigned to the exercise and control groups not reported Study start and stop dates: not reported Length of intervention: 16 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • recently diagnosed women with breast cancer • designated to undergo any type of surgery and required to receive either chemotherapy or radiation • 35 to 70 years old during the course of the study Eligibility criteria related to interest or ability, or both, to exercise: • cardiovascular disease; acute or chronic respiratory disease; acute or chronic bone, joint, or muscular abnormalities that could prevent engagement in regular exercise was exclusionary Exclusion criteria:

Battaglini 2008 *(Continued)*

	• none Gender: female Current age, mean (SD) years: • exercise group: 57.5 (23) years • control group: 56.6 (16) years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported
Interventions	The number of participants assigned to the exercise intervention: not reported. The exercise intervention included: • an individualized exercise program included cardiovascular, resistance, and flexibility training Type exercise (aerobic/anaerobic): aerobic and anaerobic Intensity of the experimental exercise intervention: 40% to 60% of predicted maximum exercise capacity Frequency: twice per week Duration of individual sessions: 60 minutes Duration of exercise program: 16 weeks Total number of exercise sessions: 32 sessions Format: group Facility: facility based Professionally led by an undergraduate or graduate cancer exercise specialist Adherence: not reported The number of participants assigned to the control intervention was not reported and the control intervention was not described Contamination of control group: not reported
Outcomes	Primary outcome: • total caloric intake, assessed using 3-day food diary Other outcomes included: • fatigue, assessed using the Revised PFS • body composition analysis, assessed using skinfold measurement for the determination of percent body fat • fitness assessments included cardiovascular endurance and dynamic muscular endurance

Battaglini 2008 *(Continued)*

	Outcomes were measured at baseline; postsurgery; at treatments 1, 2, and 3; and at end of study, but the number of participants at each time point by treatment group was not reported Subgroup analysis: none reported Adverse events: none reported
Notes	Country: US Funding: none reported

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	There was no description of missing outcome data or attrition from the trial
Selective reporting (reporting bias)	Unclear risk	Owing to a lack of sufficient description of the outcomes, it is unclear whether there is selective reporting of the outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Bourke 2011

Study characteristics

Methods	Study design: RCT Number randomized: 50; 25 to the exercise group and 25 to the control group Study start and stop dates: not reported Length of intervention: 12 weeks Length of follow-up: 6 months
Participants	Type cancer: prostate cancer, nonlocalized, with metastatic disease • exercise group, n = 7 • control group, n = 7

Bourke 2011 *(Continued)*

Time since cancer diagnosis: not reported

Time in active treatment: not reported

Inclusion criteria:

- ≥ 6 months and currently on androgen suppression therapy
- Histologically confirmed, nonlocalized prostate cancer

Eligibility criteria related to interest or ability, or both, to exercise:

- sedentary
- not undertaking regular physical activity, defined as exercise or physical activity at moderate intensity for 30 minutes or more 3 times per week

Exclusion criteria:

- unstable angina
- uncontrolled hypertension
- recent myocardial infarction
- pacemakers
- painful or unstable bon metastasis

Gender: male

Current age, mean (SD) years:

- exercise group: 71.3 (6.4) years
- control group: 72.2 (7.7) years

Age at cancer diagnosis: not reported

Ethnicity/race: not reported

Education level: not reported

SES: not reported

Employment status: not reported

Comorbidities: not reported

Past exercise history, exercise behavior (Godin LSI), mean (SD):

- exercise group: 13 (9)
- control group: 15 (10)

On hormone therapy: all on androgen suppression therapy

Interventions	25 participants assigned to the exercise intervention, including: • anaerobic: supervised exercise sessions comprising 2 and 4 sets of resistance exercises (body weight resistance and free weights) targeting large skeletal muscle groups • aerobic: self-directed exercise (e.g. brisk walking, cycling, or gym exercise) using a log book (23) to record activity • small group healthy eating seminars lasting 15 to 20 minutes fortnightly for 12 weeks Type exercise (aerobic/anaerobic): aerobic and anaerobic Intensity of the experimental exercise intervention: • aerobic: 55% to 85% age predicted maximum HR, or ratings of perceived exertion 11 to 15/fairly light to hard on the Borg RPE scale, or both

Bourke 2011 *(Continued)*

	• anaerobic: not reported Frequency: • aerobic: once time per week during the initial 6 weeks and twice per week for the final 6 weeks • anaerobic: twice per week for the initial 6 weeks and once per week for the following 6 weeks Duration of individual sessions: 30 minutes each Duration of exercise program: 12 weeks Total number of exercise sessions: 278 sessions Format: individual; unclear if group "dedicated suite" Facility: facility and home based Professionally led by an exercise physiologist Adherence: • aerobic: 329/378 sessions completed (87%) • anaerobic: 360/378 sessions completed (95%) 25 participants assigned to control group, including: • usual care Contamination of control group: control group showed activity of 17.4 Godin LSI points at end of intervention (12 weeks)
Outcomes	No primary outcome was identified. Outcomes included: • total exercise behavior, assessed using the Godin LSI • dietary macronutrient intake, assessed with 3-day diet diaries • fatigue, assessed using the FACT-F • global HRQoL, assessed using the FACT-P and FACT-G • physiologic/functional fitness, assessed by a trained blinded technician • anthopometric variables, assessed by BMI and weight • aerobic exercise tolerance, assessed by treadmill and Borg RPE scale • muscle strength assessed by MVT by isometric dynamometry of the quadriceps • functional fitness, assessed by maximum number of repetitions in 30 seconds in a standardized chair sit-to-stand test • circulating biomarker Outcomes were measured at baseline, 12 weeks, and 6 months: • exercise group: n = 25 at baseline, n = 21 at 12 weeks, n = 15 at 6 months • control group: n = 25 at baseline, n = 22 at 12 weeks, n = 13 at 6 months Subgroup analysis: none reported Adverse events: drop-outs owing to health problems were noted in 4 men in the exercise group (2 because of cardiac issues) and 5 men in the control group
Notes	Country: US Funding: none reported
Risk of bias	

Bourke 2011 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Randomization was carried out remotely using nQuery statistical software"
Allocation concealment (selection bias)	Low risk	" … without disclosure of the sequence to the researcher responsible for the running of the trial until after completion of the baseline assessments"
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	"Physiologic and functional fitness outcomes were assessed by a trained technician blinded to group allocation but blinding was not possible for those completing the HRQoL questionnaires"
Incomplete outcome data (attrition bias) All outcomes	High risk	In the exercise group, 4 participants at 12 weeks and 6 at 6 months were lost to follow-up. In the control group, 3 at 12 weeks and 9 at 6 months were lost to follow-up. However, the investigators used the SPSS Expectation Maximization procedure to impute missing values so ITT analyses could be done
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Brown 2006

Study characteristics	
Methods	Study design: RCT Number randomized: 115; 57 to the exercise group and 58 to the control group Study start and stop dates: not reported Length of intervention: 4 weeks Length of follow-up: 4, 7, and 27 weeks after baseline
Participants	Type cancer, n (%): various • exercise group: brain, 6 (12.7%); head and neck, 7 (14.3%); lung, 9 (18.4%); ovarian, 1 (2.0%); gastrointestinal, 18 (36.7%); other, 8 (16.3%) • control group: brain, 6 (11.1%); head and neck, 11 (20.4%); lung, 6 (11.1%); ovarian, 0 (0.0%); gastrointestinal, 21 (38.9%); other, 10 (18.5%) Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • adults • scheduled to undergo radiation therapy for at least 2 weeks • cancer diagnosis within the past 12 months

Brown 2006 *(Continued)*

- expected survival of at least 6 months, but a 5-year survival probability of no more than 50%

Eligibility criteria related to interest or ability, or both, to exercise:

- none, but participants were screened preceding the exercise intervention to assure ability to participate

Exclusion criteria:

- MMSE score < 20
- ECOG performance score of ≥ 3
- active alcohol or substance dependence (except nicotine)
- active thought disorder
- suicidal plans
- participation in a psychosocial research trial

Gender, n (%):

- exercise group: male, 29 (59.2%); female, 20 (40.8%)
- control group: male, 37 (58.5%); female, 17 (31.5%)

Current age, n (%):

- exercise group: < 50 years, 7 (14.3%); ≥ 50 years, 42 (85.7%)
- control group: < 50 years, 12 (22.2%); ≥ 50 years, 42 (77.8%)

Age at cancer diagnosis: not reported

Ethnicity/race: all patients were white or of unknown ethnicity

Education level: not reported

SES: not reported

Employment status, currently employed, n (%):

- exercise group: 10 (35.7%)
- control group: 29 (53.7%)

Comorbidities: not reported

Past exercise history: not reported

On hormone therapy: not reported

Interventions	57 participants assigned to the exercise intervention, including:
	• a structured multidisciplinary intervention focused on specific strategies designed to improve participants' overall QoL. Sessions included 20 minutes of exercises, including:
	  * seated active ROM exercises of upper and lower extremities, progressing to resistive exercises with an elastic band
	  * stretching exercises
	  * functional lower extremity exercises (e.g. marching in place) stressing increasing endurance
	• Educational sessions coinciding with exercise sessions
	
	Type exercise (aerobic/anaerobic): aerobic and anaerobic
	
	Intensity of the experimental exercise intervention: not reported
	
	Frequency: twice per week
	
	Duration of individual sessions: 90 minutes

Brown 2006 *(Continued)*

	Duration of exercise program: 4 weeks Total number of exercise sessions: 8 sessions Format: group Facility: facility Professionally led by a physical therapist Adherence: 78% of participants attended all sessions, 92% attended all but 1 session. No subject missed more than 2 sessions 58 participants assigned to control group, including: • usual care Contamination of control group: not reported

Outcomes	Primary outcome:
	
	• global HRQoL, but how assessed was not reported
	
	Other outcomes included:
	
	• fatigue, assessed using:
	  • Linear Analogue Self Assessment fatigue
	  • Profile of Moods State fatigue-inertia and vigor-activity subscales
	  • Speilberger's STAI fatigue question
	  • Symptom Distress Scale fatigue question
	
	Outcomes were measured at baseline, 4 weeks, 7 weeks, and 27 weeks:
	
	• exercise group: n = 55 at baseline, n = 46 at 4 weeks, number of participants completing longer follow-up visits not reported
	• control group: n = 57 at baseline, n = 54 at 4 weeks, number of participants completing longer follow-up visits not reported
	
	Subgroup analysis: none reported
	
	Adverse events: not reported

Notes	Country: US Funding: Linse Bock Foundation, Saint Mary's Hospital Sponsorship Board

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants

Brown 2006 *(Continued)*

Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	High risk	The number of participants who withdrew from the study was not reported beyond the 4-week period. An ITT analysis was not completed
Selective reporting (reporting bias)	High risk	The authors describe some QoL measures in the methods for which no results are presented
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Cadmus 2009

Study characteristics	
Methods	Study design: RCT Number randomized: 75; 37 to the exercise group and 38 to the control group Study start and stop dates: March 2004 to July 2006 Length of intervention: 6 months Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer, Stage 0 to IIIA Time since cancer diagnosis, mean (SD) weeks: • exercise group: 11.1 (4.5) weeks • control group: 11.0 (5.2) weeks Time in active treatment: scheduled for chemotherapy or radiation therapy or within first 2 weeks of starting chemotherapy or radiation therapy Inclusion criteria: • pre- or postmenopausal • 35 to 75 years old Eligibility criteria related to interest or ability, or both, to exercise: • physically able to exercise • physician consent to begin an exercise program Exclusion criteria: • diagnosis of recurrent or other primary cancer event • current smoker Gender: female Current age, mean (SD) years: • exercise group: 54.5 (8.2) years • control group: 54.0 (10.9) years

Cadmus 2009 *(Continued)*

	Age at cancer diagnosis: not reported Ethnicity/race, %: • exercise group: non-Hispanic white, 96% • control group: non-Hispanic white, 92% Education level, %: • exercise group: college degree or higher, 68% • control group: college degree or higher, 72% SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy: • exercise group, 56% • control group, 68% BMI, mean (SD): • exercise group: 27.9 (5.3) • control group: 27.5 (5.4) Body fat, mean (SD): • exercise group: 36.7% (5.9%) • control group: 38.0% (6.1%)
Interventions	25 participants assigned to the exercise intervention, including: • home-based supervised exercise program with weekly telephone calls, information, heart monitor, activity logs Type exercise (aerobic/anaerobic): unclear, up to the women's choice Intensity of the experimental exercise intervention: 60% to 80% of predicted maximal HR Frequency: 5 days per week Duration of individual sessions: 30 minutes Duration of exercise program: 6 months Total number of exercise sessions: 120 sessions Format: individual Facility: home Professionally led by "staff" Adherence, mean (SD) minutes of activity per week: • 144 (75) minutes compared with target of 150 minutes with 64% meeting goal 25 participants assigned to control group, including: • usual exercise

Cadmus 2009 *(Continued)*

	Contamination of control group: not reported
Outcomes	No primary outcome was identified. QoL outcomes included: • happiness, assessed using the 2-item Fordyce Happiness Measure • self-esteem, assessed using the Rosenberg Self-Esteem Scale • depression, assessed using the CES-D scale • anxiety, assessed using the STAI • stress, assessed using the Cohen's 10-item Perceived Stress Scale • QoL, assessed using FACT-B • QoL, assessed using the MOS SF-36 Outcomes were measured at baseline and 6 months: • exercise group: n = 25 at baseline, n = 22 at 6 months • control group: n = 25 at baseline, n = 23 at 6 months Subgroups: HRQoL level at baseline, by weight loss, or body fat, or both Adverse events: none reported
Notes	Country: US Funding: Lance Armstrong Foundation, American Cancer Society, Susan G. Komen. National Institutes of Health

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated randomization code
Allocation concealment (selection bias)	Low risk	"The randomization code was obtained by the principal investigator (who was not involved in recruitment or data collection) only after baseline measures for that individual had been completed and staff conducting clinic visits did not have access to the randomization program"
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	Low risk	ITT analysis performed and baseline values were carried forward for the 5 women who had missing 6-month data
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Caldwell 2009

Study characteristics	
Methods	Study design: RCT Number randomized: 25; 13 to the exercise group and 12 to the control group Study start and stop dates: not reported Length of intervention: 12 weeks Length of follow-up: 6 months
Participants	Type cancer: breast cancer Stage, n (%): • exercise group: Stage I, 5 (38.5%); Stage II, 4 (30.8%); Stage III, 4 (30.8%) • control group: Stage I, 2 (16.7%); Stage II, 7 (58.3%); Stage III, 3 (25.0%) Time since cancer diagnosis: not reported Time in active treatment: completed surgery, and scheduled to receive chemotherapy Inclusion criteria: • had a clinical diagnosis of breast cancer (Stage I to III) • 21 to 60 years old • had undergone a definitive surgical procedure (lumpectomy or mastectomy) • scheduled to receive any chemotherapy regimen/hormone blocker deemed as an appropriate treatment for breast cancer administered prior to (neoadjuvant) and after (adjuvant) surgical intervention • approved to participate in the study by an oncologist who would oversee the participant's cancer treatment Eligibility criteria related to interest or ability, or both, to exercise: • presence of concomitant major health problems in which an exercise regimen is contraindicated • currently participating in a structured exercise program Exclusion criteria: • male Gender: female Current age, mean (SD) years: • exercise group: 47.15 (9.20) years • control group: 46.33 (10.8) years Age at cancer diagnosis: not reported Ethnicity/race, n (%): • exercise group: Asian, 1 (7.7%); African American, 2 (15.4%); Hispanic/Latino, 1 (7.7%); Caucasian, 9 (69.2%) • control group: Asian, 0 (0.0%); African American, 1 (8.3%); Hispanic/Latino, 5 (41.7%); Caucasian, 6 (50.0%) Education level, n (%): • exercise group: high school, 2 (15.4%); vocational, 1 (7.7%); some college, 2 (15.4%); college graduate, 8 (61.5%)

Caldwell 2009 *(Continued)*

	• control group: high school, 3 (25.0%); vocational, 1 (8.3%); some college, 2 (16.7%); college graduate, 6 (50.0%) SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported

Interventions	13 participants assigned to the exercise intervention, including:
	
	• home-based low-intensity level strength training/functional endurance regimen including:
	  * biceps curl
	  * arm raises
	  * chair stands
	  * 1 foot stands
	  * side leg raises
	  * walking
	
	Type exercise (aerobic/anaerobic): aerobic and anaerobic
	
	Intensity of the experimental exercise intervention: mild
	
	Frequency: 3 to 5 times per week
	
	Duration of individual sessions: as per participant ability and endurance
	
	Duration of exercise program: 12 weeks
	
	Total number of exercise sessions: 72 to 100 sessions
	
	Format: individual
	
	Facility: home
	
	Professionally led by a physical therapist
	
	Adherence: not reported
	
	12 participants assigned to control group, including:
	
	• usual care
	
	Contamination of control group: not reported

Outcomes	Primary outcome: • fatigue, assessed using the SCFS Other outcomes included: • Karnofsky's Performance Scale • International Physical Activity Questionnaire • timed Get Up and Go Test • 6-MWT Outcomes were measured at baseline and 6 months. 3 participants were not able to start the study owing to changes in treatment plan and were not included in any analysis: • exercise group: n = 13 at baseline, n = 8 at 6 months

Caldwell 2009 *(Continued)*

	• control group: n = 12 at baseline, n = 9 at 6 months Subgroup analysis: not reported Adverse events: not reported
Notes	Country: US Funding: none reported

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"...computerized randomization program..."
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	High risk	Analyses were not conducted on an ITT basis and the treatment of missing data was not described. There was substantial attrition from the trial, especially in the intervention arm The number of participants who withdrew from the study was not reported beyond the 4-week period
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Campbell 2005

Study characteristics

Methods	Study design: RCT Number randomized: 22; 12 to the exercise group and 10 to the control group Study start and stop dates: not reported Length of intervention: 12 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer Time since cancer diagnosis: not reported

Campbell 2005 *(Continued)*

	Time in active treatment: not reported Inclusion criteria: • had surgery • undergoing adjuvant therapy Eligibility criteria related to interest or ability, or both, to exercise: • already exercising vigorously 3 times per week for 20 minutes or more Exclusion criteria: • uncontrolled cardiac or hypertensive disease • respiratory disease • cognitive dysfunction Gender: female Current age, mean (SD) years: • exercise group: 48 (10) years • control group: 47 (5) years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES, Carstairs Deprivation Index: • exercise group: 3.0 • control group: 3.8 Employment status: not reported Comorbidities: not reported Past exercise history, mean minutes of physical activity per week (SD): • exercise group: 330 (71) minutes • control group: 421 (191) minutes On hormone therapy: not reported

Interventions	12 participants assigned to the exercise intervention, including:
	
	• supervised exercise program consisting of:
	  * warm-up
	  * 10 to 20 minutes' exercise including walking, cycling, low-level aerobics, muscle-strengthening exercises, circuits, etc.
	  * cool down
	  * relaxation period
	• discussion targeting different motivational factors, 6 different themes discussed twice during the 12-week intervention
	
	Type exercise (aerobic/anaerobic): aerobic
	
	Intensity of the experimental exercise intervention: moderate, 60% to 75% age-adjusted HR maximum
	
	Frequency: twice per week
	
	Duration of individual sessions: not reported

Campbell 2005 *(Continued)*

	Duration of exercise program: 12 weeks Total number of exercise sessions: 24 sessions Format: group Facility: facility Professionally led: unclear Adherence: 10 of 12 women completed that 12-week intervention. Participants completed an average of 70% of the total number of sessions 10 participants assigned to control group, including: • usual care Contamination of control group: not reported
Outcomes	Primary outcome: • change in HRQoL between baseline and 12 weeks, as assessed by FACT-G Other HRQoL outcomes included: • fatigue, assessed using the PFS • HRQoL, assessed using FACT-B • functional well-being, assessed using the FACT-B subscale • PWB, assessed using the FACT-B subscale • breast cancer concerns, assessed using the FACT-B subscale • satisfaction, assessed using the SWLS Other outcomes included: • 12-MWT • perceived expectation of treatment, assessed using the Perceived Expectations and Benefits of Total Care Outcomes were measured at baseline and 12 weeks: • exercise group: n = 12 at baseline, n = 10 at 12 weeks • control group: n = 10 at baseline, n = 9 at 12 weeks Subgroup analysis: none reported Adverse events: none reported
Notes	Country: UK/Scotland Funding: Greater Glasgow NHS Trust

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described

Campbell 2005 *(Continued)*

Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	High risk	Analyses were not conducted on an ITT basis and the treatment of missing data was not described
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Chandwani 2010

Study characteristics	
Methods	Study design: RCT Number randomized: 71, but 10 withdrew leaving 61; 30 to the exercise group and 31 to the control group Study start and stop dates: not reported Length of intervention: 6 weeks Length of follow-up: 3 months
Participants	Type cancer: breast cancer Stage, n (%): • exercise group: Stage 0, 2 (7%); Stage I, 6 (20%); Stage II, 12 (40%); Stage III, 10 (33%) • control group: Stage 0, 0 (0%); Stage I, 10 (32%); Stage II, 15 (48%); Stage III, 6 (19%) Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • ≥ 18 years old • able to read, write, and speak English • scheduled to undergo radiation therapy • written informed consent Eligibility criteria related to interest or ability, or both, to exercise: • physical limitations that would prohibit participation in the yoga program (e.g. lymphedema or unresolved surgical issues) Exclusion criteria:

Chandwani 2010 *(Continued)*

- major psychiatric diagnosis (e.g. a mood or thought disorder)

Gender: female

Current age, mean (SD, range):

- exercise group: 51.39 (7.97, 37.1 to 67.6) years
- control group: 4.02 [typographical error in table], (9.96, 31.8 to 67.9) years

Age at cancer diagnosis: not reported

Ethnicity/race, n (%):

- exercise group: black/African American, 1 (3%); white/Caucasian, 24 (80%); Latino/Hispanic, 3 (10%); Asian/Pacific Islander, 1 (3%); other, 1 (3%)
- control group: black/African American, 2 (7%); white/Caucasian, 23 (79%); Latino/Hispanic, 2 (7%); Asian/Pacific Islander, 0 (0%); other, 2 (7%)

Education level, n (%):

- exercise group: completed high school or technical school, 6 (20%); some college, 6 (20%); higher education, 18 (60%)
- control group: completed high school or technical school, 4 (13%); some college, 5 (17%); higher education, 21 (70%)

SES: not reported

Employment status, n (%):

- exercise group: employed full-time, 5 (17%); employed part-time, 4 (13%); not employed, 21 (70%)
- control group: employed full-time, 8 (27%); employed part-time, 2 (7%); not employed, 20 (67%)

Comorbidities: not reported

Past exercise history: 4 patients in the exercise and 2 in the control group reported practicing yoga "currently" and 7 in the exercise and 9 in the control group practiced in the past

On hormone therapy: not reported

Interventions

The number of participants assigned to the exercise intervention was unclear because 10 participants withdrew and their assignment was not reported. Of the remaining participants 30 were assigned to the exercise intervention, including:

- yoga, as defined by the VYASA yoga research foundation and university in Bengaluru, India. The multidimensional module of yoga included:
  - preparatory warm-up movements synchronized with breathing (10 minutes)
  - maintenance in selected postures (forward-, backward-, and side-bending *asanas* in sitting and standing positions, cobra posture, crocodile, and half-shoulder stand with support) (25 minutes)
  - deep relaxation technique (in corpse posture, 10 minutes)
  - alternate-nostril breathing (*pranayama*) (5 minutes)
  - meditation (10 minutes)

Type exercise (aerobic/anaerobic): aerobic and anaerobic

Intensity of the experimental exercise intervention: mild

Frequency: twice per week plus encouragement to practice daily at home

Duration of individual sessions: 60 minutes

Duration of exercise program: 6 weeks

Total number of exercise sessions: 12 sessions

Chandwani 2010 *(Continued)*

	Format: although designed to be group, the program ended up with most women having 1-on-1 sessions Facility: facility with encouragement to practice at home Professionally led by VYASA trained teachers Adherence: 15 participants (50%) attended all 12 classes; 8 (28%) attended 11 classes; and 1 (3%) attended 10 classes. 8 participants (28%) reported practicing yoga outside of class every day, 12 (40%) reported practicing more than twice per week, 8 (28%) reported practicing twice per week, and 1 (3%) reported not practicing outside the classes The number of participants assigned to the control intervention was unclear because 10 participants withdrew and their assignment was not reported. Of the remaining participants 31 were assigned to the control intervention, including: • waiting list Contamination of control group: not reported
Outcomes	Primary outcome included: • physical function, assessed using the Physical component scale of the MOS-SF-36 • emotional state, assessed using the Mental component scale of the MOS-SF-36 Other outcomes were other subscales of the MOS SF-36, including: • general health • physical function • body pain • role-physical • role emotional • mental health • social function • vitality • fatigue, measured using the BFI • sleep, measured using the PSQI • depression, measured using the CES-D • anxiety, measured using the STAI • intrusiveness, measured using a subscale of the Impact of Events Scale • avoidant, measured using a subscale of the Impact of events Scale • benefit finding, measured using the Benefit Finding Scale Outcomes were measured at baseline, 1 week, 1 month, and 3 months: • exercise group: n = 30 at baseline, n = 27 at 1 week, n = 26 at 1 month, n = 27 at 3 months • control group: n = 31 at baseline, n = 31 at 1 week, n = 27 at 1 month, n = 29 at 3 months Subgroup analysis: a number of subgroup analyses are reported for different times and different measures Adverse events: not reported
Notes	Country: US Funding: National Cancer Institute, Philanthropic support from the Integrative Medicine Program, The University of Texas M.D. Anderson Cancer Center

Risk of bias

Chandwani 2010 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Participants were then randomly assigned… by use of minimization, a form of adaptive randomization"
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	Low risk	"An intent-to-treat approach was used to analyze the data." The authors used 2 different methods to impute missing data: simple mean imputation and multiple imputation
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Chang 2008

Study characteristics	
Methods	Study design: RCT Number randomized: 24; 12 to the exercise group and 12 to the control group Study start and stop dates: not reported Length of intervention: 3 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: AML Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • Aware of diagnosis • Prescribed chemotherapy: specifically, induction therapy with cytarabine 100 mg/m^2/day by continuous intravenous infusion for 7 days and idarubicin 12 mg/m^2/day by intravenous push on days 1, 2, and 3 • Performance status 0 to 3 on ECOG Eligibility criteria related to interest or ability, or both, to exercise: • none

Chang 2008 *(Continued)*

	Exclusion criteria: • none Gender, n (%): • exercise group: male, 8 (72.7%); female, 3 (27.3%) • control group: male, 4 (36.4%); female, 7 (63.6%) Current age, mean (SD) years: • exercise group: 49.4 (15.3) years • control group: 53.3 (13.6) years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported
Interventions	12 participants assigned to the exercise intervention, including: • walking exercise program consisted of 12 minutes' supervised walking in the hospital hallway on 5 days per week Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: target HR = resting + 30 Frequency: 5 days per week Duration of individual sessions: 12 minutes Duration of exercise program: 3 weeks Total number of exercise sessions: 15 sessions Format: individual Facility: hospital Professionally led by an Masters-prepared nurse research assistant, who accompanied patient on walk Adherence: not reported 12 participants assigned to control group, including: • visit by trained research assistant to maintain same patient contact Contamination of control group: not reported

Outcomes	No primary outcome was identified. QoL outcomes included:
	• fatigue, measured using the BFI, and subscales:
	  * fatigue intensity
	  * fatigue interference

Chang 2008 *(Continued)*

	• 12-MWT • overall symptom distress, assessed using the Symptom Distress Scale Modified Form • mood disturbance, assessed using the Profile of Moods State short-form Outcomes were measured at baseline, 1 week, 2 weeks, and 3 weeks: • exercise group: n = 11 at baseline and all subsequent time points • control group: n = 11 at baseline and at all subsequent time points Subgroup analysis: none Adverse events: not reported
Notes	Country: Taiwan Funding: none reported

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	High risk	1 participant from the exercise group and 1 from the control group were not included in any analyses
Selective reporting (reporting bias)	Low risk	There is no evidence of selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Cheville 2010

Study characteristics

Methods	Study design: RCT Number randomized: 103; 49 to the exercise group and 54 to the control group Study start and stop dates: not reported Length of intervention: 3 weeks

Cheville 2010 *(Continued)*

	Length of follow-up: 6 months
Participants	Type cancer, n (%): various: • exercise group: gastrointestinal, 18 (36.7%); head and neck, 7 (14.3%); lung, 9 (18.4%); brain, 6 (12.2%); other, 9 (18.3%) • control group: gastrointestinal, 21(38.9%); head and neck, 11 (20.4%); lung, 6 (11.1%); brain, 6 (11.1%); other, 10 (18.5%) Time since cancer diagnosis: not reported Time in active treatment, mean (SD) days from surgery to enrolment: • exercise group: 49.1 (7.1) days • control group: 42.5 (6.9) days Time in active treatment, currently receiving chemotherapy, n (%): • exercise group: 29 (59.2%) • control group: 34 (63.0%) Inclusion criteria: • diagnosis of cancer within the last 12 months • expected survival time of at least 6 months • 5-year survival probability of no more than 50% (as routinely determined by the primary radiation oncologist) • treatment recommendation of radiation therapy of at least 2 weeks Eligibility criteria related to interest or ability, or both, to exercise: • evaluated by a physiatrist to ensure the capacity for safe participation Exclusion criteria: • previous radiation therapy • recurrent disease after a disease-free period > 6 months • previous cancer diagnosis within 5 years • MMSE score < 20 • ECOG performance score ≥ 3 • active alcohol or substance dependence (except nicotine) • active thought disorder, or suicidal plans • participating in another psychosocial research trial Gender, n (%): • exercise group: female, 20 (40.8%); male, 29 (59.2%) • control group: female, 17 (31.5%); male, 37 (68.5%) Current age, mean (SD, range) years: • exercise group: 59.7 (11.49, 31.0 to 85.0) years • control group: 59.4 (10.62, 36.0 to 82.0) years Age at cancer diagnosis: not reported Ethnicity/race: 100% white Education level: not reported SES: not reported

Cheville 2010 *(Continued)*

	Employment status, currently employed, n (%): • exercise group: 28 (57.1%) • control group: 29 (53.7%) Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported

Interventions	57 participants assigned to the exercise intervention, including:
	• structured, multidisciplinary intervention including
	  * physical therapy
	  * conditioning exercises (flexibility and strengthening activities)
	  * cognitive, emotional, social, and spiritual components centered around specific topics
	  * coping strategies
	Type exercise (aerobic/anaerobic): anaerobic
	Intensity of the experimental exercise intervention: not reported
	Frequency: 3 times per week
	Duration of individual sessions: 90 minutes, with 30 minutes devoted to physical therapy conditioning exercises
	Duration of exercise program: 3 weeks
	Total number of exercise sessions: 8 sessions
	Format: group
	Facility: facility and home
	Professionally supervised and led by a physical therapist
	Adherence: 6 participants (10.9%) missed ≥ 4 sessions. Attended session rate for the entire cohort was 89.3%
	58 participants assigned to control group, including:
	• usual care
	Contamination of control group: not reported

Outcomes	Primary outcome:
	• global HRQoL, measured using the Spitzer QOL Uniscale
	Other outcomes included:
	• HRQoL and HRQoL domains, assessed using the LASAs of QoL, including subscales for:
	  * cognitive
	  * physical functioning
	  * EWB
	  * social (overall SWB, social support, financial well-being, and legal concerns)
	  * spiritual well-being
	  * physical symptoms (fatigue, pain frequency, and pain severity)
	• distress, assessed using the Symptom Distress Scale
	• Vigor-Activity and Fatigue-Inertia, assessed using the POMS–Short Form

Cheville 2010 *(Continued)*

	• Spiritual well-being, assessed using the Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being Outcomes were measured at baseline and at 4 weeks, 8 weeks, and 27 weeks: • exercise group: n = 49 at baseline, n = 46 at 4 weeks, n = 47 at 8 weeks, n = 39 at 27 weeks • control group: n = 54 at baseline, n = 54 at 4 weeks, n = 49 at 8 weeks, n = 43 at 27 weeks Subgroup analysis: cancer type and age group Adverse events: not reported
Notes	Country: US Funding: Linse Bock Foundation and the Saint Marys Hospital Sponsorship Board

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"...randomly assigned...using a minimization procedure that balances the marginal distribution"
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Analyses were not conducted on an ITT basis and there was substantial attrition from the trial, especially in the intervention arm. However, "...Missing data were dealt with in a number of ways. Simple imputations of missing data for the primary QOL-related secondary endpoints was undertaken as a sensitivity analysis."
Selective reporting (reporting bias)	High risk	Data on several secondary outcomes were not reported. There were subgroup analyses which were not prespecified
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Cohen 2004

Study characteristics

Methods	Study design: RCT Number randomized: 39; 20 to the exercise group and 19 to the control group Study start and stop dates: not reported Length of intervention: 7 weeks

Cohen 2004 *(Continued)*

	Length of follow-up: 1 week, 1 month, and 3 months after the last session
Participants	Type cancer: lymphoma Stage, %: • exercise group: Stage I, 22%; Stage II, 39%; Stage III, 17%; Stage IV, 22% • control group: Stage I, 22%; Stage II, 33%; Stage III, 12%; Stage IV, 33% Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • lymphoma • receiving chemotherapy or had received it within the past 12 month • age ≥ 18 years • able to read and speak English Eligibility criterion related to interest or ability, or both, to exercise: • none reported Exclusion criteria: • major psychotic illnesses Gender, n: female, 12; male, 32 Current age, mean years: 51 years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history, n: • exercise group: 4 • control group: 8 On hormone therapy, n: • exercise group: 1 • control group: 2
Interventions	19 participants assigned to the Tibetan yoga exercise intervention, including: • controlled breathing and visualization • mindfulness • postures from the Tsa lung • preliminary set of postures from the Trul khor (sngon 'gro) The exercises are simple motions done with specific breathing patterns Type exercise (aerobic/anaerobic): aerobic

Cohen 2004 *(Continued)*

	Intensity of experimental exercise intervention: mild Frequency: once per week, with recommendation to practice techniques at home at least daily Duration of individual session: not reported Duration of exercise program: 7 weeks Total number of exercise sessions: 7 sessions Format: group and individual Facility: tertiary care hospital and home Professionally led: Tibetan yoga instructor Adherence: all participants attended at least 1 yoga session; 6 (32%) attended all 7 sessions; 5 (26%) attended 5 or 6 sessions; 6 (32%) attended 2 or 3 sessions; and 2 (10%) attended only 1 session Co-intervention: none Control group: 19 assigned to control group, consisting of • waiting list Contamination of control group: not reported
Outcomes	Outcomes: QoL outcomes, including: • psychological distress, assessed using the Impact of Events Scale • anxiety, assessed using the Spielberger State Anxiety Inventory • depression, assessed using the Center for Epidemiologic Studies - Depression scale • fatigue, assessed using the BFI • sleep, assessed using the PSQI Outcomes were measured at baseline and at 1 week, 1 month, and 3 months after the last yoga session: • exercise group: n = 20 at baseline, n = 19 at follow-up (time of measure not reported) • control group: n = 19 at baseline, n = 19 at follow-up (time of measure not reported) Adverse events: not reported
Notes	Country: US Funding: Bruce S. Gelb Foundation

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Group assignment was conducted sequentially using minimization"
Allocation concealment (selection bias)	Low risk	"The allocation process was concealed from all investigators because all the relevant information was entered into a computer program and group assignment was determined by the program"
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants

Cohen 2004 *(Continued)*

Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	Although it was stated that only 1 study participant dropped out before the end of the study, data were presented only for 30 study participants, not the 38 who completed the study
Selective reporting (reporting bias)	Low risk	There is no evidence of selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Courneya 2003a

Study characteristics	
Methods	Study design: Cluster randomized controlled trial, where clusters were psychotherapy classes Number randomized: 108; 60 (in 11 classes) to the exercise group and 48 (in 11 classes) to the control group Study start and stop dates: group psychotherapy classes were conducted between September 1998 and April 2001 Length of intervention: 10 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: various Breast cancer, 40.6%; colon cancer, 9.4%; ovarian cancer, 5.2%; stomach cancer, 4.2%, melanoma, 4.2%; HD, 3.1%; NHL, 3.1%; brain, 3.1%; lung cancer, 3.1%; other, 15.6%; missing, 8.3% Time since cancer diagnosis, mean (SD) months: • exercise group: 16.79 (18.45) months • control group: 15.71 (16.70) months Time in active treatment: not reported, although 43.5% of participants in exercise group and 45.2% of participants in control group were still receiving treatment Inclusion criteria: • diagnosis of cancer • voluntary participation in a group psychotherapy class offered at the cancer institute • ability to answer questions written in English Eligibility criterion related to interest or ability, or both, to exercise: • passing the rPAR-Q, a screening tool to determine the need to consult a physician before increasing exercise levels • no contraindications to moderate-intensity exercise based on a submaximal fitness assessment were inclusionary Exclusion criteria: • none

Courneya 2003a *(Continued)*

Gender, %:

- exercise group: female, 84.4%
- control group: female, 86.7%

Current age, mean (SD) years:

- exercise group: 52.51 (10.21) years
- control group: 50.53 (10.08) years

Age at cancer diagnosis: not reported

Ethnicity/race: not reported

Education level, % completing university:

- exercise group: 57.1%
- control group: 60.5%

SES, % with family income > USD40,000:

- exercise group: 63.0%
- control group: 71.1%

Employment status, % currently employed:

- exercise group: 64.61%
- control group: 47.7%

Comorbidities: not reported

Past exercise history, mean (SD) minutes participants engaged in mild, moderate, or strenuous exercise:

- exercise group: 192.53 (227.43) minutes
- control group: 137.68 (117.76) minutes

On hormone therapy: not reported

Interventions	60 participants assigned to the personalized exercise intervention, including: • prescription for walking although participants were allowed to choose alternate mode of exercise (e.g. swimming, cycling) • group psychotherapy Type exercise (aerobic/anaerobic): aerobic Intensity of experimental exercise intervention: goal was to achieve 65% to 75% of estimated HR maximum as soon as safely possible Frequency: 3 to 5 times per week Duration of individual sessions: 20 to 30 minutes Duration of exercise program: 10 weeks Total number of exercise sessions: variable, but maximum would be 50 sessions Format: individual Facility: home, with group psychotherapy classes offered in facility (Cross Cancer Institute) Not professionally led 48 participants assigned to the control group, including:

Courneya 2003a *(Continued)*

	• group psychotherapy Adherence: 51/60 participants completed the 10-week intervention; 43/51 (84.3%) achieved the minimum exercise prescription of 60 minutes of moderate to strenuous exercise per week and 16/51 (31.4%) achieved the optimum exercise prescription of 150 minutes of moderate to strenuous exercise per week. Total minutes of exercise, mean (SD) = 196.65 (149.56) minutes Contamination of control group: mean (SD) minutes when participants in the control group participated in exercise = 100.91 (104.24) minutes
Outcomes	No primary outcome was identified. QoL outcomes included: • QoL, assessed using FACT-G and subscales for physical, functional, emotional, social/family, and spiritual well-being • satisfaction with life, measured using the SWLS • depression, assessed by the CES-D scale • anxiety, assessed by the STAI • fatigue, assessed using the 13-item FS of the FACT measurement system Outcomes were measured at baseline and 10 weeks: • exercise group: n = 60 at baseline, n = 51 at 10 weeks • control group: n = 48 at baseline, n = 45 at 10 weeks Subgroup analysis: several subgroup analyses were prespecified and conducted Adverse events: none reported
Notes	Country: Canada Funding: National Institutes of Health, Canadian Institutes of Health Research, National Cancer Institute of Canada (NCIC), CCS, CCS/NCIC Sociobehavioral Cancer Research Network

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Allocation sequence was generated using a random numbers table
Allocation concealment (selection bias)	High risk	Allocation was not completely concealed. It was concealed from the fitness appraiser but not from other study personnel
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	Although stated that analyses were conducted on an ITT basis, the treatment of missing data was not described. There was substantial attrition from the study in both study groups
Selective reporting (reporting bias)	Low risk	There is no evidence of selective reporting of outcomes

Courneya 2003a *(Continued)*

Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Courneya 2007a

Study characteristics	
Methods	Study design: RCT Number randomized: 242; 78 to an aerobic exercise group, 82 to a resistance exercise group, and 82 to the control group Study start and stop dates: February 2003 to July 2005 Length of intervention: length of the chemotherapy session (median 17 weeks; 95% CI 9 to 24 weeks) Length of follow-up: 6 months
Participants	Type cancer: breast cancer Stage, n (%) • aerobic exercise group: Stage I, 18 (23.1%); Stage IIa, 33 (42.3%); Stage IIb, 17 (21.8%); Stage IIIa, 10 (12.8%) • resistance exercise group: Stage I, 22 (26.8%); Stage IIa, 36 (43.9%); Stage IIb, 9 (11.0%); Stage IIIa, 15 (18.3%) • control group: Stage I, 20 (24.4%); Stage IIa, 30 (36.6%); Stage IIb, 22 (26.8%); Stage IIIa, 10 (12.2%) Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • English- or French-speaking • ≥ 18 years old • Stage I to IIIA breast cancer • beginning first-line adjuvant chemotherapy • approval by treating oncologist Eligibility criteria related to interest or ability, or both, to exercise: • none Exclusion criteria: • pregnancy • incomplete axillary surgery • transabdominal rectus abdominus muscle reconstructive surgery • uncontrolled hypertension • cardiac illness • psychiatric illness Gender: female Current age, mean (range) years: • aerobic exercise group: 49.0 (30 to 75) years • resistance exercise group: 49.5 (25 to 76) years

Courneya 2007a *(Continued)*

- control group: 49.0 (26 to 78) years

Age at cancer diagnosis: not reported

Ethnicity/race: not reported

Education level, completed university, n (%):

- aerobic exercise group: 51 (65.4%)
- resistance exercise group: 51 (62.2%)
- control group: 53 (64.6%)

SES, income > USD60,000 per year, n (%):

- aerobic exercise group: 28 (38.4%)
- resistance exercise group: 41 (53.9%)
- control group: 34 (42.5%)

Employment status, full time employed, n (%):

- aerobic exercise group: 20 (25.6%)
- resistance exercise group: 29 (35.4%)
- control group: 23 (28.0%)

Comorbidities, hypertension, n (%):

- aerobic exercise group: 5 (6.4%)
- resistance exercise group: 8 (9.8%)
- control group: 4 (4.9%)

Past exercise history, n (%)

- aerobic exercise group: current exerciser, 15 (19.2%); current weight trainer, 4 (5.1%)
- resistance exercise group: current exerciser, 22 (26.8%); current weight trainer, 6 (7.3%)
- control group: current exerciser, 27 (32.9%); current weight trainer, 9 (11.3%)

On hormone therapy: not reported

Obese, n (%):

- aerobic exercise group, 17 (21.8%)
- resistance exercise group, 14 (17.1%)
- control group, 19 (23.2%)

BMI, n (%):

- aerobic exercise group, 26.7 (5.6%)
- resistance exercise group, 26.1 (5.5%)
- control group, 27.1 (5.4%)

Current smoker, n (%):

- aerobic exercise group, 6 (7.7%)
- resistance exercise group, 9 (11.0%)
- control group, 5 (6.1%)

Interventions	78 participants assigned to the aerobic exercise intervention, including: • cycle ergometer, treadmill, or elliptical 82 participants assigned to the resistance exercise intervention, including:

Courneya 2007a *(Continued)*

- performing 2 sets of 8 to 12 repetitions of 9 different exercises: leg extension, leg curl, leg press, calf raises, chest press, seated row, triceps extension, biceps curls, and modified curl-ups

Type exercise (aerobic/anaerobic): aerobic or anaerobic

Intensity of the experimental exercise intervention:

- aerobic: beginning at 60% of their maximal oxygen consumption, or VO_2max, for weeks 1 to 6 and progressing to 70% during weeks 7 to 12 and 80% beyond week 12
- resistance: 60% to 70% of their estimated 1 repetition maximum, resistance was increased by 10% when participants completed > 12 repetitions

Frequency: 3 times per week

Duration of individual sessions:

- aerobic: 15 minutes for weeks 1 to 3 and increased by 5 minutes every 3 weeks until the duration reached 45 minutes at week 18
- resistance: not reported

Duration of exercise program: length of chemotherapy (~ 17 weeks)

Total number of exercise sessions: ~ 51 sessions

Format: individual

Facility: facility

Professionally led by exercise trainers

Adherence:

- aerobic: 72.0% adherence rate
- resistance: 68.2% adherence rate

82 participants assigned to control group, including:

- request not to initiate an exercise program
- offer of a 1-month exercise program after postintervention assessments

Contamination of control group: not reported

Outcomes	No primary outcome was identified. QoL outcomes included: • global HRQoL, assessed using the FACT-An Other outcomes included: • psychosocial functioning, assessed by the Rosenberg Self-Esteem Scale • depression, assessed using the Center for Epidemiological Studies Depression Scale • anxiety, assessed using the Spielberger State Anxiety Inventory Outcomes were measured at baseline, at mid-point, at end of the intervention, and at 6-month follow-up: • aerobic exercise group: n = 78 at baseline, n = 73 at mid-point, n = 74 at the end of intervention, n = 68 at the 6-month follow-up • resistance exercise group: n = 82 at baseline, n = 75 at mid-point, n = 76 at the end of intervention, n = 73 at the 6-month follow-up • control group: n = 82 at baseline, n = 75 at mid-point, n = 73 at the end of intervention, n = 60 at the 6-month follow-up Subgroup analysis: subgroups included patient preference, marital status, age, disease stage, chemotherapy protocol

Courneya 2007a *(Continued)*

	Adverse events: 2 participants experienced an adverse event related to exercise after baseline maximal treadmill testing: 1 became lightheaded, hypotensive, and moderately nauseous and 1 experienced dizziness, weakness, and mild diarrhea
Notes	Country: Canada Funding: Canadian Breast Cancer Research Alliance, Canada Research Chairs Program, NCIC with funds from the CCS and the NCIC/CCS Sociobehavioral Cancer Research Network, Heart and Stroke Foundation of Canada, Canadian Institutes of Health Research, Alberta Heritage Foundation for Medical Research

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer generated
Allocation concealment (selection bias)	Low risk	The allocation sequence was generated in Edmonton and concealed from the project directors at each site who assigned participants to groups
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	Low risk	Used all available data in ITT analyses, using the missing at random assumption for mixed models
Selective reporting (reporting bias)	Low risk	There is no evidence of selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Courneya 2008

Study characteristics

Methods	Study design: RCT Number randomized: 55; 26 to the exercise group and 29 to the control group Study start and stop dates: July 2003 to September 2006 Length of intervention: 12 weeks Length of follow-up: 1 to 2 weeks after intervention
Participants	Type cancer, n (%): breast cancer (primary) or metastatic disease • exercise group: primary breast cancer, 15 (57.7%); metastatic disease, 15 (57.7%) • control group: primary breast cancer, 18 (62.1%); metastatic disease, 11 (37.9%)

Courneya 2008 *(Continued)*

Time since cancer diagnosis: not reported

Time in active treatment: not reported

Inclusion criteria:

- ≥ 18 years of age
- histologically confirmed nonmyeloid cancer diagnosis
- hemoglobin level 80 to 110 g/L
- ECOG performance status score of 0 to 2
- completed definitive surgery
- expected survival duration of ≥ 3 months
- English speaking

Eligibility criteria related to interest or ability, or both, to exercise:

- contraindications to maximal exercise testing

Exclusion criteria:

- iron deficiency (ferritin, 12 µg/L)
- received an erythropoiesis-stimulating agent within 4 weeks of randomization
- uncontrolled hypertension
- cardiac abnormalities
- psychiatric illness
- known hematologic disorder causing anemia
- substantial lung, pleural, or pericardial disease
- preexisting bone metastases at high risk for fractures

Gender, female, n (%):

- exercise group: 20 (76.9%)
- control group: 25 (86.2%)

Current age, mean (range) years:

- exercise group: 58 (40 to 77) years
- control group: 54 (25 to 77) years

Age at cancer diagnosis: not reported

Ethnicity/race: not reported

Education level, completed university, n (%):

- exercise group: 16 (61.5%)
- control group: 13 (44.8%)

SES, income > USD60,000 per year, n (%)

- exercise group: 10 (38.5%)
- control group: 14 (48.3%)

Employment status, employed full or part-time, n (%):

- exercise group: 8 (30.8%)
- control group: 6 (20.7%)

Comorbidities, n (%):

- exercise group: lung disease, 6 (23.1%); current heart disease, 4 (15.3%)
- control group: lung disease, 5 (17.2%); current heart disease, 5 (17.2%)

Courneya 2008 *(Continued)*

	Past exercise history, current exerciser, n (%): • exercise group: 3 (11.5%) • control group: 3 (10.3%) On hormone therapy: not reported
Interventions	26 participants assigned to the exercise intervention, including: • individually tailored exercise program consisting of 3 cycle ergometry per week, aimed at improving cardiorespiratory fitness • darbepoetin alfa treatment at a dose of 4.5 µg/kg on weeks 1, 2, 3, 4, 5, 8, and 11 Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: 60% to 100% of baseline peak power output Frequency: 3 times per week Duration of individual sessions: not reported Duration of exercise program: 12 weeks Total number of exercise sessions: 36 sessions Format: individual Facility: facility Professionally led by an exercise physiologist Adherence: participants attended 84.2% (30.3/36) of scheduled exercise sessions and achieved the prescribed exercise duration and intensity in 94.7% (28.7/30.3) and 94.1% (28.5/30.3) of the sessions 29 participants assigned to control group, including: • darbepoetin alfa treatment at a dose of 4.5 µg/kg on weeks 1, 2, 3, 4, 5, 8, and 11 Contamination of control group: mean (SD) 32 (80) minutes of nonprotocol-related moderate to strenuous exercise per week

Outcomes	Primary outcome:
	• global HRQoL, assessed using the FACT-An
	Other outcomes included:
	• fatigue, assessed using the FACT-An
	• physiologic outcomes, including:
	  * cardiorespiratory fitness, assessed by peak VO_2
	  * hemoglobin
	Outcomes were measured at baseline, 12 weeks, and 13 to 14 weeks:
	• exercise group: n = 29 at baseline, n = 29 at 12 weeks, n = 29 at 13 to 14 weeks
	• control group: n = 26 at baseline, n = 25 at 12 weeks, n = 26 at 13 to 14 weeks
	Subgroup analysis: none reported
	Adverse events: not reported

Notes	Country: Canada

Courneya 2008 *(Continued)*

	Funding: Canada Research Chairs Program, Research Team Grant from the National Cancer Institute of Canada, CCS, NCIC/CCS Sociobehavioral Cancer Research Network, Health Research Studentships from the Alberta Heritage Foundation for Medical Research

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"computer-generated program"
Allocation concealment (selection bias)	Low risk	"The allocation sequence was concealed from the project director who assigned participants to groups"
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	Low risk	"...according to intention-to-treat principles using the last observation carried-forward method"
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Courneya 2009

Study characteristics

Methods	Study design: RCT Number randomized: 122; 60 to an exercise group and 62 to the control group Study start and stop dates: 2005 to 2008 Length of intervention: 12 weeks Length of follow-up: 6 months
Participants	Type cancer, n (%): lymphoma • exercise group: NHL indolent, 25 (41.7%); NHL aggressive, 24 (40.0%); HL, 11 (18.3%) • control group: NHL indolent, 27 (43.5%); NHL aggressive, 24 (38.7%); HL, 11 (17.7%) Stage, n (%): • exercise group: Stage I, 11 (18.3%); Stage II, 8 (13.3%); Stage III, 9 (15.0%); Stage IV, 15 (25.0%) • control group: Stage I, 7 (11.3%); Stage II, 15 (24.2%); Stage III, 8 (12.9%); Stage IV, 13 (21.0%) Time since cancer diagnosis, mean (SD) months since diagnosis:

Courneya 2009 *(Continued)*

- exercise group: 25.3 (31.5) months
- control group: 33.0 (39.0) months

Time in active treatment: not reported, but some participants still being actively treated.

Inclusion criteria:

- English speaking
- ≥ 18 years old
- histologically confirmed HL or NHL
- receiving chemotherapy or no treatment. Patients receiving chemotherapy may have started treatment before enrolment but needed to have at least 8 weeks of planned treatment remaining

Eligibility criterion related to interest or ability, or both, to exercise:

- none

Exclusion criteria:

- uncontrolled hypertension
- cardiac illness
- residence > 80 km from facility
- not approved by their oncologist

Gender, n (%):

- exercise group: male, 37 (61.7%)
- control group: male, 35 (56.5%)

Current age, mean (range) years:

- exercise group: 52.8 (18 to 77) years
- control group: 53.5 (18 to 80) years

Age at cancer diagnosis: not reported

Ethnicity/race: not reported

Education level, completed university, n (%):

- exercise group: 31 (51.7%)
- control group: 32 (51.6%)

SES, income > USD60,000 per year, n (%):

- exercise group: 34 (63.0%)
- control group: 39 (62.9%)

Employment status, employed, n (%):

- exercise group: 22 (36.7%)
- control group: 32 (51.6%)

Comorbidities, n (%):

- exercise group: arthritis, 24 (40.0%); hypercholesteremia, 18 (30.0%); hypertension, 14 (23.3%)
- control group: arthritis, 14 (22.6%); hypercholesteremia, 18 (29.0%); hypertension, 21 (33.9%)

Past exercise history, baseline exerciser, n (%):

- exercise group: 12 (20.0%)
- control group: 23 (37.1%)

Courneya 2009 *(Continued)*

	On hormone therapy: not reported Current chemotherapy, n (%): • exercise group: 28 (46.7%) • control group: 26 (41.9%) Other characteristics, n (%): • exercise group: overweight, 27 (45.0%); obese, 16 (26.7%); current smoker, 4 (6.7%) • control group: overweight, 20 (32.3%); obese, 17 (27.4%); current smoker, 9 (14.5%) Other characteristics, mean (SD): • exercise group: BMI, 27.4 (4.5) kg/m^2; weight (SD), 81.8 (14.8) kg • control group: BMI, 26.7 (5.4) kg/m^2; weight (SD), 78.5 (17.1) kg
Interventions	60 participants assigned to the exercise group, including: • exercise on an upright or recumbent cycle ergometer (Life Fitness, Schiller Park, IL) for 12 weeks • 1 session per week of interval training above the ventilatory threshold in week 7 • 1 session of $VO_{2\ peak}$ interval training in week 9 Type exercise (aerobic/anaerobic): aerobic Intensity of experimental exercise intervention: started at 60% of peak power output ($VO_{2\ peak}$) and increased by 5% each week to 75% by the fourth week Frequency: 3 times per week Duration of individual sessions: 15 to 20 minutes for first 4 weeks, increased by 5 minutes per week to 40 to 45 minutes in the ninth week Duration of exercise program: 12 weeks Total number of exercise sessions: 36 sessions Format: group Facility: facility Professionally led by an exercise physiologist 62 participants assigned to the control group, including: • request not to increase exercise above baseline levels • offer of 4 weeks supervised exercise at end of the study Adherence: attended a mean of 28/36 (77.8%) and a median of 33/36 (91.7%) supervised sessions. Duration and intensity were met during 27.8/28 (99.0%) and 25.4/28 (90.7%) supervised sessions, respectively. • 45/60 (75%) participants attended ≥ 66% of sessions • 3/60 (65%) participants attended ≥ 80% of sessions • 21/60 (35%) participants attended 100% of sessions Contamination of control group: the mean change in vigorous exercise from baseline: -4 minutes • 49/62 (79%) participants reported no regular vigorous exercise during intervention • 13/62 (21%) participants reported regular vigorous exercise during intervention
Outcomes	Primary outcome: patient-rated physical functioning, assessed using the TOI-An from the FACT-An scale

Courneya 2009 *(Continued)*

	Secondary QoL outcomes included: • total FACT-An • FACT-Fatigue subscale • happiness, assessed by the Happiness scale • depression, assessed by the CES-D • anxiety, assessed by the SF STAI • lymphoma symptoms, assessed by the lymphoma scale of the FACT • general health by the single item on the MOS SF-12 Outcomes were measured at baseline, 12 weeks, and 6 months: • exercise group: n = 60 at baseline, n = 57 at 12 weeks, n = 55 at 6 months • control group: n = 62 at baseline, n = 60 at 12 weeks, n = 55 at 6 months Subgroup analyses: major disease type, current treatment status (on chemotherapy versus not), patient preference, age, sex, marital status, disease stage at entry, general health, BMI Adverse events: 3 adverse events related to exercise (back, hip, knee)
Notes	Country: Canada Funding: Lance Armstrong Foundation; Canada Research Chairs Program; Alberta Heritage Foundation for Medical Research; NCIC; and by the CCS and the NCIC/CCS Sociobehavioral Cancer Research Network

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"computer-generated sequence"
Allocation concealment (selection bias)	Low risk	"The allocation sequence was generated independently and concealed in opaque envelopes from the study coordinator who assigned participants to groups."
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	"Outcomes assessors were not always blinded to group assignment but were trained in standardizing testing procedures."
Incomplete outcome data (attrition bias) All outcomes	High risk	Although stated ITT analyses, missing data were not accounted for. In exercise group, 3 participants did not complete QoL measures postintervention and 3 at 6 months In control group, 2 participants did not complete QoL measures postintervention, and 5 at 6 months
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Crowley 2003

Study characteristics	
Methods	Study design: RCT Number randomized: 22; 13 to the exercise group and 9 to the control group Study start and stop dates: not reported Length of intervention: 13 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer Cancer stage, n (%): Stage I, 13 (59.1%); Stage II, 9 (40.9%) Time since cancer diagnosis: not reported Time in active treatment: completed surgery, initiating adjuvant chemotherapy of four 3-week cycles of adriamycin and cytoxan Inclusion criteria: • ages 35 to 60 years • complete primary surgery • receiving adjuvant chemotherapy, specifically adriamycin and cytotoxan Eligibility criteria related to interest or ability, or both, to exercise: • medical condition that did not allow participation in a structured exercise program • commitment to not initiating participation in a formal exercise program during the study period • continuation of an ongoing exercise regimen was acceptable Exclusion criteria: • previous history of cancer treated with cytotoxic drugs or radiation therapy • breast reconstruction at the time of primary surgery • treatment regimen that required radiation therapy either before or concurrent with chemotherapy • pre-existing cardiac or pulmonary disease • current pregnancy or active lactation • inability to give informed consent Gender: female Current age, range: 36 to 58 years Age at cancer diagnosis: not reported Ethnicity/race, n (%): Caucasian, 21 (95.5%); African American, 1 (4.5%) Education level, n (%): high school, 1 (4.5%); vocational school, 1 (4.5%); some years of college, 6 (27.3%); college graduate, 14 (63.6%) SES: not reported Employment status, n (%): unemployed, 3 (13.6%); full-time, 14 (63.6%); part-time, 5 (22.7%) Comorbidities: not reported Past exercise history: not reported

Crowley 2003 *(Continued)*

	On hormone therapy: not reported Menopausal status, n (%): premenopausal, 12 (54.5%); postmenopausal, 10 (45.5%)

Interventions	13 participants assigned to the exercise intervention, including:
	
	• 13-week home-based structured endurance and strength training exercise program
	  * endurance component consisted of a home-based walking program
	  * strength training component consisted of the performance of progressive resistance training using exercise tubing
	
	Type exercise (aerobic/anaerobic): aerobic and anaerobic
	
	Intensity of the experimental exercise intervention:
	
	• endurance component: 60% of the target HR
	• strength training: not reported
	
	Frequency: 3 to 5 times per week
	
	Duration of individual sessions: not reported
	
	Duration of exercise program: 13 weeks
	
	Total number of exercise sessions: 39 to 65 sessions over 13 weeks
	
	Format: individual
	
	Facility: home
	
	Professionally led in that education provided by an exercise physiologist twice during the program, once at the beginning and once during week 8
	
	Adherence: average days walked per week was 3.66 days or 113 minutes per week
	
	9 participants assigned to control group, including:
	
	• usual care
	
	Contamination of control group: average days walked per week was 1.79 days or 53 minutes per week

Outcomes	Primary outcomes: non-HRQoL and HRQoL outcomes including:
	
	• non-HRQoL outcomes:
	  • physical performance/endurance, assessed using a symptom limited graded exercise test with the Cornell Treadmill Protocol to measure functional capacity (VO_2max/kg)
	  • physical self-efficacy, assessed using the Self-Efficacy to Perform Self-Management Behaviors and the Self-Efficacy to Achieve Outcomes scales
	  • strength, assessed using a 1-repetition maximal chest press and leg press
	• HRQoL outcomes were:
	  * fatigue, assessed using the Revised PFS to measure overall fatigue and 4 subscales, behavioral/severity, sensory, affective/meaning, and cognitive/mood; and subject report of fatigue assessed using the AFI
	  * attention performance, assessed using the AFI as a measure of cognitive function
	  * functional wellness, assessed using the MOS SF-36 Health Survey measuring subscales of physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional, and mental health
	  * health transitions, assessed using a single-item question included on the SF-36
	  * belief of current state of health, assessed using the Functional Wellness Questionnaire
	
	Outcomes were measured at baseline, 7 weeks, and 13 weeks:

Crowley 2003 *(Continued)*

	• exercise group: n = 13 at baseline (for all outcomes), n = 13 at 7 weeks (all outcomes, except physical performance/endurance), n = 13 at 13 weeks (all outcomes) • control group: n = 9 at baseline (for all outcomes), n = 9 at 7 weeks (all outcomes, except physical performance/endurance), n = 9 at 13 weeks (all outcomes) Subgroup analysis: none reported Adverse events: not reported
Notes	Country: US Funding: Sigma Theta, Rho Chapter, Oncology Nursing Society Foundation, Pharmacia & Upjohn

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random numbers table used, with consecutive numbers on the table used with those numbers ending in an even integer assigned to the exercise group, and numbers ending in an odd integer assigned to the control group
Allocation concealment (selection bias)	Low risk	Each random number placed in an envelope that was sealed and consecutively numbered on the outside
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	High risk	Analyses were not conducted on an ITT basis and the treatment of missing data was not described. It is unclear how much attrition occurred in the trial
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Culos-Reed 2010

Study characteristics

Methods	Study design: RCT Number randomized: 100; 53 to the exercise group and 47 to the control group Study start and stop dates: recruitment occurred between 2004 and 2006 Length of intervention: 16 weeks Length of follow-up: 12 months
Participants	Type cancer: prostate cancer

Culos-Reed 2010 *(Continued)*

Time since cancer diagnosis: not reported

Time in active treatment: not reported

Inclusion criteria:

- diagnosis of prostate cancer (any stage)
- may or may not have had previous treatment
- expected to receive androgen deprivation therapy for at least 6 months

Eligibility criteria related to interest or ability, or both, to exercise:

- physician's clearance to participate in a hybrid exercise program consisting of aerobic, strength, and flexibility components

Exclusion criteria:

- any comorbid condition that would restrict the participant's ability to enter the program (e.g. heart disease, emphysema, and arthritis)
- high risk of osteoporotic fracture because of long-term steroid use or T-score < −2.5 on screening bone mineral densitometry DXA scan

Gender: male

Current age, mean (SD, range) years:

- exercise group: 67.2 (8.8, 46 to 82) years
- control group: 68.0 (8.4, 49 to 86) years

Age at cancer diagnosis: not reported

Ethnicity/race: not reported

Education level, n (%):

- exercise group: some high school, 12 (23.1%); completed high school, 10 (19.2%); some university/college, 8 (15.4%); completed university/college, 17 (32.7%); some/completed graduate school, 5 (9.6%)
- control group: some high school, 7 (14.9%); completed high school, 6 (12.8%); some university/college, 12 (25.5%); completed university/college, 11 (23.4%); some/completed graduate school, 11 (23.4%)

SES, annual income, n (%):

- exercise group: < USD20,000, 4 (8.3%); USD20,000 to USD39,999, 13 (27.1%); USD40,000 to USD59,999, 7 (14.6%); USD60,000 to USD79,000, 9 (18.8%); > USD80,000, 15 (31.3%)
- control group: < USD20,000, 3 (6.8%); USD20,000 to USD39,999, 14 (31.8%); USD40,000 to USD59,999, 14 (31.8%); USD60,000 USD79,000, 6 (13.6%); > USD80,000, 7 (15.9%)

Employment status, n (%):

- exercise group: full-time, 16 (30.2%); retired, 30 (56.6%); disability/sick leave, 3 (5.7%); other, 4 (7.6%)
- control group: full-time, 5 (10.6%); retired, 31 (66.0%); disability/sick leave, 1 (2.1%); other, 10 (21.2%)

Comorbidities: not reported

Past exercise history: not reported

On hormone therapy: not reported

Interventions	53 participants assigned to the individualized physical activity exercise intervention, including: • home-based component primarily consisting of walking, stretching, and light resistance (i.e. theraband)

Culos-Reed 2010 *(Continued)*

	• group-based component in a fitness center consisting of an activity component (walking, stretching, light resistance) and education/discussion Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: moderate Frequency: • home-based component: 3 to 5 times per week • group-based component: once per week during the 16-week intervention and once per month until completion of the follow-up assessments Duration of individual sessions: • home-based component: 60 minutes • group-based component: 90 minutes Duration of exercise program: 16 weeks Total number of exercise sessions: • home-based component: 156 to 260 sessions • group-based component: 24 sessions Format: individual and group Facility: home and facility (fitness center) Group-based component professionally led by certified fitness professional Adherence: not reported 47 participants assigned to control group, including: • waiting list control Contamination of control group: not reported
Outcomes	Primary outcome: • physical activity behavior, assessed using the Godin LSI of the Godin Leisure Time Exercise questionnaire Other outcomes included: • HRQoL, assessed using the European Organization for the Research and Treatment of Cancer, Quality of Life Study Group (QLQ-C30) • organ-specific function and bother, assessed using the EPIC • fatigue, assessed using the Fatigue Severity Scale • depression, assessed using the CES-D scale Outcomes were measured at baseline, 16 weeks, 6 months, and 12 months: • exercise group: n = 53 at baseline, n = 53 at 16 weeks, n = 53 at 6 months, n = 53 at 12 months • control group: n = 47 at baseline, n = 47 at 16 weeks, n = 47 at 6 months, n = 47 at 12 months Subgroup analysis: not reported Adverse events: not reported
Notes	Country: Canada Funding: none reported

Culos-Reed 2010 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assigned was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	Low risk	Analyses were conducted on an ITT basis
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Danhauer 2009

Study characteristics

Methods	Study design: RCT Number randomized: 44; 22 to the exercise group and 22 to the control group Study start and stop dates: recruitment from August 2005 to October 2006 Length of intervention: 10 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer, DCIS or Stages I to IV Cancer stage, n (%): • exercise group: DCIS, 3 (13.6%); Stage I, 5 (22.7%); Stage II, 10 (45.5%); Stage III, 3 (13.6%); Stage IV, 1 (4.6%) • control group: DCIS, 5 (22.7%); Stage I, 9 (40.9%); Stage II, 3 (13.6%); Stage III, 2 (9.1%); Stage IV, 3 (13.6%) Time since cancer diagnosis, mean (SD) months: • exercise group: 24.4 (39.5) months • control group: 22.8 (35.6) months Time in active treatment: 2 to 24 months post primary treatment (surgery); 34% still in active treatment

Danhauer 2009 *(Continued)*

Inclusion criteria:

- ≥ 18 years old
- 2 to 24 months post primary treatment (surgery) following initial diagnosis
- recurrence of breast cancer within the past 24 months (regardless of treatment status)
- able to understand English

Eligibility criterion related to interest or ability, or both, to exercise:

- physically able to attend restorative yoga classes

Exclusion criteria:

- medical contraindications as reported by physician

Gender: female

Current age, mean (SD) years:

- exercise group: 54.3 (9.6) years
- control group: 57.2 (10.2) years

Age at cancer diagnosis: not reported

Ethnicity/race, n (%):

- exercise group: non-Hispanic White, 19 (86.4%); African American, 2 (9.1%); Asian/Pacific Islander, 1 (4.6%)
- control group: non-Hispanic White, 20 (90.9%); African American, 1 (4.6%); Asian/Pacific Islander, 1 (4.6%)

Education level, n (%):

- exercise group: high school diploma/GED, 0 (0.0%); some college or vocational school, 6 (27.3%); college graduate, 5 (22.7%); graduate study or degree, 1 (50.0%)
- control group: high school diploma/GED, 3 (13.6%; some college or vocational school, 8 (36.4%); college graduate, 3 (13.6%); graduate study or degree, 8 (36.4%)

SES, n (%):

- exercise group: < USD35,000, 6 (30.0%); USD35,000 to USD49,999, 3 (15.0%); USD50,000 to USD99,999, 8 (40.0%); USD100,000+, 3 (15.0%)
- control group: < USD35,000, 5 (27.8%); USD35,000 to USD49,999, 1 (5.6%); USD50,000 to USD99,999, 5 (27.8%); USD100,000+, 6 (33.3%)

Employment status: not reported

Comorbidities: not reported

Past exercise history, n (%):

- exercise group: never had done yoga, 20 (90.9%); no yoga experience in the past year, 20 (90.9%)
- control group: never had done yoga, 15 (68.2%); no yoga experience in the past year, 18 (81.8%)

On hormone therapy: not reported

Ongoing treatment, n (%):

- exercise group: receiving chemotherapy, 8 (36.4%); receiving radiation therapy, 6 (27.3%)
- control group: receiving chemotherapy, 3 (13.6%); receiving radiation therapy, 3 (13.6%)

Interventions	22 participants assigned to the exercise intervention, including:

Danhauer 2009 *(Continued)*

	• restorative yoga which combined physical postures (*asanas*), breathing (*pranayama*), and deep relaxation (*savasana*). Yoga poses were modified based on participant needs. Poses included: mountain pose; arm and shoulder stretch; supported forward fold; seated sun salutation; and reclining twist with a bolster Type exercise (aerobic/anaerobic): aerobic/anaerobic Intensity of experimental exercise intervention: mild Frequency: once per week Duration of individual sessions: 75 minutes Duration of exercise program: 10 weeks Total number of exercise sessions: 10 sessions Format: group Facility: Wake Forest University Health Sciences and local studio Professionally led by yoga instructor with cancer-specific yoga training who was registered by the National Yoga Alliance 22 participants assigned to control group, including: • waiting list for yoga Adherence: 11 women attended 7 or more sessions; 6 women attended 3 to 6 sessions; and 5 women attended ≤ 2 sessions Contamination of control group: not reported
Outcomes	No primary outcomes were identified. Outcomes included: • physical health status (PCS and MCS), measured using the MOS's SF-12 • HRQoL, measured using the FACT-B, which consists of the subPWB subscale, SWB subscale, EWB subscale, FWB subscale, and breast cancer specific concerns • fatigue, measured using the FACT-F scale • spirituality, measured using the FACT-Sp, which has 2 domains, sense of meaning/peace and role of faith. Only the sense of meaning/peace subscale was included in this study • depression, measured using the CES-D • sleep dysfunction, measured using the PSQI • positive and negative affect, measured using the PANAS Outcomes were measured at baseline and at 10 weeks (end of the intervention): • exercise group: n = 22 at baseline, n = 13 at 10 weeks • control group: n = 22 at baseline, n = 14 at 10 weeks Adverse events: cancer recurrence was reported for 4 women in the exercise group and 6 women in the control group. No adverse events were reported
Notes	Country: US Funding: Wake Forest University Comprehensive Cancer Center

Risk of bias

Bias	Authors' judgement	Support for judgement

Danhauer 2009 *(Continued)*

Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	Data were analyzed on an ITT basis. Participants who failed to return the study questionnaire were excluded from the analyses - 9 participants in the exercise group and 7 participants in the control group did not return the study questionnaire. 1 participant in the control group withdrew from the study
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

de Oliveira 2010

Study characteristics	
Methods	Study design: RCT Number randomized: 55; 28 to the exercise group and 27 to the control group Study start and stop dates: June 2005 to September 2006 Length of intervention: length of radiation Length of follow-up: 6 months
Participants	Type cancer: breast cancer Time in cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • invasive breast cancer • indication of radiation therapy • postsurgery Eligibility criteria related to interest or ability, or both, to exercise: • medical contraindication Exclusion criteria: • inability to complete questionnaires

de Oliveira 2010 *(Continued)*

	Gender: female Current age, range: 40 to 60 years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level, %: primary, 60%; middle, 20%; secondary, 20% SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy: about 50% were on hormone therapy
Interventions	28 participants assigned to the exercise intervention, including: • kinesotherapy of the upper limb, including 19 different exercises Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: not reported Frequency: not reported Duration of individual sessions: 45 minutes Duration of exercise program: length of radiation therapy Total number of exercise sessions: about 18 sessions Format: individual Facility: facility Professionally led: not reported Adherence: not reported 27 participants assigned to control group, including: • usual care Contamination of control group: not reported

Outcomes	Primary outcome:
	• amplitude of movement, assessed using Gosselnik
	Other outcomes included:
	• global HRQoL, assessed using FACT-B and subscales:
	  * PWB
	  * social/family well-being
	  * FWB
	  * breast subscale
	  * EWB
	Outcomes were measured at baseline, end of treatment (~ 3 months), and 6 months:
	• exercise group: n = 28 at baseline, n = 28 at 3 months, n = 24 at 6 months

de Oliveira 2010 *(Continued)*

	• control group: n = 27 at baseline, n = 27 at 3 months, n = 25 at 6 months Subgroup analysis: none reported Adverse events: not reported
Notes	Country: Brazil Funding: FAEPEX UNICAMP, pelo financiamento e Bolsa CAPES

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"greada por computador"
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	The outcome assessor was blinded to the study allocation
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient details provided to determine whether there was any attrition
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Dimeo 1999

Study characteristics

Methods	Study design: quasi-randomized controlled trial Number randomized: 62; 29 to the exercise group and 33 to the control group Study start and stop dates: not reported Length of intervention: length of hospitalization Length of follow-up: to end of the intervention
Participants	Type cancer, n: various • exercise group: breast carcinoma, 13; metastatic breast carcinoma, 3; seminoma, 3; sarcoma/adenocarcinoma, 2; small cell lung carcinoma, 0; HD, 2; NHL, 4

Dimeo 1999 *(Continued)*

- control group: breast carcinoma, 12; metastatic breast carcinoma, 3; seminoma, 3; sarcoma/adenocarcinoma, 0; small cell lung carcinoma, 4; HD, 5; NHL, 5

Time since cancer diagnosis: not reported

Time in active treatment: not reported

Inclusion criteria:

- undergoing HDC followed by peripheral stem cell transplantation
- ages 18 to 60 years
- active malignancy confirmed histologically
- ability to understand written German

Eligibility criteria related to interest or ability, or both, to exercise:

- none reported

Exclusion criteria:

- associated psychiatric, muscular, cardiovascular, or pulmonary disease

Gender, n:

- exercise group: male, 9; female, 18
- control group: male, 13; female, 19

Current age, mean (SD, range) years:

- exercise group: 40 (11, 21 to 59) years
- control group: 40 (10, 20 to 56) years

Age at cancer diagnosis: not reported

Ethnicity/race: not reported

Education level: not reported

SES: not reported

Employment status: not reported

Comorbidities: not reported

Past exercise history: not reported

On hormone therapy: not reported

BMI, mean (SD, range):

- exercise group: 24.5 (3.8, 18 to 32)
- control group: 23.6 (2.9, 19 to 32)

Interventions	29 participants assigned to the exercise intervention, including: • biking on a ergometer in the supine position following an interval training pattern of 1 minute biking followed by 1-minute rest Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: participants "biked" for 1 minute with an intensity sufficient to reach a HR equivalent to at least 50% of the cardiac reserve, calculated as 220 - age - resting HR Frequency: daily

Dimeo 1999 *(Continued)*

	Duration of individual sessions: 30 minutes Duration of exercise program: length of hospitalization Total number of exercise sessions: varied Format: individual Facility: facility Professionally supervised and instructed by study personnel Adherence: 82% (SD, 16%) of the hospitalization days 33 participants assigned to control group, including: • usual care Contamination of control group: not reported

Outcomes	No primary outcome was identified. QoL outcomes included:
	• Total mood disturbance, as assessed by the POMS, and subscales:
	  * depression
	  * fatigue
	  * vigor
	  * anger/hostility
	• Psychological stress, as assessed by the SCL-90 and subscales, including:
	  * somatization
	  * obsessive-compulsive traits
	  * interpersonal sensitivity
	  * depression
	  * anxiety
	  * hostility
	  * phobic anxiety
	  * global psychological distress
	Outcomes were measured at baseline and discharge from hospital (~ 3 months):
	• exercise group: n = 29 at baseline, n = 27 at end of intervention
	• control group: n = 33 at baseline, n = 32 at end of intervention
	Subgroup analysis: none reported
	Adverse events: not reported

Notes	Country: Germany Funding: Nenad Keul Foundation, Freiburg, and Daimler-Benz AG

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Quasi-randomized
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described

Dimeo 1999 *(Continued)*

Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	The outcome assessor was blinded to the study allocation
Incomplete outcome data (attrition bias) All outcomes	High risk	Analyses were conducted on an ITT basis; However, the treatment of missing data was not described. There was substantial attrition from the trial, especially in the intervention arm
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

DiSipio 2009

Study characteristics	
Methods	Study design: RCT Number randomized: 337; numbers assigned to the exercise or control group not reported Study start and stop dates: started 2006, but end date not reported Length of intervention: unclear Length of follow-up: unclear
Participants	Type cancer: breast cancer Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • resident of Queensland • diagnosed with unilateral breast cancer in 2006 or 2007 Eligibility criteria related to interest or ability, or both, to exercise: • none reported Exclusion criteria: • none reported Gender: female Current age: not reported Age at cancer diagnosis: not reported Ethnicity/race: not reported

DiSipio 2009 *(Continued)*

	Education level: not reported SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported
Interventions	Neither the exercise nor control interventions were described, nor the number of participants assigned to either group
Outcomes	No primary outcome was identified. QoL outcomes included: • Global HRQoL, assessed using FACT-B Outcomes were measured at baseline, mid-intervention (6 months), and 3 months postintervention (12 months) Subgroup analysis: none reported Adverse events: not reported
Notes	Country: Australia Funding: none reported Published conference abstract

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	The outcome assessor was blinded to the study allocation
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient details provided to determine whether there was any attrition
Selective reporting (reporting bias)	Unclear risk	Insufficient details provided to assess whether there was selective outcome reporting
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Donnelly 2011

Study characteristics	
Methods	Study design: RCT Number randomized: 33; 16 to the exercise group and 17 to the control group Study start and stop dates: recruitment form June 2008 to March 2009 Length of intervention: 12 weeks Length of follow-up: 6 months
Participants	Type cancer, n (%): gynecologic cancers (ovarian, endometrial, uterine, cervical, or mixed) • exercise group: ovarian, 6 (37.5%); endometrial, 6 (37.5%); cervical, 2 (12.5%); mixed, 1 (12.5%) • control group: ovarian, 6 (35.3%); endometrial, 5 (29.4%); cervical, 3 (17.6%); mixed, 2 (11.8%) Cancer stage, stage I to III, n (%): • exercise group: Stage I, 7 (43.8%); Stage II, 7 (43.8%); Stage III, 2 (12.5%) • control group: Stage I, 9 (52.9%); Stage II, 3 (17.6%); Stage III, 5 (29.4%) Time since cancer diagnosis, mean (SD) months: • exercise group: 8.7 (9.6) months • control group: 8.6 (8.9) months Time in active treatment: some women still receiving treatment Inclusion criteria: • women • ≥ 18 years old • diagnosis of gynecologic cancer (Stage I to III) • completed surgery and either undergoing or completed anticancer treatment • within 3 years of diagnosis • report of mild to severe fatigue Eligibility criterion related to interest or ability, or both, to exercise: • currently sedentary (i.e. vigorous physical activity < 20 minutes/week or moderate physical activity < 60 minutes/week for the past 6 months) was inclusionary Exclusion criteria: • current medical or psychiatric illness (i.e. unstable cardiovascular disease, uncontrolled hypertension, diabetes or respiratory disease, severe mental illness, cognitive dysfunction or orthopedic problems) • participation in other intervention trials • previous diagnosis of cancer • another fatigue-related comorbidity (fibromyalgia, chronic fatigue syndrome, multiple sclerosis, myalgic encephalopathy, lupus, or arthritis) Gender: female Current age, mean (SD) years: • exercise group: 53.5 (8.7) years • control group: 52.1 (11.8) years

Donnelly 2011 *(Continued)*

	Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status, n (%): • exercise group: full/part-time, 1 (6.3%); sick leave, 9 (56.3%); housewife, 2 (12.5%); retired, 4 (25.0%) • control group: full/part-time, 3 (17.6%); sick leave, 8 (47.1%); housewife, 2 (11.8%); retired, 4 (23.5%) Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported
Interventions	16 participants assigned to the exercise intervention, including: • physical activity, including walking and strengthening exercises, implemented by an initial, individual face to face consultation with a physical therapist and physical activity consultations guidelines followed by weekly telephone calls for 10 weeks, a final face-to-face consultation at week 12, and 2 monthly follow-up calls Type exercise (aerobic/anaerobic): aerobic Intensity of experimental exercise intervention: moderate Frequency: aim to meet physical activity guidelines (30 minutes of physical activity on at least 5 days per week) Duration of individual sessions: 30 minutes Duration of exercise program: 12 weeks Total number of exercise sessions: maximum of 60 sessions Format: individual Facility: home Professionally led with initial consultation with a professional physical therapist 17 participants assigned to control group, including: • usual care • telephone calls at same time and length as exercise group Adherence: 44% of all participants, or 58% of all individuals who remained medically unfit to take part Contamination of control group: unclear
Outcomes	Primary outcome: • fatigue, assessed using the MFSI-SF and the FACIT-F subscale Secondary outcomes: • QoL, assessed using the FACT-G scale • depression, assessed using the BDI-II • positive and negative affect, assessed using the PANAS • sleep dysfunction, assessed using the PSQI

Donnelly 2011 *(Continued)*

	Outcomes were measured at baseline, 12 weeks (end of intervention), and 6-month follow-up (9 months after baseline): • exercise group: n = 16 at baseline, n = 15 at 12 weeks, n = 12 at 6-month follow-up • control group: n = 17 at baseline, n = 17 at 12 weeks, n = 17 at 6-month follow-up Subgroup analysis: none reported Adverse events: • exercise group: lung metastasis (n = 1), pulmonary embolism (n = 1), heart palpitations (n = 1) • control group: none reported
Notes	Country: UK Funding: Department of Employment and Learning, Northern Ireland

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated random numbers table was used to generate the allocation sequence
Allocation concealment (selection bias)	Low risk	Allocation was concealed in sequentially numbered opaque envelopes
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	The outcome assessor was blinded to the study allocation
Incomplete outcome data (attrition bias) All outcomes	Low risk	The study used ITT analyses
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Galvao 2010

Study characteristics

Methods	Study design: RCT Number randomized: 57; 29 to the exercise group and 28 to the control group Study start and stop dates: July 2007 to September 2008 Length of intervention: 12 weeks

Galvao 2010 *(Continued)*

	Length of follow-up: to end of the intervention
Participants	Type cancer: prostate cancer Stage, n (%) • exercise group: localized, 27 (93.1%); nodal metastases, 2 (6.9%); bone metastases, 0 (0%) • control group: localized, 25 (89.3%); nodal metastases, 3 (10.7%); bone metastases, 0 (0%) Time since cancer diagnosis: not reported Time in active treatment: 6 months after enrolling Inclusion criteria: • minimum prior exposure to androgen suppression therapy > 2 months • anticipated to remain hypogonadal for the subsequent 6 months Eligibility criteria related to interest or ability, or both, to exercise: • musculoskeletal, cardiovascular, or neurologic disorders that could inhibit them from exercising • inability to walk 400 m or undertake upper and lower limb exercise, and resistance training in the previous 3 months Exclusion criteria: • prostate specific antigen evidence of disease activity • bone metastatic disease Gender: male Current age, mean (SD) years • exercise group: 69.5 (7.3) years • control group: 70.1 (7.3) years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level, postsecondary education, n (%): • exercise group: 15 (51.7%) • control group: 20 (71.4%) SES: not reported Employment status, full-time, n (%): • exercise group: 4 (13.8%) • control group: 2 (7.1%) Comorbidities, number of comorbidities (cardiovascular, hypertension, diabetes, osteoporosis, dyslipidemia), mean (SD): • exercise group: 1.0 (1.3) • control group: 1.0 (1.1) Past exercise history: not reported On hormone therapy, LHRHa antiandrogen, n (%): • exercise group: 6 (20.7) • control group: 11 (39.3)

Galvao 2010 *(Continued)*

	Previous androgen suppression therapy, n (%): • exercise group: 5 (17.2) • control group: 4 (14.3) Time on androgen suppression therapy, mean (SD) months: • exercise group: 18.2 (38.5) months • control group: 10.1 (26.8) months
Interventions	29 participants assigned to the exercise intervention, including: • combined progressive resistance and aerobic training. The resistance exercises included chest press, seated row, shoulder press, triceps extension, leg press, leg extension and leg curl, with abdominal crunches also performed. Aerobic component included cycling or walking/jogging. Sessions commenced and concluded with general flexibility exercises. Type exercise (aerobic/anaerobic): aerobic and anaerobic Intensity of the experimental exercise intervention: moderate, at 65% to 80% maximum HR and perceived exertion at 11 to 13 (6 to 20 point, Borg scale) Frequency: twice per week Duration of individual sessions: aerobic session was 15 to 20 minutes Duration of exercise program: 12 weeks Total number of exercise sessions: 24 sessions Format: group Facility: facility Professionally led by an exercise physiologist Adherence: not reported 28 participants assigned to control group, including: • encouragement to maintain customary activity and dietary patterns Contamination of control group: not reported
Outcomes	Primary outcome: • whole body and regional lean mass, fat mass, and percent fat, assessed using DXA Other outcomes included: • dynamic muscle strength and function, assessed by using the maximal number of repetitions performed at 70% of 1-RM for the chest press and leg press exercises • functional performance, assessed by repeated chair rise to standing (5 times) and the 6-musual and fast walk using electronic timing gates • cardiorespiratory capacity, assessed by the 400-m walk. Tests were performed in triplicate • blood biomarkers, including testosterone, PSA, insulin, glucose, CRP, and lipid profile levels • HRQoL, assessed using the MOS SF-36 and subscales • balance, assessed using the sensory organization test using the Neurocom Smart Balance Master and dynamic balance by the 6-m backward walk. Falls self-efficacy was determined using the Activities-Specific Balance Confidence scale Outcomes were measured at baseline and end of intervention (12 weeks): • exercise group: n = 29 at baseline, n = 29 at 12 weeks

Galvao 2010 *(Continued)*

	• control group: n = 28 at baseline, n = 28 at 12 weeks Subgroup analysis: none reported Adverse events: not reported
Notes	Country: Australia Funding: Cancer Council of Western Australia

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer random assignment program
Allocation concealment (selection bias)	Low risk	Concealed from project coordinator and exercise physiologist
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	Low risk	ITT analyses was completed with missing values imputed as change across time to be zero
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Gomes 2011

Study characteristics

Methods	Study design: RCT Number randomized: 54; number assigned to exercise and control groups not reported Study start and stop dates: not reported Length of intervention: not reported Length of follow-up: to end of the intervention
Participants	Type cancer: non-metastatic breast cancer Time since cancer diagnosis: not reported Time in active treatment: not reported

Gomes 2011 *(Continued)*

	Inclusion criteria: • none reported Eligibility criteria related to interest or ability, or both, to exercise: • none reported Exclusion criteria: • none reported Gender: female Current age, median years: • exercise group: 52.5 years • control group: 48.5 years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported BMI, median: • exercise group: 27.61 • control group: 26.49 Premenopausal, %: • exercise group: 39.3% • control group: 57.7%
Interventions	The number of participants assigned to the exercise intervention was not reported. The exercise intervention included: • brief home-based exercise orientation program Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: not reported Frequency: not reported Duration of individual sessions: not reported Duration of exercise program: not reported Total number of exercise sessions: not reported Format: individual Facility: home

Gomes 2011 *(Continued)*

	Professionally led: unclear Adherence: not reported The number of participants assigned to the control intervention was not reported. The control intervention included: • usual care Contamination of control group: not reported

Outcomes	No primary outcome was identified. QoL outcomes included:
	
	• global HRQoL, assessed using the
	  * QLQ-C30
	  * QLQ-BR23
	• fatigue, assessed using the Chalder Fatigue Questionnaire
	
	Outcomes were measured at baseline and end of intervention, but the number of individuals by treatment group at each time point was not reported
	
	Subgroup analysis: none reported
	
	Adverse events: not reported

Notes	Country: Brazil Funding: none reported Published as conference abstract

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient details provided to determine whether there was any attrition
Selective reporting (reporting bias)	Unclear risk	Insufficient details provided to assess whether there was selective outcome reporting
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Griffith 2009

Study characteristics	
Methods	Study design: RCT Number randomized: 138; 73 to the exercise group and 65 to the control group Study start and stop dates: not reported Length of intervention: varied by duration of cancer treatment. For the entire sample, the mean (SD) number of cancer treatment weeks was 12.83 (5.15) with a range of 5 to 35 weeks. The mean (SD) total weeks of cancer treatment was 15.8 (5.89) for nonprostate and 10.44 (2.73) for prostate cancer patients Length of follow-up: to end of the intervention
Participants	Type cancer, n (%): various • exercise group: breast, 23 (33.8%); colorectal, 2 (2.9%); prostate, 38 (55.9%); other, 5 (7.4%) • control group: breast, 18 (31.0%); colorectal, 5 (8.6%); prostate, 32 (55.2%); other, 3 (5.2%) Cancer stage, n (%): Stage I, 12 (10%); Stage II, 89 (70%); Stage III, 25 (20%) Time since cancer diagnosis: not reported Time in active treatment: currently undergoing treatment Inclusion criteria: • ≥ 21 years old • diagnoses of Stage I to III cancer • scheduled to receive chemotherapy, radiation therapy, or both Eligibility criteria related to interest or ability, or both, to exercise: • were already exercising more than 120 minutes per week • conditions that could preclude the advisability or safety of a moderate-intensity walking program Exclusion criteria: • comorbidities such as cardiovascular disease, cognitive dysfunction, metastatic cancer, hematologic malignancies Gender, n (%): • exercise group: male, 27 (39.7%), female, 41 (60.3%) • control group: male, 22 (37.9%), female 36 (62.1%) Current age, mean (SD) years: • exercise group: 59.8 (10.8) years • control group: 60.6 (10.8) years Age at cancer diagnosis: not reported Ethnicity/race, n (%): • exercise group: American Indian, 0 (0%); Asian/Pacific Islander, 0 (0%): black non-Hispanic, 9 (13.2%); white non-Hispanic, 57 (83.8%); Hispanic, 1 (1.5%); other, 1 (1.5%) • control group: American Indian, 1 (1.7%); Asian/Pacific Islander, 2 (3.4%); black non-Hispanic 11 (19.0%); white non-Hispanic, 42 (72.5%); Hispanic, 2 (3.4%); other, 0 (0%) Education level, n (%):

Griffith 2009 *(Continued)*

- exercise group: high school, 7 (10.3%); college, 35 (51.5%); graduate school, 26 (38.2%)
- control group: high school, 8 (13.8%); college, 17 (29.3%); graduate school, 33 (56.9%)

SES: not reported

Employment status, n (%):

- exercise group: full-time, 31 (54.4%); part-time, 5 (8.8%); resigned, 15 (26.3%); disabled, 6 (10.5%); leave of absence, 1 (1.7%); other, 8 (11.8%)
- control group: full-time, 29 (55.8%); part-time, 6 (11.5%); resigned, 15 (28.9%); disabled, 2 (3.9%); leave of absence, 3 (4.4%); other, 5 (8.6%)

Comorbidities: not reported

Past exercise history: not reported

On hormone therapy: not reported\

Interventions	73 participants assigned to the exercise intervention, including: • brisk 20- to 30-minute walk followed by 5 minutes of slower walking (cool down) • other aerobic activities such as cycling could substitute or supplement walking • biweekly telephone calls from study nurse Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: moderate, corresponding to approximately 50% to 70% of the maximum HR Frequency: 5 times per week Duration of individual sessions: 25 to 35 minutes Duration of exercise program: varied by duration of cancer treatment. For the entire sample, the mean (SD) number of cancer treatment weeks was 12.83 (5.15); range (5 to 35 weeks) Total number of exercise sessions: varied Format: individual Facility: home Not professionally led Adherence, defined as walking at least 60 minutes weekly for more than 2/3 of the total program: 67.6% with an average walking time of 117 (SD = 105) minutes per week 65 participants assigned to control group, including: • encouragement to maintain current activity levels • biweekly telephone calls Contamination of control group: non-adherence defined as walking more than 60 minutes for more than 2/3 of treatment weeks. Adherence = 77.6%, and contamination = 22.4%
Outcomes	Primary outcome included: • cardiorespiratory fitness, expressed as peak oxygen uptake (VO_2), either directly measured by treadmill testing or estimated from the 12-MWT Other outcomes included: • physical functioning subscale, assessed using the Medical Outcomes Survey Short Form-36

Griffith 2009 *(Continued)*

	• role limitations owing to physical health subscale, assessed using the Medical Outcomes Survey Short Form-36 • pain level, assessed using the pain subscale of the Medical Outcomes Survey Short Form-36 Outcomes were measured at baseline and end of intervention: • exercise group: n = 68 at baseline, n = 68 at end of intervention • control group: n = 58 at baseline, n = 58 at end of intervention Subgroup analysis: examined outcomes by cancer type (prostate versus other cancer) and performed secondary dose-response analysis, which evaluated outcomes based on the actual amount of exercise performed according to the Physical Activity Questionnaire, regardless of group assignment. This secondary analysis was necessitated by the finding that, contrary to study instructions, 22.4% of the control group participants performed exercise at a level at least equivalent to what was assigned for the exercise group. The subgroup analysis and the secondary analysis were not prespecified Adverse events: not reported
Notes	Country: US Funding: none reported

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	High risk	Although analyses were conducted on an ITT basis, 5 participants from the intervention arm and 7 from the control arm were not included in the analyses
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Hacker 2011

Study characteristics

Methods	Study design: RCT

Hacker 2011 *(Continued)*

	Number randomized: 22, but 2 did not have a transplant and 1 did not have baseline data. The author reported that 19 individuals were randomized, 9 to the exercise group and 10 to the control group Study start and stop dates: not reported Length of intervention: 6 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: hematologic malignancies Time since cancer diagnosis: not reported Time in active treatment: all receiving an HSCT Inclusion criteria: • patients scheduled to receive an HSCT • ability to speak English • ability to comprehend the purpose of the study • no history of psychiatric illness • treating physicians provided approval for participants to participate in the trial Eligibility criteria related to interest or ability, or both, to exercise: • none reported Exclusion criteria: • none reported Gender, n: male, 14; female, 5 Current age, mean (SD, range) years: 46.26 (16.23, 20 to 67) years Age at cancer diagnosis: not reported Ethnicity/race, n: African Americans, 11; white, 7; Hispanic, 1 Education level, n: completed some college as their highest level of education, 10 SES, n: income level < USD40,000, 10 Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported

Interventions	9 participants assigned to the exercise intervention, including:
	
	• progressive strength-training intervention, including a comprehensive program of progressive resistance to strengthen the upper body, lower body, and abdominal muscles using elastic resistance bands (Thera-Bands; Hygenic Corp) if able, and body weight for resistance. Progression of the exercise prescription was structured to first increase the number of sets from 1 to 2 sets of 8 to 10 repetitions and then to increase the resistance level of elastic bands. Preselected exercises with concentric and eccentric muscle contractions included:
	  • 8 exercises using elastic resistance bands (chest fly, biceps curl, triceps extension, shoulder shrug, shoulder upright row, shoulder lateral raise, knee flexion, and knee extension)
	  • 3 exercises that used body weight as resistance (wall push-ups, squats, and bed sit-ups)
	
	Type exercise (aerobic/anaerobic): anaerobic

Hacker 2011 *(Continued)*

	Intensity of the experimental exercise intervention: Borg RPE scale of somewhat hard (Borg scale 13) Frequency: 3 times per week, once or twice at the clinic and once or twice at home Duration of individual sessions: varied Duration of exercise program: 6 weeks Total number of exercise sessions: 18 sessions Format: individual Facility: facility and home Professionally led: unsupervised and supervised by the principal investigator or a trained member of the research team Adherence: by week 2, all participants in the strength-training group exercised at least once or twice per week, and most met the strength-training prescription of exercising 3 times per week by week 3. All of the participants exercised at least once or twiceper week for at least 5 of the 6 weeks 10 participants assigned to control group, including: • usual activities • recommendations regarding rest, physical activity, and exercise from their attending HSCT physician • request not to exercise Contamination of control group: not reported

Outcomes	No primary outcome was identified. QoL outcomes included:
	
	• fatigue, assessed using a 1-item fatigue intensity scale and the fatigue subscale of the QLQ-C30
	• Health Status Perceptions, assessed using the QLQ-C30 and including:
	  * global HRQoL
	  * physical
	  * emotional
	  * role
	  * cognitive
	  * social
	  * symptoms (fatigue, pain, nausea/vomiting)
	  * single-item questions (appetite loss, constipation, dyspnea, diarrhea, financial stress, and sleep disturbances)
	• Life Satisfaction, assessed using the Ferrans and Powers QLI and subscales, including:
	  • global HRQoL
	  • health and functioning
	  • psychological/spiritual
	  • social and economic
	  • family
	
	Other outcomes included:
	
	• physical activity, measured using a wrist-worn accelerometer, the Actiwatch-Score (Phillips Respironics)
	• muscle strength consisting of timed stair climb, handgrip strength, 30-s chair-stand, time needed to stand up from bed rest examination
	
	Outcomes were measured at baseline, 8 days after transplant (second baseline), and 6 weeks after discharge from the hospital:
	
	• exercise group: n = 9 at baseline, n = 8 at 8 days, n = 8 at 6 weeks
	• control group: n = 10 at baseline, n = 9 at 8 days, n = 7 at 6 weeks

Hacker 2011 *(Continued)*

	Subgroup analysis: none Adverse events: 2 participants, 1 each from the exercise and control groups died during the course of the trial as a result of their underlying medical condition
Notes	Country: US Funding: National Institutes of Health/National Institute of Nursing Research

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	High risk	Analyses were not conducted on an ITT basis and the treatment of missing data was not described. There was substantial attrition from the trial, especially in the intervention arm
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Haddad 2011

Study characteristics

Methods	Study design: RCT Number randomized: 163; 53 to the yoga exercise group, 56 to the stretching exercise group, and 54 to the control group Study start and stop dates: not reported Length of intervention: 6 weeks Length of follow-up: 1, 3, and 6 months
Participants	Type cancer: breast cancer, Stages 0 to III Time since cancer diagnosis: not reported Time in active treatment: not reported

Haddad 2011 *(Continued)*

	Inclusion criteria: • breast cancer Stage 0 to III • undergoing radiation therapy Eligibility criteria related to interest or ability, or both, to exercise: • none reported Exclusion criteria: • none reported Gender: female Current age, mean years: 51.9 years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported
Interventions	53 participants assigned to the yoga exercise intervention 56 participants assigned to the stretching exercise intervention Type exercise (aerobic/anaerobic): aerobic or anaerobic • yoga: aerobic • stretching: anaerobic Intensity of the experimental exercise intervention: not reported Frequency: 3 times per week for either yoga or stretching Duration of individual sessions: not reported Duration of exercise program: 6 weeks Total number of exercise sessions: 18 sessions for either yoga or stretching Format: not reported Facility: unclear Professionally led: not reported Adherence: not reported 54 participants assigned to control group, including: • waiting list Contamination of control group: not reported

Haddad 2011 *(Continued)*

Outcomes	No primary outcome was identified. QoL outcomes included: • fatigue, assessed using the BFI • depression, assessed using the CES-D • global QoL, assessed using the MOS SF-36 and subscales • benefit finding, assessed using the Benefit Finding • spiritualty, assessed using the FACT-Sp Outcomes were measured at baseline, end of treatment (6 weeks), 1, 3, and 6 months following end of treatment: • yoga exercise group: n = 53 at baseline and all follow-up visits • stretching exercise group: n = 56 at baseline and all follow-up visits • control group: n = 54 at baseline and all follow-up visits Subgroup analysis: not reported Adverse events: not reported
Notes	Country: unclear, investigators from US, India and Germany Funding: none reported Published conference abstract

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Generation of allocation sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient details provided to determine whether there was any attrition
Selective reporting (reporting bias)	Unclear risk	Insufficient details provided to assess whether there was selective outcome reporting
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Headley 2004

Study characteristics	
Methods	Study design: RCT Number randomized: 38; the number of participants originally assigned to the exercise or control group not reported Study start and stop dates: not reported Length of intervention: 12 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer, Stage IV Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • scheduled to initiate outpatient chemotherapy • would be receiving HDC for the purpose of bone marrow or stem cell transplantation or would be receiving hormonal therapy as a single treatment • English-literate • ≥ 18 years of age Eligibility criteria related to interest or ability, or both, to exercise: • having performance status of ≤ 2 on the Zubrod scale • being able to sit in a straight back chair for at least 30 minutes • having access to a television and video cassette player Exclusion criteria: • received radiation therapy during the prior 2 months • serum hemoglobin level ≤ 8.0 g/dL • resting pain level of > 2 on a 0 to 10 pain scale • symptomatic bone metastases Gender: female Current age, mean (SD) years: • exercise group: 52.25 (11.43) years • control group: 50.00 (7.10) years Age at cancer diagnosis: not reported Ethnicity/race, n: • exercise group: Caucasian, 15; African American, 1 • control group: Caucasian, 12; African American, 4 Education level, years of education, mean (SD): • exercise group: 12.60 (2.5) years • control group: 14.4 (3.12) years SES: not reported Employment status, n:

Headley 2004 *(Continued)*

	• exercise group: not employed, 10; employed full-time, 6; employed part-time, 0 • control group: not employed, 7; employed full-time, 8; employed part-time, 1 Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported
Interventions	The number of study participants originally assigned to the exercise intervention not reported. Data available for 16 participants assigned to the exercise intervention, including: • 30-minute seated exercise program in which participants sit in a straight backed chair while performing stretching and repeated flexion and extension of the arms, head, upper torso, and legs with the assistance of a video • The program includes: a 5-minute warm-up, 20 minutes of moderate-intensity repetitive motion exercises, and a 5-minute cool-down Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: moderate Frequency: 3 times per week Duration of individual sessions: 30 minutes Duration of exercise program: 12 weeks Total number of exercise sessions: 36 sessions Format: individual Facility: home Not professionally led Adherence: not reported The number of study participants originally assigned to the control intervention not reported. Data available for 16 participants assigned to the control group, including: • permission to continue any usual physical activity Contamination of control group: not reported
Outcomes	No primary outcome was identified. QoL outcomes included: • fatigue, assessed using the FACIT-F Version IV • global QoL, using the FACIT-F Outcomes were measured at baseline and at the beginning of each course of chemotherapy for 12 weeks for a total of 4 measurements. The numbers by treatment group not reported. The total number of participants at each time point included: baseline, n = 32; cycle 2, n = 28; cycle 3, n = 30; cycle 4, n = 24 Subgroup analysis: none Adverse events: not reported
Notes	Country: US Funding: ONS Foundation and the University of Texas Health Sciences Center in the Houston School of Nursing

Headley 2004 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer used to generate the random sequence
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	There was no discussion on how missing data were addressed. In addition, there were no ITT analyses as data on women who did not complete the study were excluded from the analyses
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Hwang 2008

Study characteristics

Methods	Study design: RCT Number randomized: 40; 17 to the exercise group and 20 to the control group Study start and stop dates: not reported Length of intervention: 5 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer Time since cancer diagnosis: not reported Time in active treatment: women approached at first planned radiation therapy treatment visit Inclusion criteria: • outpatient waiting list for radiation therapy for breast cancer Eligibility criteria related to interest or ability, or both, to exercise: • concurrent major health problems that could affect participation in an exercise program including uncontrolled hypertension, cardiovascular disease, acute or chronic respiratory disease, and cognitive dysfunction

Hwang 2008 *(Continued)*

	Exclusion criteria: • none Gender: female Current age, mean (SD) years: • exercise group: 46.3 (9.5) years • control group: 46.3 (7.5) years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported
Interventions	17 participants assigned to the exercise intervention, including: • supervised exercise program, including stretching exercises focused on the shoulders, aerobic exercise such as treadmill walking and bicycling, and strengthening exercise Type exercise (aerobic/anaerobic): aerobic and anaerobic Intensity of the experimental exercise intervention: target HR of 50% to 70% of the age-adjusted HR maximum Frequency: 3 times per week Duration of individual sessions: 50 minutes Duration of exercise program: 5 weeks Total number of exercise sessions: 15 sessions Format: not reported Facility: not reported Professionally led: not reported Adherence: all 17 patients completed the program 23 participants assigned to control group, including: • demonstration of shoulder ROM exercises and encouragement to continue with normal activities Contamination of control group: not reported
Outcomes	No primary outcome was identified. Outcomes included: • global QoL, assessed using the WHO QOL-BREF • fatigue, assessed using the BFI • ROM, assessed by a physical therapist • pain, assessed using a single-item VAS

Hwang 2008 *(Continued)*

	Outcomes were measured at baseline and 5 weeks: • exercise group: n = 17 at baseline, n = 5 weeks • control group: n = 20 at baseline, n = 5 weeks Subgroup analysis: none Adverse events: "No significant exercise-related adverse events such as lymphedema were reported"
Notes	Country: Korea Funding: none reported

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Generation of allocation sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	3 in control group lost to follow-up
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Jarden 2009

Study characteristics

Methods	Study design: RCT Number randomized: 42; 21 to the exercise group and 21 to the control group Study start and stop dates: April 2005 to November 2007 Length of intervention: length of hospitalization Length of follow-up: 6 months
Participants	Type cancer, n: hematologic malignancies

Jarden 2009 *(Continued)*

- exercise group: CML, 4; AML 9; acute lymphocytic (lymphoblastic) leukemia; 3; aplastic anemia, 3; myelodysplasia, 2; Waldenstrom macroglobulinemia, 0; paroxysmal nocturnal hemoglobinuria, 0; myelofibrosis, 1
- control group: CML, 5; AML 7; acute lymphocytic (lymphoblastic) leukemia; 5; aplastic anemia, 1; myelodysplasia, 1; Waldenstrom macroglobulinemia, 1; paroxysmal nocturnal hemoglobinuria, 1; myelofibrosis, 0

Time since cancer diagnosis: not reported

Time in active treatment: not reported

Inclusion criteria:

- 18 to 65 years old
- scheduled for a myeloablative allo-HSCT

Eligibility criteria related to interest or ability, or both, to exercise:

- none reported

Exclusion criteria:

- prior HSCT
- recent cardiovascular or pulmonary disease
- abnormal electrocardiogram
- psychiatric disorder
- motor, musculoskeletal, or neurologic dysfunction requiring walking aides
- bony metastasis

Gender, n (%):

- exercise group: male, 13 (61.9%); female, 8 (38.1%)
- control group: male, 13 (61.9%); female, 8 (38.1%)

Current age, mean (SD) years:

- exercise group: 40.9 (13.3) years
- control group: 37.4 (11.1) years

Age at cancer diagnosis: not reported

Ethnicity/race: not reported

Education level, university or secondary school, n (%):

- exercise group: 10 (47.6%)
- control group: 13 (61.9%)

SES: not reported

Employment status, full-time, employed, n (%):

- exercise group: 16 (76.2%)
- control group: 19 (90.5%)

Comorbidities: not reported

Past exercise history, baseline physical activity level I + II, n (%)

- exercise group: 15 (71.4%)
- control group: 14 (66.7%)

On hormone therapy: not reported

Jarden 2009 *(Continued)*

	BMI, mean (SD) • exercise group: 27.5 (5.5) • control group: 24.73 (5.2)

Interventions	21 participants assigned to the exercise intervention, including:
	• multimodal exercise program, including:
	  • stationary cycling, 15 to 30 minutes for 5 days per week
	  • dynamic and stretching exercises, 5 days per week
	  • resistance training, 3 days per week
	• progressive relaxation on 2 days per week
	• psychoeducation
	Type exercise (aerobic/anaerobic): aerobic and anaerobic
	Intensity of the experimental exercise intervention: not to exceed 75% of maximal HR
	Frequency: 5 days per week
	Duration of individual sessions: 1 hour ± 10 minutes
	Duration of exercise program: length of hospitalization
	Total number of exercise sessions: varied
	Format: individual
	Facility: hospital
	Professionally led by a research investigator
	Adherence: not reported
	21 participants assigned to control group, including:
	• usual care
	Contamination of control group: not reported

Outcomes	Primary outcome:
	• physical capacity, assessed by measuring the $VO_{2\ max}$
	Other outcomes included:
	• physiologic outcomes included:
	  • muscle strength
	  • functional performance
	• HRQoL outcomes included:
	  • global HRQoL measured using the EORTC QLQ-C30
	  • cancer–specific QoL and fatigue, assessed using the FACT-An
	  • anxiety, assessed using the HADS
	  • depression, assessed using the HADS
	Outcomes were measured at baseline, postintervention, 3 months, and 6 months:
	• exercise group: n = 21 at baseline, n = 17 post-intervention, n = 17 at 3 months, n = 13 at 6 months
	• control group: n = 21 at baseline, n = 17 at end of hospitalization, n = 13 at 3 months, n = 13 at 6 months
	Subgroup analysis: none

Jarden 2009 *(Continued)*

	Adverse events: • exercise group: 1 participant developed complications and 2 died • control group: 1 participant developed complications and 1 died
Notes	Country: Denmark Funding: The Lundbeck Foundation, The Novo Nordic Foundation, The Danish Cancer Society, The Copenhagen Hospital Corporation, The Danish Nursing Society

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"...using the computerized Clinical International Trial Management System"
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	Low risk	Used ITT with assumption that data were missing at random
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Lanctot 2010

Study characteristics

Methods	Study design: RCT Number randomized: 101; 58 to the exercise group and 43 to the control group Study start and stop dates: not reported Length of intervention: 8 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer, Stages I to III Time since cancer diagnosis: not reported Time in active treatment: not reported

Lanctot 2010 *(Continued)*

	Inclusion criteria: • undergoing chemotherapy Eligibility criteria related to interest or ability, or both, to exercise: • none reported Exclusion criteria: • none reported Gender: not reported Current age: not reported Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported
Interventions	58 participants assigned to the exercise intervention, including: • yoga postures, visualization, relaxation, meditation, breathing exercises. A video was given for daily home practice Type exercise (aerobic/anaerobic): unclear Intensity of the experimental exercise intervention: not reported Frequency: once per week Duration of individual sessions: 90 minutes Duration of exercise program: 8 weeks Total number of exercise sessions: 8 sessions Format: not reported Facility: facility and home Professionally led by yoga instructors accredited with the Bali method Adherence: not reported 43 participants assigned to control group, which was not described Contamination of control group: not reported
Outcomes	No primary outcome was identified. QoL outcomes included: • global QoL, assessed using the Quality of Life Systematic Inventory and subscales:

Lanctot 2010 *(Continued)*

- physical health
- cognitive functioning
- affective functioning
- leisure
- cancer module
- familial functioning
- marital life

- depression, assessed using the BDI

Outcomes were measured at baseline and at 8 weeks:

- exercise group: n = 41 at baseline and at 8 weeks
- control group: n = 32 at baseline and at 8 weeks

Subgroup analysis: none reported

Adverse events: not reported

Notes	Country: Canada Funding: none reported Published conference abstract

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Generation of allocation sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient details provided to determine whether there was any attrition
Selective reporting (reporting bias)	Unclear risk	Insufficient details provided to assess whether there was selective outcome reporting
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Moadel 2007

Study characteristics

Moadel 2007 *(Continued)*

Methods	Study design: RCT Number randomized: 164; 108 to a yoga exercise group and 56 to the control group Study start and stop dates: 2001 to 2005 Length of intervention: 12 weeks Length of follow-up: 1, 3, and 6 months
Participants	Type cancer: breast cancer, stage of disease: • exercise group: Stage I, 42%; Stage II, 36%; Stage III, 17%; Stage IV, 5% • control group: Stage I, 50%; Stage II, 38%; Stage III, 12%; Stage IV, 0% Time since cancer diagnosis, mean (SD, range) years: • exercise group: 1.15 (1.14, 0.06 to 4.06) years • control group: 0.98 (1.13, 0.03 to 4.70) years Time in active treatment: receiving chemotherapy, %: • exercise group: at baseline, 30%; at 3 months, 36% • control group: at baseline, 23%; at 3 months, 27% Randomization was stratified by treatment status Inclusion criteria: • ≥ 18 years old • new/recurrent breast cancer (Stages I to III) diagnosis within previous 5 years • high performance status (ECOG performance status of < 3) • ability to speak English or Spanish Eligibility criterion related to interest or ability, or both, to exercise: • not actively practicing yoga Exclusion criteria: none reported Gender: female Current age, mean (SD, range) years: • exercise group: 55.11 (10.07, 32 to 75) years • control group: 54.23 (9.81, 28 to 71) years Age at cancer diagnosis: not reported Ethnicity/race, %: • exercise group: African-American, 42%; Hispanic, 30%; non-Hispanic white, 22%; other, 6% • control group: African-American, 43%; Hispanic, 34%; non-Hispanic white, 23%; other, 0% Education level: • exercise group: high school, 69%; college/graduate, 31% • control group: high school, 89%; college/graduate, 11% SES: not reported Employment status: not reported Comorbidities: not reported

Moadel 2007 *(Continued)*

	Past exercise history: not reported On hormone therapy, %: • exercise group: at baseline, 24%; at 3 months, 36% • control group: at baseline, 41%; at 3 months, 50%
Interventions	108 participants assigned to exercise group, consisting of yoga with each session including: • physical stretches and poses • breathing exercises • meditation All exercises were done in a seated or reclined position Type exercise (aerobic/anaerobic): aerobic Intensity of experimental exercise intervention: mild Frequency: once per week, but participants were allowed to attend more than 1 session per week and asked to practice yoga at home Duration of sessions: 90 minutes Duration of program: 12 weeks Total number of exercise sessions: 12 sessions Facility: facility and home Professionally led: not reported 56 participants assigned to control group, including: • waiting list Adherence: 26 (31%) participants did not attend any classes, but 8 reported practicing yoga at home at least a few times per week. The mean number of classes attended by active class participants was 7.00 (SD 3.80) classes. Of 59 participants reporting data, 61% practiced yoga at home at least a few times per week Contamination of control group: not reported

Outcomes	No primary outcome was identified. QoL outcomes included:
	
	• global QoL, measured using the FACT-G and subscales of
	  * PWB
	  * functional well-being
	  * EWB
	  * SWB
	• fatigue, assessed using the FACIT-F
	• spiritual well-being, assessed using the FACIT-Sp
	• mood, assessed using subscales of the POMS
	
	Outcomes were measured at baseline and 12 weeks:
	
	• exercise group: n = 84 at baseline, n = 84 at 12 weeks
	• control group: n = 44 at baseline, n = 44 at 12 weeks
	
	Subgroup analysis: by treatment status
	
	Adverse events: none reported

Moadel 2007 *(Continued)*

Notes	Country: US Funding: National Cancer Institute, Langeloth Foundation

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Generation of allocation sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	Investigators stated that they used an "intention-to-treat approach" but it is unclear how the 24 drop-outs in the exercise arm and the 12 drop-outs in the control arm were handled
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Mock 1994

Study characteristics

Methods	Study design: RCT Number randomized: 14; 9 to the exercise group and 5 to the control group Study start and stop dates: not reported Length of intervention: duration of chemotherapy (4 to 6 months) Length of follow-up: 1 month postchemotherapy
Participants	Type cancer: breast cancer Time since cancer diagnosis: not reported Time in active treatment: enrolled prior to beginning chemotherapy Inclusion criteria: • age 30 to 69 years • able to understand English • accepted into a program of adjuvant cytotoxic chemotherapy

Mock 1994 *(Continued)*

- Stage I or II breast cancer

Eligibility criteria related to interest or ability, or both, to exercise:

- "Before entering the program, subjects were questioned about whether they engaged in a regular exercise program and were screened for health problems that would contraindicate beginning such a program"

Exclusion criteria:

- history of previous breast cancer
- concurrent major health problems (e.g. gross obesity, cardiovascular disease, respiratory disease, cognitive dysfunction)

Gender: female

Current age: mean (range), 44 (34 to 61) years

Age at cancer diagnosis: not reported

Ethnicity/race: 93% Caucasian, 7% Other

Education level: mean years of education, 16 years

SES: not reported

Employment status: 78% employed

Comorbidities: not reported

Past exercise history: not reported

On hormone therapy: not reported

Interventions	9 participants assigned to the exercise intervention, including: • progressive, regular program composed of a brisk, incremental 10- to 45-minute walk followed by 5 minutes of slow walking (cool down) • support group led by an oncology clinical nurse specialist: 90 minutes every 2 weeks for the duration of the chemotherapy treatments Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: not reported Frequency: 4 or 5 times per week Duration of individual sessions: 10 to 45 minutes and 5 minutes cool-down Duration of exercise program: 4 to 6 months Total number of exercise sessions: varied Format: individual Facility: home Not professionally led Adherence: "...not all equally successful in maintaining an active exercise program, but all exercised for a minimum of 30 minutes three or more times per week throughout the program" 5 participants assigned to control group, including: • usual care

Mock 1994 *(Continued)*

	Contamination of control group: "two did not exercise at all, and three exercised less than 30 minutes twice per week"

Outcomes	No primary outcome was identified. QoL outcomes included:
	• physical functioning, assessed using the Karnofsky Performance Status scale
	• psychosocial adjustment, assessed using
	  • Psychosocial Adjustment to Illness Scale
	  • Brief Symptom Inventory
	• self concept, assessed using the total score of the Tennessee Self-Concept Scale
	• body image, using
	  • Body Image VAS
	  • Physical Self Subscale of the Tennessee Self-Concept Scale
	• symptom intensity, assessed using Symptoms Assessment Scales
	Outcomes were measured at baseline, mid-treatment (about 3 months), and end of the intervention (about 6 months):
	• exercise group: n = 9 at baseline, n = 9 at 3 months, n = 9 at 6 months
	• control group: n = 5 at baseline n = 5 at 3 months, n = 5 at 6 months
	Subgroup analysis: none
	Adverse events: "No walkers suffered any known physical injury or bleeding episode related to the walking program"

Notes	Country: US Funding: American Cancer Society—Massachusetts Division, American Nurses Foundation, Massachusetts Nurses Foundation, Boston College

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	Low risk	All study participants were included in the analyses in the originally assigned treatment group
Selective reporting (reporting bias)	High risk	Only some of the symptoms from the SAS were included in the table; others were summarized only using generalities in the text "infrequently"

Mock 1994 *(Continued)*

Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Mock 1997

Study characteristics	
Methods	Study design: quasi-randomized controlled trial Number randomized: 50, numbers originally assigned to treatment groups not reported, but 22 reported assigned to the exercise group and 24 to the control group Study start and stop dates: not reported Length of intervention: about 6 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer, Stage I or II Time since cancer diagnosis: not reported Time in active treatment: received breast-conserving surgery; undergoing radiation therapy Inclusion criteria: • newly diagnosed Stage I or II breast cancer • received breast conserving surgery • undergoing radiation therapy • age 35 to 65 years Eligibility criteria related to interest or ability, or both, to exercise: • participating in a structured exercise program Exclusion criteria: • concurrent major health problems such as cardiovascular disease, acute or chronic respiratory disease • cognitive dysfunction Gender: female Current age, mean (SD) years: • exercise group: 48.09 (5.42) years • control group: 50.29 (8.47) years Age at cancer diagnosis: not reported Ethnicity/race, n (%): • exercise group: Caucasian, 18 (82%), African American, 4 (18%) • control group: Caucasian, 22 (92%), African American, 1 (4%), Hispanic, 1 (4%) Education level, mean (SD) years: • exercise group: 15.36 (2.72) years • control group: 14.96 (2.46) years SES: not reported

Mock 1997 *(Continued)*

	Employment status, n (%): • exercise group: full-time, 9 (41%), part-time, 9 (41%), unemployed, 4 (18%) • control group: full-time, 9 (38%), part-time, 6 (25%), unemployed, 9 (38%) Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported
Interventions	22 participants reported to be assigned to the exercise intervention, including: • self-paced progressive program "...a brisk incremental 20- to 30-minute walk, followed by 5 minutes of slow walking (cool down)" 4 or 5 times per week Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: not reported Frequency: 4 or 5 times per week Duration of individual sessions: 25 to 35 minutes Duration of exercise program: about 6 weeks Total number of exercise sessions: 24 to 30 sessions Format: individual Facility: home Not professionally led Adherence: 19/22 (86%) reported exercising ≥ 3 times per week for at least 30 minutes 24 participants reported to be assigned to control group, including: • usual care, with regular contact from study staff to inquire about health and general response to treatment Contamination of control group: "several control subjects were regular walkers at the time of study entry"
Outcomes	No primary outcome was identified. Outcomes included: • physical function, assessed using the 12-MWT • exercise level, assessed using the Exercise Rating Scale (frequency and length of time spent exercising) • symptom experience (pain, skin changes, nausea, vomiting, fatigue, diarrhea, difficulty sleeping, irritability, depression, mouth sores, anxiety, constipation, and satisfaction with body), assessed using the Symptom Assessment Scales • fatigue, assessed using PFS Outcomes were measured at baseline and end of intervention at 6 weeks. Symptom experience and fatigue were also assessed at 3 weeks. Numbers of participants with data at each time point not reported by treatment group, but implied to be 22 in exercise group and 24 in control group Subgroup analysis: none Adverse events: not reported
Notes	Country: US

Mock 1997 *(Continued)*

	Funding: Commonwealth of Massachusetts Department of Public Health Breast Cancer Researcher's Award; National Institute for Nursing Research Exploratory Center Award

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Random assignment of first participant and then alternating assignment
Allocation concealment (selection bias)	High risk	Alternation of treatment assignment
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	No ITT analyses were performed and no accounting of study participants who withdrew from study
Selective reporting (reporting bias)	Low risk	There is no evidence of selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Mock 2001

Study characteristics

Methods	Study design: RCT Number randomized: 52, numbers assigned to exercise or control group not reported Study start and stop dates: not reported Length of intervention: duration of treatment; 6 weeks for radiation therapy and 4 to 6 months for chemotherapy Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer Stage, %: Stage I, 54%; Stage II, 40%; Stage IIIa, 6% Time since cancer diagnosis: not reported Time in active treatment: In treatment Inclusion criteria: • recently treated for Stage I to IIIa breast cancer by definitive surgery • scheduled to receive outpatients adjuvant radiation (64%) or chemotherapy (36%)

Mock 2001 *(Continued)*

	Eligibility criteria related to interest or ability, or both, to exercise: • concurrent major health problem that would contraindicate an exercise program Exclusion criteria: • none reported Gender: female Current age: mean (range) years: 47.98 (28 to 75) years Age at cancer diagnosis: not reported Ethnicity/race, n (%): white, 43 (86%); African American, 6 (12%); Hispanic, 1 (2%) Education level, mean (range) years of education: 14.76 (8 to 20) years SES: not reported Employment status, n (%): full-time, 24 (48%); part-time, 9 (18%; unemployed, 17 (34%) Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported
Interventions	Number of participants assigned to the exercise intervention not reported. The exercise intervention included: • individualized walking program, with contact from clinic staff every 2 weeks to check on progress based on Levine conservation model Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: not reported Frequency: 5 or 6 sessions per week Duration of individual sessions: 10 to 15 minutes to start, advancing to 30 minutes Duration of exercise program: to end of therapy Total number of exercise sessions: varied Format: individual Facility: home Not professionally led Adherence: 33% did not maintain a minimum of 90 minutes/week in ≥ 3 daily sessions Number of participants assigned to control group not reported. The control intervention included: • usual care, with contact from study staff every 2 weeks for attention control Contamination of control group: 50% were actively exercising during the study period
Outcomes	No primary outcome was identified. QoL outcomes included: • fatigue, assessed using Modified PFS, including * overall fatigue and 4 fatigue dimensions: temporal, severity, affective, and sensory • physical function, assessed using

Mock 2001 *(Continued)*

- 12-MWT
- activity level rating scale
- MOS SF-36 physical function

- emotional distress, assessed using the Profile of Moods State questionnaire
- global HRQoL and QoL domains, assessed using the MOS SF-36 and following subscales
  - physical functioning
  - social functioning
  - role functioning physical limitations
  - role functioning-emotional limitations
  - bodily pain
  - general mental health
  - vitality
  - general health perceptions

Outcomes were measured at baseline and end of the intervention, but numbers by treatment group with data at each time point were not reported

Subgroup analysis: owing to poor adherence in the experimental group and high contamination in the control group, the analyses reported were not based on randomization but based on high-walkers versus low-walkers

Adverse events: none reported

Cost: Described as "low cost" but no data reported

Notes	Country: US Funding: Fatigue Initiative in Research, Education Grant from the Oncology Nursing Society Foundation through a donation from Ortho Biotech

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer generated
Allocation concealment (selection bias)	Unclear risk	Sealed envelopes
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	No ITT analyses were performed
Selective reporting (reporting bias)	Low risk	There is no evidence of selective reporting of outcomes

Mock 2001 *(Continued)*

Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Mock 2005

Study characteristics	
Methods	Study design: RCT Number randomized: 119; 60 to the exercise group and 59 to the control group Study start and stop dates: recruitment between 1998 and 2001 Length of intervention: for the duration of treatment, 6 weeks if radiation therapy or 3 to 6 months if chemotherapy Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer Stage, % • exercise group: Stage 0, 20%; Stage I, 45%; Stage II, 35%; Stage IIIa, 0% • control group: Stage 0, 27.2%; Stage I, 40.7%; Stage II, 25.4%; Stage IIIa, 6.7% Time since cancer diagnosis: not reported Time in active treatment: initiating adjuvant therapy Inclusion criteria: • 18 to 70 years old Eligibility criteria related to interest or ability, or both, to exercise: • concurrent major health problems that could affect participation in an exercise program, including obesity (BMI > 35 kg/m^2), cardiovascular disease, acute or chronic respiratory disease, cognitive dysfunction • engaged in active exercise (> 45 minutes per week) Exclusion criteria: • no additional exclusions Gender: female Current age, mean (SD) years: • exercise group: 51.3 (8.9) years • control group: 51.6 (9.7) years Age at cancer diagnosis: not reported Ethnicity/race, % Caucasian: • exercise group: 85.0% • control group: 79.3% Education level, years of education, mean (SD) years: • exercise group: 15.1 (2.8) years

Mock 2005 *(Continued)*

	• control group: 14.9 (2.7) years SES: not reported Employment status: 73% employed Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported Adjuvant treatment: radiation therapy, 58%; chemotherapy, 42%
Interventions	60 participants assigned to the exercise intervention, including: • walking briskly for 15 minutes and increasing to 30 minutes as training progressed Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: target HR range of ~ 50% to 70% of maximum HR Frequency: 5 or 6 times per week Duration of individual sessions: 45 minutes Duration of exercise program: 6 weeks for radiation or 3 to 6 months for chemotherapy Total number of exercise sessions: varied Format: individual Facility: home Not professionally led Adherence: defined as engaging in ≥ 60 minutes of aerobic activity for at least 67% of the duration of the trial: 39/54 (72%) adhered 59 participants assigned to control group, including: • usual care, with contact from the research team every 2 weeks for attention control Contamination of control group: defined as exceeding 45 minutes of aerobic activity weekly for 67% of the duration of the trial: 33/54 (61%) were not contaminated; 39% were contaminated

Outcomes	Primary outcome:
	
	• fatigue, assessed using the PFS
	
	Other outcomes included
	
	• physical function, assessed using
	  • 12-MWT
	  • SF-36 Physical Function Scale
	  • Physical Activity Questionnaire
	
	Outcomes were measured at baseline and end of the intervention:
	
	• exercise group: n = 54 at baseline, n = 54 at end of the intervention
	• control group: n = 54 at baseline n = 54 at end of the intervention
	
	Subgroup analysis: high walkers (>60 minutes per week in ≥ 3 sessions) versus low walkers (< 60 minutes per week or not at all)

Mock 2005 *(Continued)*

	Adverse events: not reported
Notes	Country: US Funding: Fatigue Initiative in Research and Education multi-institutional award from the Oncology Nursing Society Foundation

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer generated
Allocation concealment (selection bias)	Low risk	Number sealed opaque envelopes
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	No ITT analyses were performed and 6 participants withdrew from the exercise group and 5 form the control group
Selective reporting (reporting bias)	Low risk	There is no evidence of selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Monga 2007

Study characteristics

Methods	Study design: RCT Number randomized: 30; not clear how many originally randomized to the exercise or control groups Study start and stop dates: not reported Length of intervention: 8 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: prostate cancer Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria:

Monga 2007 *(Continued)*

- first time cancer diagnosis
- ambulatory
- able to complete self-report measures,

Eligibility criteria related to interest or ability, or both, to exercise:

- inability to exercise

Exclusion criteria:

- concurrently receiving chemotherapy
- major health problems (uncontrolled hypertension, i.e. seated systolic blood pressure > 160 mmHg or seated diastolic blood pressure > 90 mmHg, uncontrolled insulin-dependent diabetes mellitus, severe arthritis, and obvious cognitive dysfunction)
- recent history of sudden onset of shortness of breath on exertion or a recent history of dizziness, blurred vision, or fainting spells
- recent history of unstable angina, coronary artery disease, myocardial infarction, or cardiac failure
- bone, back, or neck pain of recent origin

Gender: male

Current age, mean (SD, range) years:

- exercise group: 68.0 (4.2, 62 to 77) years
- control group: 70.6 (5.3, 64 to 80) years

Age at cancer diagnosis: not reported

Ethnicity/race: n, (%)

- exercise group: white, 3 (27%); black, 7 (64%); Hispanic, 1(9%)
- control group: white, 4 (40%); black, 5 (50%); Hispanic, 1 (10%)

Education level, years education, mean (SD) years:

- exercise group: 12.4 (3.3) years
- control group: 11.6 (2.8) years

SES: not reported

Employment status: not reported

Comorbidities, n (%):

- exercise group: hypertension, 5 (45%); diabetes mellitus, 3 (27%); cardiovascular disease, 2 (18%); chronic obstructive pulmonary disease, 2 (11%)
- control group: hypertension, 3 (30%); diabetes mellitus, 3 (30%); cardiovascular disease, 2 (20%); chronic obstructive pulmonary disease, 1 (10%)

Past exercise history: not reported

On hormone therapy: not reported

Weight, mean (SD) lb:

- exercise group: 177.3 (29.1) lb
- control group: 80.1 (28.8) lb

Interventions	11 participants assigned to the exercise intervention had data (unclear how many originally assigned to exercise group), including: • 10-minute warm-up, a 30-minute aerobic segment consisting of walking on a treadmill, and a 5-to 10-minute cool down period

Monga 2007 *(Continued)*

	Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: not reported, instructed to maintain target HR Frequency: 3 times per week Duration of individual sessions: 50 minutes Duration of exercise program: 8 weeks Total number of exercise sessions: 24 sessions Format: unclear Facility: facility Professionally led by a staff kinesiotherapist and supervised by a physician Adherence: not reported 10 participants assigned to control group with data (unclear how many originally assigned to control group), including: • standard care Contamination of control group: not reported
Outcomes	No primary outcome was identified. Outcomes included: • cardiovascular fitness assessed using the modified Bruce treadmill test • flexibility, assessed using the modified sit-and-reach test • strength, assessed by measuring the time it takes to stand up and sit down 5 times from an armless chair • fatigue, assessed using the PFS • global HRQoL, assessed by using the FACT-P and the FACT-G questionnaire • depression, assessed using the BDI Outcomes were measured at baseline and end of the intervention at 8 weeks: • exercise group: n = 11 at baseline, n = 11 at 8 weeks • control group: n = 10 at baseline n = 10 at 8 weeks Subgroup analysis: none Adverse events: none reported
Notes	Country: US Funding: none reported

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias)	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants

Monga 2007 *(Continued)*
All outcomes

Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	9 participants withdrew, but data not provided on these 9 participants
Selective reporting (reporting bias)	Low risk	There is no evidence of selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Moros 2010

Study characteristics	
Methods	Study design: RCT Number randomized: 22; 11 to the exercise group and 11 to the control group Study start and stop dates: not reported Length of intervention: 18 to 22 weeks Length of follow-up: 10 to 15 days after end of the intervention
Participants	Type cancer: breast cancer, Stages I to III Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • postsurgery • scheduled to receive chemotherapy Eligibility criteria related to interest or ability, or both, to exercise: • did not regularly exercise • could not exercise Exclusion criteria: • < 65 years old • presence of comorbidities, including diabetes, cardiovascular disease, osteoarticular disease Gender: female Current age: age range 38 to 64 years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported

Moros 2010 *(Continued)*

	SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported
Interventions	11 participants assigned to the exercise intervention, including: • "dynamic aerobic exercise" adapted individually Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: 60% to 70% of determined cardiac HR Frequency: 3 times per week Duration of individual sessions: 60 minutes Duration of exercise program: 18 to 22 weeks Total number of exercise sessions: maximum of 66 sessions Format: individual Facility: facility Professionally led by investigators Adherence: 10 participants adhered > 80% 11 participants assigned to control group, including: • usual care Contamination of control group: not reported
Outcomes	Outcomes included: • functional capacity, assessed using the Karnofsky Scale • psychological status, assessed using the General Health Questionnaire • global HRQoL, measured using the QLQ-C30 Outcomes were measured at baseline and postintervention (about 3 months): • exercise group: n = 10 at baseline, n = 10 at postintervention • control group: n = 7 at baseline n = 7 at postintervention Subgroup analysis: none Adverse events: not reported
Notes	Country: Spain Funding: none reported

Risk of bias

Bias	Authors' judgement	Support for judgement

Moros 2010 *(Continued)*

Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	1 participant withdrew from the exercise group and 4 from the control group and were not included in the analyses
Selective reporting (reporting bias)	Low risk	There is no evidence of selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Mustian 2009

Study characteristics	
Methods	Study design: RCT Number randomized: 40; 20 to the exercise group and 20 to the control group Study start and stop dates: August 2004 to December 2006 Length of intervention: 4 weeks Length of follow-up: 3 months
Participants	Type cancer: breast cancer and prostate cancer Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • primary diagnosis of breast or prostate cancer • completion of enrolment and baseline assessments before the end of the first calendar week of radiation treatments • at least 30 scheduled radiation treatments (6 weeks) Eligibility criteria related to interest or ability, or both, to exercise: • sedentary lifestyle • no contraindications prohibiting participation in a low- to moderate-intensity walking or resistance exercise program or physical fitness testing, as assessed by patients' radiation oncologist (or physician designee)

Mustian 2009 *(Continued)*

Exclusion criteria:

- distant metastases
- recurrent disease

Gender, n (%):

- exercise group: male, 6 (32%), female, 13 (68%)
- control group: male, 5 (26%), female, 14 (74%)

Current age, mean (SD, range) years:

- exercise group: 56.6 (13.7, 36 to 82) years
- control group: 63.3 (9.4, 48 to 78) years

Age at cancer diagnosis: not reported

Ethnicity/race, n (%):

- exercise group: white, 16 (84%); Asian, 2 (11%); black, 1 (5%)
- control group: white, 18 (95%); Asian, 0 (0%); black, 1 (5%)

Education level; partial college education or greater, n (%):

- exercise group: 16 (84%)
- control group: 12 (63%)

SES: not reported

Employment status, currently employed, n (%):

- exercise group: 17 (90%)
- control group: 12 (63%)

Comorbidities: not reported

Past exercise history: all were "sedentary"

On hormone therapy, n (%):

- exercise group: 1 (5%)
- control group: 2 (10%)

Weight, mean (SD, range) lbs:

- exercise group: 173.7 (46.8, 109 to 256) lb
- control group: 188.3 (43.9, 130 to 264) lb

BMI, mean (SD, range)

- exercise group: 28.7 (5.4, 21 to 39)
- control group: 31.3 (6.8, 20 to 42)

Interventions	20 participants assigned to the exercise intervention, including: • aerobic and anaerobic program provided as a single, 45-minute, instructional session and a prepackaged individual "exercise kit" with written instructions and materials necessary for the patient to complete the home-based walking and resistance band exercise intervention • the individually tailored aerobic component included a walking program • the individually tailored resistance band exercise prescription included individually determined number of sets (1 set = 8 to 15 repetitions) for each of the 11 exercises (i.e. bicep curl, tricep extension, overhead press, rows, chest press, internal and external rotation, lateral and front raises, horizontal

Mustian 2009 *(Continued)*

	adduction, and abduction) with instructions to increase resistance to a maximum of 4 sets of 15 repetitions for each exercise daily Type exercise (aerobic/anaerobic): aerobic and anaerobic Intensity of the experimental exercise intervention: • aerobic: moderately intense aerobic exercise (60% to 70% of HR reserve, 3 to 5 exercise rating of perceived exertion on the AC SM revised rating scale) • anaerobic: low to moderately intense progressive resistance exercise (3 to 5 exercise rating of perceived exertion on the AC SM revised rating scale) Frequency: 7 times per week Duration of individual sessions: not reported Duration of exercise program: 4 weeks Total number of exercise sessions: 28 sessions Format: individual Facility: facility and home Professionally led by a certified exercise scientist Adherence: 15/19 reported increased daily steps walked; 12/19 reported doing resistance training at the end of the intervention; 8/19 maintained resistance training through 3-month follow-up. Change in number of steps from baseline to 4 weeks, 3997 (5959) and at 3 months, 5792 (7094.6); change in minutes daily resistance at 4 weeks, 9.43 (11.44), at 6 weeks and at 3 months 6.81 (9.94); change in days/week resistance at 4 weeks, 3.05 (2.99) and at 3 months, 1.33 (2.52) 20 participants assigned to control group, including: • usual care Contamination of control group: 1/19 reported resistance training at 3-month follow-up. Change in number of steps from baseline to 4 weeks, -572.3 (2139.1) and at 3 months, -64.4 (2756.4); change in minutes daily resistance at 4 weeks, -1.57 (4.73), at 6 weeks and at 3 months, -1.03 (6.06); change in days/week resistance at 4 weeks, -0.21 (0.63) and 3 months, -0.12 (0.86)
Outcomes	No primary outcome was identified. QoL outcomes included: • fatigue, assessed using the BFI • global QoL and fatigue, assessed using the FACIT-F Non-HRQoL outcomes included: • 6-MWT • handgrip dynamometry • bioelectrical impedance Outcomes were measured at baseline, 4 weeks, and 3 months: • exercise group: n = 19 at baseline, n = 19 at 4 weeks, n = 19 at 3 months • control group: n = 19 at baseline, n = 19 at 4 weeks, n = 19 at 3 months Subgroup analysis: none Adverse events: none reported
Notes	Country: US Funding: National Cancer Institute

Mustian 2009 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"using a randomization scheme with blocks of four"
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	The study appears to have been blinded at baseline, but it is not clear if it was at follow-up, "A clinical research coordinator obtained patient consent and collected all the self-report assessments (e.g. BFI) while a second coordinator with a Master's in Exercise Science performed the objective tests (e.g. 6-minute walk, handgrip dynamometer) and explained the home-based exercise program to participants." The study statistician and data managers remained blinded at all times
Incomplete outcome data (attrition bias) All outcomes	Low risk	"Data were analyzed on an "intent-to-treat" basis, with patients being analyzed in the group to which they were assigned." 1 participant from each group withdrew before any measures were made
Selective reporting (reporting bias)	Low risk	There is no evidence of selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Mutrie 2007

Study characteristics

Methods	Study design: RCT Number randomized: 203; 101 to the exercise group and 102 to the control group Study start and stop dates: January 2004 to January 2005 Length of intervention: 12 weeks Length of follow-up: 6 months
Participants	Type cancer: breast cancer Stage, n (%): • exercise group: Stage I, 17 (17.2%); Stage II, 74 (74.7%); Stage III, 8 (8.1%) • control group: Stage I, 16 (15.7%); Stage II, 77 (75.5%); Stage III, 9 (8.8%) Time since cancer diagnosis, mean (SD) days: • exercise group: 162.2 (78.0) days • control group: 161.9 (69.8) days

Mutrie 2007 *(Continued)*

	Time in active treatment: not reported Inclusion criteria: • Stage 0 to III breast cancer Eligibility criteria related to interest or ability, or both, to exercise: • regular exercise Exclusion criteria: • concurrent unstable cardiac, hypertensive, or respiratory disease • cognitive dysfunction Gender: female Current age, mean (SD) years: • exercise group: 51.3 (10.3) years • control group: 51.8 (8.7) years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status; n (%): • exercise group: employed full/part time, 16 (16.2%); sick, 49 (49.5%); housewife, 14 (14.1%); retired, 20 (20.2%) • control group: employed full/part time, 13 (12.7%); sick, 62 (60.8%); housewife, 12 (11.8%); retired, 15 (14.7%) Comorbidities: not reported Past exercise history: not reported On hormone therapy: not reported Weight, mean (SD) kg: • exercise group: 70.2 (12.5) kg • control group: 71.5 (16.4) kg BMI, mean (SD) • exercise group: 27.3 (5.2) • control group: 27.5 (6.0)
Interventions	101 participants assigned to the exercise intervention, including: • program based on guidelines for prescription of exercise for cancer patients and survivors. The classes consisted of a warm-up of 5 to 10 minutes, 20 minutes of exercise (e.g. walking, cycling, low level aerobics, muscle strengthening exercises, or circuits of specifically tailored exercises), and a cool-down and relaxation period • usual care from the healthcare team • support in form of group discussions following exercise session in which a specific theme was covered Type exercise (aerobic/anaerobic): aerobic

Mutrie 2007 *(Continued)*

	Intensity of the experimental exercise intervention: moderate; 50% to 75% of age adjusted maximum HR Frequency: 3 times per week Duration of individual sessions: 45 minutes Duration of exercise program: 12 weeks Total number of exercise sessions: 36 sessions Format: 2 group and 1 individual session per week Facility: group session were facility based and individual session home based Professionally led by trained exercise specialists Adherence: not reported 102 participants assigned to control group, including: • usual care from the healthcare team Contamination of control group: not reported
Outcomes	Primary outcomes included: • QoL as assessed by the FACT-G questionnaire Other outcomes included: • depression, assessed using the BDI • emotional state, assessed using the PANAS • BMI • 7-day recall of physical activity, measured using the SPAQ • performance in a 12-MWT • score on a shoulder mobility test Outcomes were measured at baseline, at end of the intervention (12 weeks), and 6 months: • exercise group: n = 99 at baseline, n = 82 at 12 weeks, n = 82 at 6 months • control group: n = 102 at baseline, n = 92 at 12 weeks, n = 95 at 6 months Subgroup analysis: none Adverse events: none reported
Notes	Country: UK Funding: Cancer Research UK, UK Medical Research Council

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"The randomisation was stratified by hospital and treatment at baseline (chemotherapy, radiotherapy, or combination) and used randomised permuted blocks of length four and six (that is, for sequences of four or six women in each hospital-treatment combination, exactly half were allocated to each group)"

Mutrie 2007 *(Continued)*

Allocation concealment (selection bias)	Low risk	"Randomisation was done by telephone to an interactive voice response system"
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	"We took steps to blind the evaluation of outcomes by having questionnaire responses in sealed envelopes and ensuring that outcome measures were taken by researchers who were not involved in exercise classes"
Incomplete outcome data (attrition bias) All outcomes	High risk	"We did the analysis on an intention-to-treat basis, in the sense that we took no account of adherence to the intervention. We used all available data." However, 19 participants were not included in the analyses at the 12 weeks, including 12 lost to follow-up (including 2 excluded from the analyses since they were taking tamoxifen) and 7 not assessed. In the control group, 3 participants were lost to follow-up and 7 not assessed. At the 6-month time period, 7 were not assessed in the exercise group and 4 in the control group
Selective reporting (reporting bias)	Low risk	There is no evidence of selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Oh 2008

Study characteristics	
Methods	Study design: RCT Number randomized: 30; 15 to the exercise group and 15 to the control group Study start and stop dates: recruitment took place from July 2006 to August 2006 Length of intervention: 8 weeks Length of follow-up: to end of the intervention
Participants	Type cancer, n: • exercise group: breast, 6; ovary, 4; lymphoma, 1; lung, 1; colon, 0; others, 3 • control group: breast, 6; ovary, 2; lymphoma, 1; lung, 1; colon, 3; others, 2 Time since cancer diagnosis: not reported Time in active treatment: some patients still undergoing chemotherapy; randomization stratified by whether still being treated or completed therapy Inclusion criteria: • confirmed diagnosis of cancer at any stage • ≥ 18 years old • ECOG performance status of 0 to 3 • expected survival length of > 12 months • ability to complete all study questionnaires and sign the consent form

Oh 2008 *(Continued)*

	Eligibility criterion related to interest or ability, or both, to exercise: • medical contraindication for exercise (e.g. significant orthopedic problem or cardiovascular disease) • already practicing Qigong Exclusion criteria: • diagnosis of other major medical or psychiatric disorder • history of epilepsy, brain metastasis, delirium, or dementia Gender, n:· • exercise group: male, 3; female, 12 • control group: male, 3; female, 12 Age group, n: • exercise group: 36 to 45 years, 2; 46 to 55 years, 4; 56 to 65 years, 3; 66 to 75 years, 6 • control group: 36 to 45 years, 2; 46 to 55 years, 3; 56 to 65 years, 9; 66 to 75 years, 1 Age at cancer diagnosis: not reported Ethnicity, n: • exercise group: Caucasian, 11; Asian, 3; Indigenous Australian, 1 • control group: Caucasian, 14; Asian, 0; Indigenous Australian, 1 Education level, n: • exercise group: primary, 1; secondary, 5; tertiary, 9 • control group: primary, 1; secondary, 4; tertiary, 10 SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: limited by eligibility criteria On hormone therapy: not reported
Interventions	15 participants assigned to exercise group, consisting of medical Qigong, with each session including: • 15 minutes of general discussion • 30 minutes of gentle stretching and body movement in standing postures • 15 minutes movement in seated posture, and • 30 minutes of breathing exercise Type exercise (aerobic/anaerobic): aerobic Intensity of experimental exercise intervention: mild Frequency: once or twice per week for 8 weeks and recommendation to practice at home daily Duration of sessions: 90 minutes, 1 hour for home sessions Duration of program: 8 weeks Total number of exercise sessions: maximum of 16 facility-based and 56 home-based sessions Facility: facility Professionally led: experienced medical Qigong instructor who was a Chinese medicine practitioner

Oh 2008 *(Continued)*

	15 participants assigned to control group, including: • usual care Adherence: not reported Contamination of control group: not reported

Outcomes	Primary outcomes, QoL and symptom experience, included:
	• global QoL, measured using EORTC Core QLQ-C30, and subscales of
	  * physical function
	  * role function
	  * emotional function
	  * cognition function
	  * social function
	  * fatigue
	  * nausea
	  * pain
	  * dyspnea
	  * insomnia
	  * appetite
	  * constipation
	  * diarrhea
	  * perceived financial impact of the disease
	Physiologic outcomes included:
	• CRP
	Outcomes were measured at baseline and 8 weeks:
	• exercise group: n = 15 at baseline, n = 8 at 8 weeks
	• control group: n = 15 at baseline, n = 10 at 8 weeks
	Subgroup analysis: none reported
	Adverse events: none reported

Notes	Country: Australia Funding: University of Sydney Cancer Research Fund

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Randomization was done by a computer program"
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants

Oh 2008 *(Continued)*

Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	ITT analysis not completed. Of 15 randomized participants in each treatment group, 7 withdrew from the exercise group and 5 from the control group...
Selective reporting (reporting bias)	Low risk	There is no evidence of selective reporting of outcomes
Other bias	High risk	Small sample size can put study at risk of bias

Oh 2010

Study characteristics	
Methods	Study design: RCT Number randomized: 162; 79 to the exercise group and 83 to the control group Study start and stop dates: first recruitment phase was between July 2006 and August 2007 and the second recruitment phase was from August 2007 to May 2008 Length of intervention: 10 weeks Length of follow-up: to end of the intervention
Participants	Type cancer, n (%): • exercise group: breast, 26 (37.7%); lung, 6 (8.7%); prostate, 8 (11.6%); colorectal/bowel, 8 (11.6%); others, 23 (33.3%) • control group: breast, 21 (30.9%); lung, 3 (4.4%); prostate, 4 (5.9%); colorectal/bowel, 8 (11.8%); others, 32 (47.1%) Time since cancer diagnosis: not reported Time in active treatment: 36 (47.4%) of patients in the intervention group still undergoing cancer treatment and 34 (45.9%) in the control group; randomization stratified by whether still being treated or completed therapy Inclusion criteria: • confirmed diagnosis of malignancy at any stage • ≥ 18 years old • expected survival length of > 12 months Eligibility criterion related to interest or ability, or both, to exercise: • medical contraindication for exercise (e.g. significant orthopedic problem or cardiovascular disease) • already practicing Qigong Exclusion criteria: • diagnosis of other major medical or psychiatric disorder • history of epilepsy, brain metastasis, delirium, or dementia Gender, n (%):·

Oh 2010 *(Continued)*

- exercise group: male, 31 (39.2%); female, 48 (60.8%)
- control group: male, 38 (45.8); female, 45 (54.2%)

Age, mean (SD) years:

- exercise group: 60.1 (11.7) years
- control group: 59.9 (11.3) years

Age at cancer diagnosis: not reported

Ethnicity, n (%):

- exercise group: Caucasian, 57 (77.0%); Asian, 10 (13.5%); Indigenous Australian, 1 (1.4%); other, 6 (8.1%)
- control group: Caucasian, 49 (64.5%); Asian, 17 (22.4%); Indigenous Australian, 1 (1.3%); other, 9 (11.8%)

Education level, n (%):

- exercise group: primary, 1 (1.3%); secondary, 35 (45.5%); undergraduate, 19 (24.7%); postgraduate, 22 (28.6%)
- control group: primary, 7 (9.2%); secondary, 34 (44.7%); undergraduate, 19 (25.0%); postgraduate, 16 (21.1%)

SES: not reported

Employment status: not reported

Comorbidities: not reported

Past exercise history: limited by eligibility criteria

On hormone therapy: not reported

Interventions	79 participants assigned to exercise group, consisting of medical Qigong, with each session including: • 15 minutes of general discussion • 30 minutes of gentle stretching and body movement in standing postures • 15 minutes movement in seated posture, and • 30 minutes meditation and including breathing exercises Type exercise (aerobic/anaerobic): aerobic Intensity of experimental exercise intervention: mild Frequency: twice per week for 10 weeks and recommendation to practice at home daily Duration of sessions: 90 minutes for supervised sessions, 30 minutes for home sessions Duration of program: 10 weeks Total number of exercise sessions: maximum of 20 facility-based and 70 home-based sessions Facility: facility Professionally led: experienced medical Qigong instructor who was a Chinese medicine practitioner 83 participants assigned to control group, including: • usual care Adherence: not reported Contamination of control group: not reported

Oh 2010 *(Continued)*

Outcomes	Primary outcome of QoL included:
	• QoL, measured using the FACT-G, and subscales of:
	  * PWB
	  * SWB
	  * EWB
	  * functional well-being
	Secondary outcomes included:
	• fatigue, measured using the FACT-F scale
	• mood, measured using the Profile of Mood State and subscales of:
	  * tension and anxiety
	  * depression
	  * anger and hostility
	  * lack of vigor
	  * fatigue
	  * confusion
	Physiologic outcomes included:
	• CRP
	Outcomes were measured at baseline and 10 weeks:
	• exercise group: n = 79 at baseline, n = 54 at 10 weeks
	• control group: n = 83 at baseline, n = 54 at 10 weeks
	Subset: cognitive function outcomes were reported for a subset of patients enrolled after October 2007, including:
	• EORTC QLQ-C30 cognitive subscale
	• FACT-Cog subscales of:
	  * perceived cognitive impairment
	  * perceived cognitive abilities
	  * impact of cognitive impairments on QoL
	For this group, outcomes were measured at baseline and 10 weeks:
	• exercise group: n = 37 at baseline, n = 23 at 10 weeks
	• control group: n = 44 at baseline, n = 31 at 10 weeks
	Subgroup analysis: none reported
	Adverse events: none reported

Notes	Country: Australia Funding: University of Sydney Cancer Research Fund

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Randomization, by computer..."
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described

Oh 2010 *(Continued)*

Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	Low risk	ITT analysis completed. There were 25 drop-outs in the exercise group and 29 drop-outs in the control group, and missing values were "dealt with by multiple imputation..."
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Raghavendra 2007

Study characteristics	
Methods	Study design: RCT Number randomized: 98; 45 to the exercise group and 53 to the control group, but this substudy only included 65 participants who began chemotherapy, 31 to the exercise group, and 34 to the control group Study start and stop dates: participants were recruited between January 2000 and June 2002 Length of intervention: varied, based on the number (4 to 8) of adjuvant chemotherapy cycles prescribed following surgery Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer Stage, n (%): • exercise group: Stage II, 16 (57.1%); Stage III, 12 (42.9%) • control group: Stage II, 14 (41.1%); Stage III, 20 (58.8%) Time since cancer diagnosis: not reported Time in active treatment; number of chemotherapy cycles, n (%): • exercise group: 6 cycles, 22 (78.6%); 8 cycles, 3 (10.7%); 4 cycles, 3 (10.7%) • control group: 6 cycles, 27 (79.4%); 8 cycles, 4 (11.8%); 4 cycles, 3 (8.8%) Inclusion criteria: • recently diagnosed operable breast cancer • 30 to 70 years old • Zubrod's performance status 0 to 2 (ambulatory > 50% of time) • high-school education • having a treatment plan with surgery followed by adjuvant chemotherapy or by both adjuvant radiation therapy and chemotherapy

Raghavendra 2007 *(Continued)*

- consenting to participate in the trial

Eligibility criteria related to interest or ability, or both, to exercise:

- none

Exclusion criteria:

- any concurrent medical condition that was likely to interfere with the treatment
- major psychiatric, neurologic illness, or autoimmune disorders
- any known metastases
- history of intestinal obstruction
- sensitivity to any class of antiemetics (such as $5HT_3$ receptor antagonists or dopamine antagonists) and corticosteroids (such as dexamethasone)

Gender: female

Current age: not reported

Age at cancer diagnosis: not reported

Ethnicity/race: not reported

Education level, mean (SD) years of education:

- exercise group: 10.4 (5) years
- control group: 13.5 (3) years

SES: not reported

Employment status: not reported

Comorbidities: not reported

Past exercise history: not reported

On hormone therapy: not reported

Interventions	28 participants assigned to the exercise intervention, including:
	• an integrated yoga program tailored to the participant's need during chemotherapy, consisting of a set of *asanas* (postures done with awareness) breathing exercises, meditation, and yogic relaxation techniques
	  • during chemotherapy infusion, the exercise program consisted of yogic relaxation, meditation using breath awareness, and impulses of touch emanating from palms and fingers, or chanting a mantra
	  • the home sessions consisted of yoga postures, breathing exercises and *pranayama*, and yogic relaxation
	Type exercise (aerobic/anaerobic): aerobic
	Intensity of the experimental exercise intervention: not reported
	Frequency: 6 days per week at home
	Duration of individual sessions: 1 hour per day at home
	Duration of exercise program: varied
	Total number of exercise sessions: unclear
	Format: individual
	Facility: clinic and home based

Raghavendra 2007 *(Continued)*

	Professionally led by a yoga expert in the clinic Adherence: not reported 34 participants assigned to control group, including: • psychodynamic supportive-expressive therapy with coping preparation Originally 53 participants assigned, but only 34 were eligible for this substudy Contamination of control group: not reported
Outcomes	Primary outcomes included: • nausea and vomiting, assessed as frequency and intensity of both postchemotherapy and anticipatory nausea and vomiting using the MANE questionnaire Other outcomes included: • anxiety state and trait, assessed using the STAI • depression, assessed using the BDI • global HRQoL, assessed using the FLIC • subjective symptoms, assessed using a subjective symptom checklist to measure treatment-related side effects, problems with sexuality and image, and relevant psychological and somatic symptoms • treatment-related toxicity and side effects, assessed using the WHO Toxicity Criteria during chemotherapy Outcomes were measured at baseline (before starting chemotherapy), mid-cycle, and at the end of chemotherapy: • exercise group: n = 28 before starting the first chemotherapy infusion cycle, n = 28 during the mid-chemotherapy infusion cycle, n = 28 after completion of the chemotherapy infusion cycle • control group: n = 34 before starting the first chemotherapy infusion cycle, n = 34 during the mid-chemotherapy infusion cycle, n = 34 after completion of the chemotherapy infusion cycle Subgroup analysis: none Adverse events: not reported
Notes	Country: India Funding: Central Council for Research in Yoga and Naturopathy, Ministry of Health and Family Welfare, Government of India

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Allocation sequence was generated using random numbers generated by a random number table
Allocation concealment (selection bias)	Low risk	Treatment assigned was concealed from study personnel using opaque envelopes, which were opened sequentially in the order of assignment during recruitment, with the names and registration numbers of the participants written on the covers
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants

Raghavendra 2007 *(Continued)*

Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	Analyses were not conducted on an ITT basis and the treatment of missing data was not described Although no study participants were excluded after the substudy began, it is unclear whether additional study participants could have been included in the substudy
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	High risk	The study was completed on a subgroup of the originally randomized study participants. Because a significant proportion of the originally randomized study participants were not included in the substudy, it is unclear if the selection bias prevented by randomization was maintained

Rogers 2009

Study characteristics	
Methods	Study design: RCT Number randomized: 41; 21 to the exercise group and 20 to the control group Study start and stop dates: recruitment from April 2006 to May 2007 Length of intervention: 12 weeks Length of follow-up: 3 months after end of the intervention
Participants	Type cancer: breast cancer Cancer stage, Stage I to III, n (%): • exercise group: Stage I, 6 (29%); Stage II, 11 (52%); Stage III, 4 (19%) • control group: Stage I, 6 (30%); Stage II, 10 (50%); Stage III, 4 (20%) Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • female • 18 to 70 year old • history of Stage I, II, or IIIA breast cancer • English speaking • currently taking an aromatase inhibitor or estrogen receptor modulator • medical clearance provided by physician • At least 8 weeks postsurgery Eligibility criterion related to interest or ability, or both, to exercise: • engaging in ≥ 60 minutes of vigorous physical activity or ≥ 150 minutes of moderate plus vigorous activity per week during the past month based on self-report

Rogers 2009 *(Continued)*

Exclusion criteria:

- dementia or organic brain syndrome
- medical, psychological, or social characteristic that would interfere with the ability to fully participate in program activities and assessments
- contraindication to participate in a regular physical activity program (e.g. unstable angina, debilitating arthritis pain)
- inability to ambulate
- plans to relocate outside the study area during the study period
- breast cancer recurrence or metastasis.

Gender: female

Current age, mean (SD) years:

- exercise group: 52 (15) years
- control group: 54 (8) years

Age at cancer diagnosis: not reported

Ethnicity/race, n (%):

- exercise group: white, 19 (90%); other, 2 (10%)
- control group: white, 19 (95%); other, 1 (5%)

Education level, mean (SD) years:

- exercise group: 15 (2) years
- control group: 15 (2) years

SES household income, n (%):

- exercise group: < USD10,000, 1 (5%); USD10,000 to USD35,000, 7 (33%); USD35,000 to USD50,000, 3 (14%); > USD50,000, 10 (48%)
- control group: < USD10,000, 1 (5%); USD10,000 to USD35,000, 0 (0%); USD35,000 to USD50,000, 5 (25%); > USD50,000, 14 (70%)

Employment status: not reported

Comorbidities:

- exercise group: comorbidity score on a scale from 0 to 5: 2 (1.4)
- control group: comorbidity score on a scale from 0 to 5: 2 (1.6)

Past exercise history: not reported

On hormone therapy:

- exercise group: months on hormonal therapy, mean (SD) months, 15 (15) months; estrogen receptor modulator, n (%), 7 (33%); aromatase inhibitor, n (%), 14 (67%)
- control group: months on hormonal therapy, mean (SD) months, 22 (18) months; estrogen receptor modulator, n (%), 4 (20%); aromatase inhibitor, n (%), 16 (80%)

Interventions	21 participants assigned to the exercise group, including: • 6 discussion group sessions with a clinical psychologist at baseline, and weeks 1, 2, 4, 6, and 8 • 6 supervised exercise programs (walking), 3 per week during weeks 1 and 2, 2 per week during weeks 3 and 4, and 1 per week during weeks 5 and 6 • 40 home-based exercise (walking), 2 per week during weeks 3 and 4, 3 per week during weeks 5 and 6, 5 per week during weeks 7 through 12 • 3 individual update counseling sessions with an exercise specialist during week 8, 10, and 12

Rogers 2009 *(Continued)*

	Type exercise (aerobic/anaerobic): aerobic Intensity of experimental exercise intervention: transition from baseline to week 12 to 150 minutes of moderate-intensity activity Frequency: gradually increased from 3 times per week to 5 times per week Duration of sessions: not reported Duration of program: 12 weeks Total number of exercise sessions: 52 sessions Format: individual exercise; group peer support Facility: facility and home Professionally led: exercise specialists certified (or certification-eligible) by the American College of Sports Medicine Adherence: participants completed 100% (252/252) of the individual exercise sessions, 95% (60/63) of the individual update sessions, and 98% (123/126) of the group session for overall 99% (435/441) adherence. 6% (4/63) of update sessions were completed by telephone. 20 participants were assigned to the control group, including: • usual care, including written materials about physical activity available through the American Cancer Society Contamination of control group: not reported
Outcomes	Outcomes: QoL outcomes and physiologic outcomes, including: • FACT-B, including subscales of physical functioning, SWB, EWB, FWB, and additional concerns • FACT-G, the sum of the physical functioning, SWB, EWB, and FWB • FACT-F, a 13-item instrument • FACT-Cog, a 42-item instrument • FACT-ES, a 19-item instrument • sleep dysfunction, assessed using the PSQI • joint pain, stiffness, and physical function, using a 5-point Likert scale version (1 = none to 5 = extreme) of the 24-item WOMAC • objective activity monitoring, measured using a GT1M accelerometer • self-reported leisure time physical activity, assessed using the Godin Leisure-Time Exercise Questionnaire • stage of motivational readiness for physical activity, classified as precomtemplation, contemplation, preparation, action, and maintenance • fitness, assessed using a submaximal treadmill test and Naughton protocol to estimate oxygen consumption at 85% of predicated maximal HR • muscle strength, assessed using back/leg extensor dynamometers (Takei Back-A model #Tkk5002 - i.e. best of 3 attempts) and handgrip dynamometer (Lafeyette Model No. 78010) • BMI • waist to hip ratio, using a nonstretching tape measure to measure the waist and hip circumferences over undergarments with 3 measurements averaged • percent body fat and BMD, assessed by DXA • caloric intake, assessed with a 3-day diet record (i.e. 1 weekend and 2 weekdays) and analyzed with Diet Analysis Plus software, version 7.0.1 (Thomson) • perceived health, assessed using a 5-point Likert scale Outcomes were measured at baseline, 12 weeks, and 3 months after intervention (6 months after randomization):

Rogers 2009 *(Continued)*

	• exercise group: n = 21 at baseline, n = 20 at 12 weeks, n = 19 at 6 months • control group: n = 20 at baseline, n = 19 at 12 weeks n = 17 at 6 months Adverse events: None reported
Notes	Country: US Funding: Southern Illinois University School of Medicine Excellence in Academic Medicine Award, Brooks Medical Research Fund, Memorial Medical Center Foundation and Regional Cancer Center

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"computer-generated"
Allocation concealment (selection bias)	Unclear risk	"sealed envelopes"
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	The investigators stated that they conducted an ITT analyses, but 2 participants withdrew from the exercise group and 3 from the control group. The authors also reported that the rate of missing data for the FACT-ES and the FACT-Cog exceeded the prespecified amount for imputation of values and they analyzed
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Segal 2001

Study characteristics

Methods	Study design: RCT Number randomized: 123; 40 to the home-based exercise group, 42 to the supervised exercise group, and 41 to the control group Study start and stop dates: not reported Length of intervention: 26 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer, Stages I and II

Segal 2001 *(Continued)*

Time since cancer diagnosis: not reported

Time in active treatment: within 2 weeks

Inclusion criteria:

- Stages I and II breast cancer
- within 2 weeks of the initiation of prescribed adjuvant therapy (radiation therapy, hormonal therapy, or chemotherapy)

Eligibility criteria related to interest or ability, or both, to exercise:

- treating oncologist believed that exercise was not indicated

Exclusion criteria:

- receiving only alternative or dose-intensive chemotherapy regimens
- severe cardiac disease
- uncontrolled hypertension (160/95 mmHg blood pressure)

Gender: female

Current age, mean (SD) years:

- home-based exercise group: 51.0 (8.7) years
- supervised exercise group: 51.4 (8.7) years
- control group: 50.3 (8.7) years

Age at cancer diagnosis: not reported

Ethnicity/race: not reported

Education level: not reported

SES: not reported

Employment status: not reported

Comorbidities: not reported

Past exercise history; "physically active", %:

- home-based exercise group: 60%
- supervised exercise group: 50%
- control group: 47.6%

Interventions	40 participants assigned to the home-based exercise intervention and 40 to the supervised exercise intervention. Both groups included: • instructions for monitoring exercise intensity and completing an exercise diary, along with a standardized series of warm-up and cool-down exercises and a progressive walking program The home-based (self-directed) exercise group also included: • home exercise prescription • contact by telephone every 2 weeks during the 26-week training period to check on progress and identify barriers to exercise The supervised exercise group also included: • a supervised exercise program with a 7- to 10-minute warm-up, walking at prescribed pace, and standard cool-down. Type exercise (aerobic/anaerobic): aerobic

Segal 2001 *(Continued)*

	Intensity of the experimental exercise intervention: 50% to 60% of the predicted maximal oxygen uptake Frequency: • home-based: 5 times per week • supervised: 3 times per week in the facility and asked to exercise at home 2 days per week Duration of individual sessions: not reported Duration of exercise program: 26 weeks Total number of exercise sessions: 130 sessions Format: individual Facility: both home and facility Professionally led by an exercise specialist Adherence: not reported 41 participants assigned to control group, including: • general advice from the oncologist about the benefits of exercise and a suggestion to participants to exercise if they felt well enough
Outcomes	Primary outcome included: • change in physical functioning, assessed by measuring change in the physical functioning subscale of the MOS SF-36 Other outcomes included: • global HRQoL, assessed using the other subscales of MOS SF-36, FACT-G, and FACT-B • aerobic capacity • body weight Outcomes were measured at baseline, 13 weeks, and 26 weeks: • home-based exercise group: n = 40 at baseline, n = 40 at 13 weeks, n = 40 at 26 weeks (imputed values carried forward, so even though withdrawals, analyses included all participants) • supervised exercise group: n = 40 at baseline, n = 40 at 13 weeks, n = 40 at 26 weeks (imputed values carried forward, so even though withdrawals, analyses included all participants) • control group: n = 41 at baseline, n = 41 at 13 weeks, n = 41 at 26 weeks (imputed values carried forward, so even though withdrawals, analyses included all participants) Subgroup analysis: treated with chemotherapy versus other treatment Adverse events: none reported
Notes	Country: Canada Funding: National Cancer Institute of Canada, CCS

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random numbers table

Segal 2001 *(Continued)*

Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	Low risk	Values carried forward for withdrawals, and withdrawals balanced across groups: home-based exercise, 7; supervised, 8; control, 7
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Segal 2003

Study characteristics	
Methods	Study design: RCT Number randomized: 155; 82 to the exercise group and 73 to the control group Study start and stop dates: September 1999 to August 2001 Length of intervention: 12 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: prostate cancer Stage, n (%): • exercise group: Stage I, 0 (0%); Stage II, 40 (48.8%); Stage III, 11 (13.4%); Stage IV, 17 (20.7%); unassignable, 14 (17.1%) • control group: Stage I, 0 (0%); Stage II, 35 (47.9%); Stage III, 13 (18.1%); Stage IV, 10 (13.9%); unassignable, 15 (20.8%) Time since cancer diagnosis, mean (SD) days: • exercise group: 980.1 (1115.4) days • control group: 762.9 (1292.6) days Time in active treatment: "scheduled to receive androgen deprivation therapy" Inclusion criteria: • histologically documented prostate cancer • scheduled to receive androgen deprivation therapy for at least 3 months after recruitment • treating oncologist provided consent Eligibility criteria related to interest or ability, or both, to exercise:

Segal 2003 *(Continued)*

	• none Exclusion criteria: • severe cardiac disease (NYHA class III or greater) • uncontrolled hypertension (blood pressure > 160/95 mmHg) • uncontrolled pain • unstable bone lesions • residence > 1 hour from the study center Gender: male Current age, mean (SD) years • exercise group: 68.2 (7.9) years • control group: 67.7 (7.5) years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history; prior activity level, n (%): • exercise group: < twice per week, 31 (37.8%); ≥ 3 times per week, 51 (62.2%); prior resistance training at < twice per week, 64 (78.0%); ≥ 3 times per week, 16 (22.0%) • control group: < twice per week, 26 (35.6%); ≥ 3 times per week, 47 (64.4%); prior resistance training at < twice per week, 56 (76.7%); ≥ 3 times per week, 17 (23.3%) On hormone therapy: not reported
Interventions	82 participants assigned to the exercise intervention, including: • personalized resistance exercise program consisting of a standardized series of warm-up and cool-down exercises to be performed under supervision with 2 sets of 8 to 12 repetitions of the following 9 exercises were performed: leg extension, calf raises, leg curl, chest press, latissimus pull-down, overhead press, triceps extension, biceps curls, and modified curl-ups Type exercise (aerobic/anaerobic): anaerobic Intensity of the experimental exercise intervention: at 60% to 70% of 1-repetition maximum, increasing resistance by 5 lb when > 12 repetitions Frequency: 3 times per week Duration of individual sessions: as needed to complete program Duration of exercise program: 12 weeks Total number of exercise sessions: 36 sessions Format: individual Facility: fitness center Professionally led by a certified fitness consultant Adherence: attendance averaged 79% (28 of 36 sessions)

Segal 2003 *(Continued)*

	73 participants assigned to control group, including: • waiting list Contamination of control group: not reported
Outcomes	Primary outcomes included: • fatigue, assessed using the FACT-F • global HRQoL, assessed using the FACT-P Other outcomes included: • muscular fitness, assessed using a standard load test • body composition, including BMI, weight, waist circumference, subcutaneous skin-folds Outcomes were measured at baseline and end of the intervention: • exercise group: n = 82 at baseline, n = 74 at postintervention • control group: n = 73 at baseline, n = 61 at postintervention Subgroup analysis: • curative versus palliative treatment goal • receiving androgen deprivation therapy for < 1 year versus longer Adverse events: none reported
Notes	Country: Canada Funding: NCIC. CCS; Heart and Stroke Foundation of Canada; Canadian Institutes of Health Research CCS/NCIC Sociobehavioral Cancer Research Network.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Table of random numbers
Allocation concealment (selection bias)	Low risk	"The treatment allocation was concealed from the study coordinator until completion of baseline testing and stratification"
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Study personnel and outcome assessors for the HRQoL outcomes were not masked or blinded to the study interventions. However, blinding was used for physical outcomes "A research assistant with no knowledge of group assignment collected muscular fitness and anthropometric data and scored questionnaire responses"
Incomplete outcome data (attrition bias) All outcomes	High risk	8 men in the exercise group and 12 in the control group withdrew
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes

Segal 2003 *(Continued)*

Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Segal 2009

Study characteristics	
Methods	Study design: RCT Number randomized: 121; 40 to the aerobic exercise group, 40 to the resistance training exercise group, and 41 to the control group Study start and stop dates: February 2003 to April 2006 Length of intervention: 24 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: prostate cancer Stage, n (%): • aerobic exercise group: Stage I, 1 (2.5%); Stage II, 29 (72.5%); Stage III, 9 (22.5%); Stage IV, 0 (0%); unassignable, 1 (2.5%) • resistance exercise group: Stage I, 0 (0%); Stage II, 31 (77.5%); Stage III, 8 (20.0%); Stage IV, 8 (20.0%); unassignable, 1 (2.5%) • control group: Stage I, 0 (%); Stage II, 35 (85.4%); Stage III, 4 (9.8%); Stage IV, 1 (2.4%); unassignable, 1 (2.4%) Time since cancer diagnosis: not reported Time in active treatment: not reported Inclusion criteria: • histologically documented prostate cancer • scheduled to receive radiation therapy with or without androgen deprivation therapy • treating oncologist approved Eligibility criteria related to interest or ability, or both, to exercise: • none Exclusion criteria: • severe cardiac disease (NYHA functional class III or IV) • uncontrolled hypertension • uncontrolled pain • psychiatric illness • lives > 1 hour away Gender: male Current age, mean (SD) years: • aerobic exercise group: 66.2 (6.8) years • resistance exercise group: 66.4 (7.6) years • control group: 65.3 (7.6) years

Segal 2009 *(Continued)*

	Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level; completed university or college, n (%): • aerobic exercise group: 22 (55%) • resistance exercise group: 19 (47.5%) • control group: 21 (51.2%) SES: not reported Employment status; employed full-time, n (%): • aerobic exercise group: 9 (22.5%) • resistance exercise group: 6 (15.0%) • control group: 14 (34.1%) Comorbidities: no reported Past exercise history: not reported On hormone therapy: not reported Weight, mean (SD) kg: • aerobic exercise group: 88.1 (10.9) kg • resistance exercise group: 84.3 (9.9) kg • control group: 86.5 (15.2) kg BMI, mean (SD): • aerobic exercise group: 28.9 (3.4) • resistance exercise group: 28.1 (3.5) • control group: 29.0 (4.2)
Interventions	40 participants assigned to the aerobic exercise intervention, including: • exercise on a cycle ergometer, treadmill, or elliptical trainer 40 participants assigned to the resistance exercise intervention, including: • 2 sets of 8 to 12 repetitions of 10 different exercises (leg extension, leg curl, seated chest fly, latissimus pull-down, overhead press, triceps extension, biceps curls, calf raises, low back extension, and modified curl-ups) Type exercise (aerobic/anaerobic): aerobic or anaerobic Intensity of the aerobic exercise intervention: beginning at 50% to 60% of their predetermined peak oxygen consumption (VO_{2peak}) for weeks 1 to 4 and progressing to 70% to 75% for weeks 5 to 24 Intensity of anaerobic exercise intervention: 60% to 70% of estimated 1-repetition maximum, increased by 5 lb when more than 12 repetitions Frequency: 3 times per week Duration of individual sessions: initially 15 minutes, increasing by 5 minutes every 3 weeks up to 45 minutes Duration of exercise program: 24 weeks Total number of exercise sessions: 72 sessions Format: individual

Segal 2009 *(Continued)*

	Facility: facility Professionally led: professionally led by an exercise specialist Adherence: resistance and aerobic participants completed a median of 88% (63 of 72 sessions) and 83% (60 of 72 sessions) of scheduled sessions, respectively 41 participants assigned to control group, including: • request not to initiate exercise • offer of a program postintervention assessments and radiation therapy Contamination of control group: 6 control participants reported aerobic exercise ≥ 3 times per week
Outcomes	Outcome included HRQoL outcomes of: • fatigue, assessed using the FACT-F • prostate-specific QoL, assessed using the FACT-P • general cancer-specific QoL were assessed using the FACT-G Physical outcomes, including: • aerobic fitness, • strength • body weight • body fat percentage, • serum lipids • PSA • testosterone • hemoglobin Outcomes were measured at baseline, 12 weeks, and 24 weeks: • aerobic exercise group: n = 40 at baseline, n = 35 for fatigue at 12 weeks, n = 34 at 24 weeks • resistance exercise group: n = 40 at baseline, n = 39 for fatigue at 12 weeks, n = 38 at 24 weeks • control group: n = 41 at baseline, n = 38 at 12 weeks, n = 39 at 24 weeks Adverse events: 1 myocardial infarction, 1 syncope in aerobic group, 1 chest pain in resistance group
Notes	Country: Canada Funding: Canadian Prostate Cancer Research Fund

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer generated
Allocation concealment (selection bias)	Low risk	"Central random assignment was used, with allocation concealment before assignment"
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias)	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions

Segal 2009 *(Continued)*
All outcomes

Incomplete outcome data (attrition bias) All outcomes	Low risk	Used mixed model, analyzing data from all participants, 7 withdrew in aerobic exercise group, 3 withdrew in resistance group, and 1 withdrew in control group
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Tang 2010

Study characteristics	
Methods	Study design: RCT Number randomized: 72; 37 to the exercise group and 35 to the control group Study start and stop dates: not reported Length of intervention: 8 weeks Length of follow-up: 1 and 2 months
Participants	Type cancer, n (%): • exercise group: breast, 23 (63.9%); gastrointestinal, 6 (16.7%); nasopharyngeal, 4 (11.1%); lung, 0 (0%); other, 3 (8.3%) • control group: breast, 16 (45.7%); gastrointestinal, 5 (14.3%); nasopharyngeal, 3 (8.6%); lung, 4 (11.4%); other, 7 (20%) Time since cancer diagnosis, mean (SD) years: • exercise group: 3.56 (3.92) years • control group: 4.13 (4.06) years Time in active treatment, undergoing cancer treatment, n (%): • exercise group: 7 (19.4%) • control group: 14 (40.0%) Inclusion criteria: • ≥ 18 years old • diagnosed with cancer • complaint of sleep disturbance with a PSQI score > 5 • approved for participation by their oncologist • able to communicate in Mandarin or Taiwanese Eligibility criterion related to interest or ability, or both, to exercise: • neuromuscular deficits that would contraindicate a walking exercise intervention • have not regularly undertaken more than 1 session of moderate-intensity exercise each week over the past 6 months Exclusion criteria:

Tang 2010 *(Continued)*

- uncontrolled hypertension, cardiac, or psychiatric illness
- blood pressure > 140/90 mmHg

Gender, n (%):

- exercise group: male, 5 (13.9%); female, 31 (86.1%)
- control group: male, 12 (34.3%); female, 23 (65.7%)

Current age, mean (SD) years:

- exercise group: 47.36 (10.14) years
- control group: 56.37 (12.43) years

Age at cancer diagnosis: not reported

Ethnicity/race: not reported

Education level, mean (SD) years:

- exercise group: 9.97 (3.67) years
- control group: 8.26 (4.66) years

SES: not reported

Employment status, n (%):

- exercise group: working, 13 (36.1%); not working, 23 (63.9%)
- control group: working, 10 (28.6%); not working, 25 (71.4%)

Comorbidities: not reported

Past exercise history: not reported

On hormone therapy: not reported

Interventions	37 participants assigned to a walking exercise intervention, including: • instructions to walk briskly (at a pace that was faster than normal), starting with a 5-minute warm-up (walking slowly) and finishing with a 5-minute cool-down after completing the 30-minute walk • exercise booklet - written material for home use focusing on safety and proper technique Type exercise (aerobic/anaerobic): aerobic Intensity of experimental exercise intervention: rating of perceived exertion between 11 and 13, with a rating of 6 = resting and 20 = very, very hard Frequency: 3 times per week Duration of individual sessions: 30 minutes plus 5 minutes warm-up and 5 minutes cool-down Duration of exercise program: 8 weeks Total number of exercise sessions: 24 sessions Format: individual Facility: home Not professionally led 35 participants assigned to the control group, including: • instructions to maintain current lifestyle for 8 weeks • instructions to record in a diary provided by the researchers any exercise taken beyond what they normally do

Tang 2010 *(Continued)*

	• invited to begin their own walking program following study completion at 8 weeks Adherence: 32/36 (89%) reached an adherence rate of at least 50%. The mean (SD) number of complete exercise sessions was 20.03 (6.60) Contamination of control group: not reported
Outcomes	Primary outcome: • sleep quality, assessed using the PSQI Secondary outcomes included: • QoL, measured using the PCS and MCS subscales of the MOS SF-36 Outcomes were measured at baseline, 1 month, and 2 months: • exercise group: n = 37 at baseline, n = 35 at 1 month, n = 36 at 2 months • control group: n = 35 at baseline, n = 35 at 1 month, n = 35 at 2 months Subgroup analysis: none specified Adverse events: none reported
Notes	Country: Taiwan Funding: not reported

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Allocation sequence was generated using a table of random numbers
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	Low risk	The study was analyzed on an ITT basis. Missing observations, including those incurred by participant drop-outs, were imputed by the "last observation carried forward" method. The disproportionate attrition from the intervention group places the study at a high risk of bias
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Targ 2002

Study characteristics	
Methods	Study design: RCT Number randomized: 181; 93 to the exercise group and 88 to the control group Study start and stop dates: not reported Length of intervention: 12 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer Stage, n (%): • exercise group: Stage I, 31 (39%); Stage II, 35 (43%); Stage III, 5 (6%); Stage IV, 5 (6%); missing, 3 (4%) • control group: Stage I, 16 (32%); Stage II, 26 (52%); Stage III, 7 (14%); Stage IV, 2 (4%); missing, 5 (10%) Time since cancer diagnosis: within 18 months of diagnosis Time in active treatment: not reported, but some women were on chemotherapy, n (%): • exercise group: 42 (54%) • control group: 24 (48%) Inclusion criteria: • 26 to 78 years old • within 18 months of initial diagnosis of primary breast cancer or metastatic breast cancer Eligibility criterion related to interest or ability, or both, to exercise: none reported Exclusion criteria: none reported Gender: female Current age, mean (SD) years: • exercise group: 49 (8.6) years • control group: 47 (8.8) years Age at cancer diagnosis: not reported Ethnicity/race, n (%): • exercise group: Asian, 8 (11%); Hispanic, 1 (1%); African American, 4 (5%); Caucasian, 62 (83%) • control group: Asian, 2 (4%); Hispanic, 1 (2%); African American, 4 (8%); Caucasian, 41 (85%) Education level, n (%): • exercise group: < 8th grade, 1 (1%); some high school, 1 (1%); high school graduate, 0 (0%); some college, 13 (16%); college graduate, 22 (28%); postdoctorate study, 42 (53%) • control group: < 8th grade, 0 (0%); some high school, 0 (0%); high school graduate, 0 (0%); some college, 7 (14%); college graduate, 9 (18%); postdoctorate study, 34 (68%) SES, income, n (%): • exercise group: < USD15,000, 6 (8%); USD15,000 to USD29,000, 9 (12%); USD30,000 to USD44,000, 10 (13%); USD45,000 to USD49,000, 17 (22%); > USD50,000, 36 (46%) • control group: < USD15,000, 2 (4%); USD15,000 to USD29,000, 5 (10%); USD30,000 to USD44,000, 9 (18%); USD45,000 to USD49,000, 5 (10%); > USD50,000, 28 (57%) Employment status: not reported

Targ 2002 *(Continued)*

	Comorbidities: not reported Past exercise history, number of days spent exercising and minutes of exercise, mean (SD) days and minutes: • exercise group: 4.16 (1.82) days, 49.58 (23.09) minutes • control group: 4.22 (1.62) days, 51.5 (25.64) minutes On hormone therapy, n (%): • exercise group: 28 (53%) • control group: 11 (48%) Post-menopausal status, n (%): • exercise group: 17 (29%) • control group: 4 (14%)
Interventions	93 participants assigned to an intensive lifestyle change and group support program that included: • weekly health series discussion group, followed by a 90-minutes dance/movement program • weekly session consisting of silent meditation and guided imagery Type exercise (aerobic/anaerobic): aerobic Intensity of experimental exercise intervention: mild to moderate Frequency: once per week Duration of individual sessions: 90 minutes Duration of exercise program: 12 weeks Total number of exercise sessions: 12 sessions Format: group Facility: facility Professionally led: nurse 88 participants assigned to the control group, including: • unstructured psycho-educational support group Adherence: 6 women did not attend any session, but no other adherence was noted Contamination of control group: not reported

Outcomes	Outcomes: QoL outcomes, including:
	
	• change in overall QoL, measured using FACIT and subscales
	  * PWB
	  * SWB
	  * EWB
	  * FWB
	  * additional concerns

Targ 2002 *(Continued)*

- change in mood as measured by POMS and subscales
  - anxiety
  - depression
  - anger
  - vigor
  - fatigue
  - confusion
- change in spiritual function, measured using the FACIT-Sp and the Principle of Living Survey

Outcomes were measured at baseline and at 12 weeks:

- exercise groups: n = 93 at baseline, n = 79 at 12 weeks
- control group: n = 88 at baseline, n = 88 at 12 weeks

Adverse events: none reported

Notes	Country: US Funding: United States Department of Defense Material Command

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assignment was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Study personnel and outcome assessors were not masked or blinded to the study interventions
Incomplete outcome data (attrition bias) All outcomes	High risk	Although it was stated that an ITT analysis was performed, there were 7 women who dropped out in the intervention group and 24 in the control group and an additional 27 who did not attend any session and were not included in the analyses
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Vadiraja 2009b

Study characteristics

Methods	Study design: RCT Number randomized: 88; 44 to the exercise group and to 44 the control group

Vadiraja 2009b *(Continued)*

	Study start and stop dates: participants were recruited over a 2-year period from January 2004 to June 2006 Length of intervention: 6 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer Cancer stage, n (%): • exercise group: Stage I, 2 (4.5%); Stage II, 11 (25.0%); Stage III, 31 (70.5%) • control group: Stage I, 3 (6.8%); Stage II, 7 (15.9%); Stage III, 34 (77.3%) Time since cancer diagnosis: not reported Time in active treatment: prescribed adjuvant radiation therapy with a cumulative dose of 50.4 Gy with fractionations spread over 6 weeks Inclusion criteria: • women with recently diagnosed operable breast cancer • 30 to 70 years old • Zubrod's performance status 0 to 2 (ambulatory > 50% of time) • had high-school education • provided written consent to participate in the study Eligibility criteria related to interest or ability, or both, to exercise: • none Exclusion criteria: • had any concurrent medical condition that was likely to interfere with the treatment • had major psychiatric, neurologic illness, or autoimmune disorder • had any known metastases Gender: female Current age, mean (SD) years • exercise group: 46.7 (9.3) years • control group: 48.5 (10.2) years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: 94.2% of participants were in "middle class" and remainder were in "upper middle class" Employment status: not reported Comorbidities: not reported Past exercise history: 9% of population had previous exposure to yoga On hormone therapy: not reported
Interventions	44 participants assigned to the exercise intervention, including: • a set of *asanas* (postures done with awareness) • breathing exercises

Vadiraja 2009b *(Continued)*

- *pranayama* (voluntarily regulated nostril breathing)
- meditation
- yogic relaxation techniques with imagery (mind-sound resonance technique and cyclic meditation)

Type exercise (aerobic/anaerobic): aerobic

Intensity of the experimental exercise intervention: not reported

Frequency: at last 3 sessions 1 hour per week and asked to practice daily at home

Duration of individual sessions: 60 minutes

Duration of exercise program: 6 weeks

Total number of exercise sessions: at least 18 sessions

Format: individual

Facility: facility and home

Professionally led: professionally led by a trained yoga therapist

Adherence: adherence to intervention was: 29.7% attended 10 to 20 supervised sessions, 56.7% attended 20 to 25 supervised sessions, and 13.7% attended > 25 supervised sessions over a 6-week period

44 participants assigned to control group, including:

- brief supportive therapy with education as a component

Contamination of control group: not reported

Outcomes	No primary outcome was identified. Outcomes included:
	• positive and negative affect, assessed using the PANAS
	• global HRQoL, assessed using the EORTC Quality of Life C30 and subscales
	  • physical function
	  • role function
	  • emotional function
	  • cognitive function
	  • social function
	  • fatigue
	  • pain
	  • insomnia
	• Psychological distress, assessed using the Rotterdam Symptom Checklist and subscales
	  • psychological distress
	  • physical distress
	  • impairment in activities of daily living
	• depression, measured using the HADS
	• anxiety, measured using the HADS
	• perceived stress, measured using the Perceived Stress scale
	• physical outcomes included cortisol levels
	
	Outcomes were measured at baseline and 6 weeks:
	• exercise group: n = 44 at baseline, n = 42 at 6 weeks
	• control group: n = 44 at baseline, n = 33 at 6 weeks
	
	Subgroup analysis: none
	
	Adverse events: not reported

Vadiraja 2009b *(Continued)*

Notes	Country: India Funding: Central Council for Research in Yoga and Naturopathy, Ministry of Health and Family Welfare, Government of India

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Allocation sequence was generated using computer-generated computer numbers
Allocation concealment (selection bias)	Low risk	Randomization was performed using opaque sequentially numbered envelopes
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	Low risk	Analyses were conducted on an ITT basis, which accounted for the substantial attrition from the trial, especially in the control arm
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Wang 2010

Study characteristics

Methods	Study design: RCT Number randomized: 72; 35 to the exercise group and 37 to the control group Study start and stop dates: participants were recruited between December 2008 and June 2009 Length of intervention: 6 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer Stage, n (%): • exercise group: Stage I, 9 (25.7%); Stage II, 26 (74.3%) • control group: Stage I, 7 (18.9%); Stage II, 30 (81.1%) Time since cancer diagnosis: not reported

Wang 2010 *(Continued)*

Time in active treatment: followed participants from 24 hours before surgery to end of the chemotherapy cycle (6 weeks)

Inclusion criteria:

- 18 to 72 years old
- newly diagnosed with Stage I or Stage II breast cancer
- expecting chemotherapy following recovery from surgery
- able to read or write Chinese

Eligibility criteria related to interest or ability, or both, to exercise:

- adverse effects or inability to exercise as recommended by their physicians - for example, women with leukopenia, anemia, thrombocytopenia, and high fever up to 102°F
- unsafe conditions to exercise
- contraindications to exercise

Exclusion criteria:

- obesity (BMI ≥30 kg/m^2; excluded to avoid bone and joint problems)
- degenerative arthritis
- limiting dyspnea with exertion
- bone pain
- severe nausea
- psychiatric problems
- recurrent breast cancer
- reported history of other types of cancer

Gender: female

Current age, mean (SD) years:

- exercise group: 48.40 (10.15) years
- control group: 52.30 (8.84) years

Age at cancer diagnosis: not reported

Ethnicity/race: not reported

Education level, n (%):

- exercise group: able to read, 2 (5.7%); elementary, 3 (8.6%); high school, 12 (34.3%); college, 12 (34.4%); graduate, 6 (17.1%)
- control group: able to read, 2 (5.4%); elementary, 7 (18.9%); high school, 13 (35.1%); college, 14 (37.8%); graduate, 1 (2.7%)

SES: not reported

Employment status, n (%):

- exercise group: not employed, 8 (22.9%); full-time, 20 (57.1%); part-time, 1 (2.9%); retired, 4 (11.4%); leave no pay, 2 (5.7%)
- control group: not employed, 10 (27.0%); full-time, 17 (45.9%); part-time, 1 (2.7%); retired, 9 (24.3%); leave no pay, 0 (0.0%)

Comorbidities: not reported

Past exercise history, mean (SD):

- exercise group: exercise time (before), 77.00 (138.00) minutes; exercise time (current), 67.71 (127.35) minutes

Wang 2010 *(Continued)*

	• control group: exercise time (before), 94.46 (126.41) minutes; exercise time (current), 66.89 (109.60) minutes Exercise type performed at baseline, n (%): • exercise group: none, 11 (31.4%); walk, 15 (42.9%); fast walk, 5 (14.3%); mountain climbing, 1 (2.9%); yoga, 0 (0.0%); tai-chi, 0 (0.0%); others, 3 (8.6%) • control group: none, 12 (32.4%); walk, 12 (32.4%); fast walk, 3 (8.1%); mountain climbing, 3 (8.1%); yoga, 2 (5.4%); tai-chi, 2 (5.4%); others, 3 (8.1%)
Interventions	35 participants assigned to the exercise group, including a 6-week home-based walking program and strategies to boost women's exercise self-efficacy. The exercise program included the use of: • HR ring monitor (functioning as a HR monitor (Unilife Corporation, Taipei, Taiwan); pedometer • weekly phone call • weekly exercise diary • weekly meeting • a role model story to advance participants' exercise self-efficacy Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: low- to moderate-intensity measured by a maximal HR from 40% to 60% or the modified Borg Scale between 0.5 and 2 Frequency: 3 to 5 sessions per week Duration of individual sessions: 30 minutes Duration of exercise program: 6 weeks Total number of exercise sessions: 18 to 30 sessions Format: individual Facility: home Professionally led: not professionally led Adherence: poor compliance (exercise not of low to moderate intensity, < 3 exercise sessions per week, or < 30 minutes per session) were 1 (3.3%), 2 (6.7%), and 2 (6.7%), respectively 37 participants assigned to control group, including: • usual care Contamination of control group: 30.4% (n = 10) participants exercised more than 3 times per week and 30 minutes per session
Outcomes	No primary outcome was identified. QoL outcomes included: • HRQoL, assessed using the FACT-G • fatigue, assessed using the FACIT-F • sleep disturbances, assessed using the PSQI Other outcomes included: • exercise self-efficacy, assessed using the ESES • exercise behavior during the past week, assessed using the GLTEQ • exercise capacity, assessed by 6MWD Outcomes were measured at baseline, 2 to 3 weeks after surgery (second baseline), 4 weeks, and 6 weeks:

Wang 2010 *(Continued)*

	• exercise group: n = 35 at baseline, n = 35 at 2 to 3 weeks, n = 4 weeks, n = 35 at 6 weeks • control group: n = 35 at baseline, n = 35 at 2 to 3 weeks, n = 4 weeks, n = 35 at 6 weeks Subgroup analysis: none Adverse events: 2 participants (2.8%) had adverse effects of anemia and dizziness with dyspnea during the program, and both dropped out from the study at weeks 2 and 3, respectively. 3 adverse events in control group: 1 discomfort with exercise, 1 dizziness, 1 dyspnea
Notes	Country: Taiwan Funding: Hebei Department of Hygiene

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assigned was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Although there was attrition, the author completed a longitudinal repeated measure, which typically would incorporate data for missing values. However, it was not stated whether this was done
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	High risk	Substantial number of control group participants engaging in exercise could place the trial at a high risk of additional biases

Windsor 2004

Study characteristics

Methods	Study design: RCT Number randomized: 66; 33 to the exercise group and 33 to the control group Study start and stop dates: December 2001 to December 2002 Length of intervention: to end of radiation therapy Length of follow-up: 4 weeks' post-treatment
Participants	Type cancer: prostate cancer; 51 of 65 patients had tumors classified as T1 to T2

Windsor 2004 *(Continued)*

	Time since cancer diagnosis: not reported Time in active treatment: not begun Inclusion criteria: • on outpatient waiting list for radical conformal radiation therapy for localized prostate carcinoma Eligibility criteria related to interest or ability, or both, to exercise: • none Exclusion criteria: • physical frailty owing to age • comorbidity, such as unstable or severe angina, recent myocardial infarction, or dementia cardiac pacemaker Gender: male Current age, mean (SD) years: • exercise group: 68.3 (0.9, 52 to 82) years • control group: 69.3 (1.3, 52 to 82) years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status: not reported Comorbidities: not reported Past exercise history: not reported On hormone therapy, receiving adjuvant hormone therapy for high-risk tumors, n (%): • exercise group: 9 (27%) • control group: 10 (30%)
Interventions	33 participants assigned to the exercise intervention, including: • home-based continuous walking Type exercise (aerobic/anaerobic): aerobic Intensity of the experimental exercise intervention: target HR of 60% to 70% calculated maximum HR Frequency: 3 days per week Duration of individual sessions: 30 minutes Duration of exercise program: to end of therapy Total number of exercise sessions: varied Format: individual Facility: home Professionally led: unclear

Windsor 2004 *(Continued)*

	Adherence: all patients in the exercise group recorded at least 1.5 hours of aerobic exercise at the recommended percentage maximum HR per week throughout radiation therapy 33 participants assigned to control group, including: • discouraged from performing normal activities and were advised to rest and take things easy if they became fatigued Contamination of control group: none, the control group showed a small, nonsignificant decline in hours of reported aerobic activity per week during radiation therapy
Outcomes	No primary outcome was identified. Outcomes included: • fatigue, assessed using the BFI • resting HR • exercise HR, assessed using the shuttle test • physical activity, assessed using the SPAQ Outcomes were measured at baseline; after 5, 10, 15, and 20 fractions of radiation therapy; and at follow-up 4 weeks after the completion of treatment: • exercise group: n = 32 at all time points • control group: n = 33 at all time points Subgroup analysis: none Adverse events: none reported
Notes	Country: UK Funding: none reported

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The generation of the random sequence was not described
Allocation concealment (selection bias)	Low risk	"Patients were randomized to trial group by telephone call to the Scottish Cancer Therapy Network randomization line…"
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	High risk	1 participant in the exercise group withdrew and was not included in the analysis
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	High risk	Baseline tests performed after randomization

Wiskemann 2011

Study characteristics	
Methods	Study design: Multicenter RCT Number randomized: 112; 57 to the exercise group and 55 to the control group Study start and stop dates: recruitment took place starting in May 2007 and the last participant completed the trial in February 2009 Length of intervention: at least 7 to 12 weeks Length of follow-up: to end of the intervention
Participants	Type cancer, n: • exercise group: AML, 12; ALL, 6; CML, 2; chronic lymphocytic leukemia, 2; myelodysplastic syndrome, 7; secondary AML, 6; myeloproliferative syndrome, 7; multiple myeloma, 2; other lymphomas, 7; aplastic anemia, 1 • control group: AML, 10; ALL, 8; CML, 2; chronic lymphocytic leukemia, 2; myelodysplastic syndrome, 5; secondary AML, 5; myeloproliferative syndrome, 6; multiple myeloma, 1; other lymphomas, 13; aplastic anemia, 1 Time since cancer diagnosis: not reported Time in active treatment, median (range) days: • exercise group: outpatient before HSCT, 21 (5 to 112) days; duration of hospitalization, 45 (24 to 92) days; outpatient after HSCT, 49 (39 to 63) days • control group: outpatient before HSCT, 15 (5 to 90) days; duration of hospitalization, 43 (22 to 120) days; outpatient after HSCT, 52 (40 to 83) days Inclusion criteria: • scheduled for allogenic stem cell transplant Eligibility criteria related to interest or ability, or both, to exercise: not reported Exclusion criteria: not reported Gender, n (%): • exercise group: male, 32 (45%); female, 21 (62%) • control group: male, 39 (55%); female, 13 (38%) Current age, mean (range) years: • exercise group: 47.6 (18 to 70) years • control group: 50 (20 to 71) years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status: not reported Comorbidities: none reported Past exercise history, sedentary (< once per week physically active) at baseline, n (%):

Wiskemann 2011 *(Continued)*

- exercise group: 38 (48%)
- control group: 41 (52%)

Interventions	57 participants assigned to the exercise intervention, including: • endurance training, recommended primarily as (brisk) walking in the outpatient setting; bicycling and treadmill walking during hospitalization. If patients had experience in Nordic walking (walking with specially designed poles imitating the motion of cross-country skiing) or jogging, these techniques were also recommended • strength training included exercises for the upper and lower extremities with and without a set of color-coded stretch bands with different levels of resistance. 3 different strength-training protocols were used: (1) focused on extremities, (2) the entire body, or (3) bed exercises (limited to inpatient period) Type exercise (aerobic/anaerobic): aerobic and anaerobic Intensity of the experimental exercise intervention: Borg scale target scores of 12 to 14 for endurance and 14 to 16 for resistance exercises Frequency: 3 endurance (up to 5 during hospitalization) and 2 resistance training sessions per week Duration of individual sessions: • endurance training, brisk walking for 20 to 40 minutes • strength training, 8 to 20 repetitions, 2 or 3 sets Duration of exercise program: length of treatment Total number of exercise sessions: 21 to 36 endurance sessions and 14 to 24 resistance training sessions Format: individual Facility: home and facility based Professionally supervised during the inpatient period and unsupervised during the outpatient period Adherence: from baseline (medical check-up) until admission = 87.5%; during hospitalization, 83.0%; outpatient period from discharge until study end (6 to 8 weeks later), 91.3% 55 participants assigned to control group, including: • pedometer wearing and told that moderate physical activity is favorable during the treatment period Contamination of control group: not reported

Outcomes	Primary outcome was fatigue, assessed using:
	• MFI
	• fatigue subscale of the POMS
	• fatigue subscale of the EORTC QLQ-C30
	Secondary outcomes included:
	• global HRQoL, assessed using the EORTC QLC-C30 and subscales of:
	  • physical functioning
	  • role function
	  • cognitive functioning
	  • social functioning
	  • pain
	  • insomnia
	• anxiety assessed using the HADS

Wiskemann 2011 *(Continued)*

- depression assessed using
  - HADS
  - POMS depression scale
- emotional functioning, assessed using
  - QLQ-C30 emotional functioning subscale
  - POMS anger/hostility subscale
- stress, assessed using the National Comprehensive Cancer Network Distress thermometer
- physical outcomes, including
  - endurance performance assessed using the 6MWT
  - maximal isometric voluntary muscle strength assessed with a hand-held dynameter

Outcomes were measured at baseline, at admission to hospital (second baseline), at discharge from hospital, and at 6 to 8 weeks after discharge:

- exercise group: n = 57 at baseline (T0), n = 52 at admission to the hospital (second baseline) (T1), n = 40 at discharge from hospital (T2), n = 40 at 6 to 8 weeks after discharge (T3)
- control group: n = 55 at baseline (T0), n = 53 at admission to the hospital (second baseline) (T1), n = 41 at discharge from hospital (T2), n = 40 at 6 to 8 weeks after discharge (T3)

Subgroup analysis: none reported

Adverse events: 24 participants (11 in the exercise and 13 in the control group) died

Notes	Country: Germany Funding: German Jose Carreras Leukemia Foundation

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Allocation sequence was generated using the minimization procedure
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assigned was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	High risk	Analyses were not conducted on an ITT basis and the treatment of missing data was not described. Although the authors used last observation carried forward for the participants who did not complete the last study visit, they excluded randomized individuals who were considered ineligible after randomization (missing donor, revised diagnosis, contraindications in check-up, dropped out)
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

Yang 2011

Study characteristics	
Methods	Study design: RCT Number randomized: 44; 19 to the exercise group and 21 to the control group Study start and stop dates: recruitment of participants took place between 2008 and 2009 Length of intervention: 12 weeks Length of follow-up: to end of the intervention
Participants	Type cancer: breast cancer Cancer stage, n (%): • exercise group: Stage I, 9 (47.4%); Stage II, 10 (52.6%); Stage IIIa, 0 (0%) • control group: Stage I, 6 (28.6%); Stage II, 12 (57.1%); Stage IIIa, 3 (14.3%) Time since cancer diagnosis: not reported Time in active treatment: receiving 12 weeks of adjuvant chemotherapy postoperatively Inclusion criteria: • women with postoperative Stage I to IIIA breast cancer • receiving adjuvant chemotherapy during the study period • ≥ 18 years old Eligibility criteria related to interest or ability, or both, to exercise: • skeletomuscular deficits that would contraindicate a walking exercise program • regularly engaged in > 1 session of moderate-intensity exercise per week over the past 6 months Exclusion criteria: • uncontrolled hypertension, diabetes mellitus, cardiac, or psychiatric illness Gender: female Current age, mean (SD) years: • exercise group: 50.79 (7.05) years • control group: 52.71 (8.11) years Age at cancer diagnosis: not reported Ethnicity/race: not reported Education level: not reported SES: not reported Employment status, employed, n (%): • exercise group: 3 (15.8%) • control group: 8 (38.1%) BMI, mean (SD) • exercise group: 23.09 (3.32) • control group: 24.37 (3.23)

Yang 2011 *(Continued)*

	Comorbidities: none reported Past exercise history: not reported

Interventions	19 participants assigned to the exercise intervention, including:
	
	• 12-week home-based walking program, developed using the American College of Sports Medicine Guidelines, and included walking starting 2 to 3 days after each chemotherapy session. The intervention included:
	  • 5 minutes' warm-up
	  • 30 minutes' brisk walking
	  • 5 minutes' cool down
	
	Type exercise: (aerobic/anaerobic): aerobic
	
	Intensity of the experimental exercise intervention: moderate-intensity brisk walking (60% to 80% of age-adjusted maximal HR)
	
	Frequency: 3 times per week
	
	Duration of individual sessions: about 40 minutes
	
	Duration of exercise program: 12 weeks
	
	Total number of exercise sessions: 36 sessions
	
	Format: individual
	
	Facility: home
	
	Professionally led: not professionally led
	
	Adherence: adherence to the exercise intervention was about 77% (31.2 of 36) of the prescribed exercise sessions and 100% of the prescribed exercise intensity
	
	21 participants assigned to control group, including:
	
	• maintenance of their previous lifestyle for 12 weeks
	
	Contamination of control group: not reported

Outcomes	No primary outcome was identified. QoL outcomes included: • symptom severity, assessed using the MDASI-Taiwanese Version (MDASI-T) • symptoms interference with daily life, assessed using the MDASI-T • emotional distress, assessed using the POMS-SF Other outcomes included: • self-reported physical activity level, assessed using the Seven-Day Physical Activity Recall (7-Day PAR) Outcomes were measured at baseline, 6 weeks, and 12 weeks: • exercise group: n = 19 at baseline, n = 19 at 6 weeks, n = 19 at 12 weeks • control group: n = 21 at baseline, n = 21 at 6 weeks, n = 21 at 12 weeks Subgroup analysis: none reported Adverse events: no participants experienced any adverse events related to home-based exercise during the 12-week study period
Notes	Country: Taiwan

Yang 2011 *(Continued)*

Funding: Taipei Medical University Hospital

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	The random location sequence was generated using a table of random numbers
Allocation concealment (selection bias)	Unclear risk	Whether the treatment assigned was concealed from study personnel and participants was not described
Blinding of participants and personnel (performance bias) All outcomes	High risk	Owing to the nature of the intervention, it was not possible to conceal allocation to the intervention from the participants
Blinding of outcome assessment (detection bias) All outcomes	High risk	Allocation to the intervention was not concealed from the study personnel
Incomplete outcome data (attrition bias) All outcomes	High risk	44 women were randomly assigned to exercise or control groups and 40 women completed the trial. No information is provided on the 4 women who did not complete the trial
Selective reporting (reporting bias)	Low risk	There appears to be no selective reporting of outcomes
Other bias	Low risk	The trial appears to be free of other problems that could put it at a high risk of bias

6MWD: 6-minute walk distance; 7-Day PAR: Seven-Day Physical Activity Recall; HR: heart rate; AFI: Attentional Functional Index; ALL: acute lymphoblastic leukemia; AML: acute myelogenous leukemia; BDI: Beck's Depression Inventory; BFI: Brief Fatigue Inventory; BMD: bone mineral density; BMI: body mass index; Borg RPE: Borg Rating of Perceived Exertion; CCS: Canadian Cancer Society; CES-D: Center for Epidemiological Studies Depression scale; CML: chronic myeloid leukemia; CRP: C-reactive protein; DXA: dual energy X-ray absorptiometry; ECOG: Eastern Cooperative Oncology Group; EORTC: European Organization for Research and Treatment of Cancer; EPIC: Expanded Prostate Cancer Index Composite; ESES: Exercise Self-efficacy Scale; EWB: emotional well-being; FACIT-F: Functional Assessment of Chronic Illness Therapy - Fatigue; FACIT-Sp: Functional Assessment of Chronic Illness Therapy - Spiritual; FACT-An: Functional Assessment of Cancer Therapy - Anemia; FACT-B: Functional Assessment of Cancer Therapy - Breast; FACT-Cog: Functional assessment of Cancer Therapy - Cognitive Function; FACT-ES: Functional Assessment of Cancer Therapy - Endocrine symptoms; FACT-F: Functional Assessment of Cancer Therapy - Fatigue; FACT-G: Functional Assessment of Cancer Therapy - General; FACT-P: Functional Assessment of Cancer Therapy - Physical; FACT-P: Functional Assessment of Cancer Therapy - Prostate; FACT-Sp: Functional Assessment of Cancer Therapy - Spirituality; FAEPEX : Ao Fundo de Apoio ao Ensino, Pesquisa e Entenxao; FLIC: Functional Living Index for Cancer; FWB: functional well-being; GLTEQ: Goldin Leisure Time Exercise Questionnaire; HADS: Hospital Anxiety and Depression Scale; HDC: high-dose chemotherapy; HL: Hodgkin lymphoma; HR: heart rate; HRQoL: health-related quality of life; HSCT: hematopoietic stem cell transplantation; ITT: intention-to-treat; LASA: Linear Analog Scales of Assessment; LHRHa: luteinizing hormone-releasing hormone analogue; LOCF: last observation carried forward; LSI: Leisure Score Index; MANE: Morrow Assessment of Nausea and Emesis; MCS: mental component status; MDASI-T: M.D. Anderson Symptom Inventory-Taiwanese Version; MFI: Multidimensional Fatigue Inventory; MFSI-SF: Multidimensional Fatigue Symptom Inventory Short Form; MMSE: Mini Mental Status Examination; MOS SF-36: Medical Outcomes 36-Item Short Form Health Survey; MVT: maximum voluntary torque; MWT: minute walk test; NCIC: National Cancer Institute of Canada; NHL: non-Hodgkin lymphoma; NYHA: New York Heart Association; PANAS: Positive and Negative Affect Schedule; PCS: physical component status; PFS: Piper Fatigue Scale; POMS: Profile of Mood States; POMS-SF; Profile of Mood State-Short Form; PSA: prostate specific antigen; PSQI: Pittsburgh Sleep Quality Inventory; PWB: physical well-being; QLQ: Quality of Life Questionnaire; QoL: quality of life; ROM: range of motion; rPAR-Q: revised Physical Activity Readiness Questionnaire; SCFS: Schwartz Cancer Fatigue Scale; SCL: Symptom Check List; SPAQ: Scottish Physical Activity Questionnaire; SPSS Expectation Maximization; STAI: State-Trait Anxiety Index; SWB: social/family well-being; SWLS: Satisfaction with Life Scale; TOI-An: Trial Outcome Index - Anemia; UNICAMP: da Universidade Estadual de Campinas; VAS: visual analog scale; VO2max: maximal oxygen uptake; VYASA: Vivekananda Yoga Anusandhana Samsthana; WHO: World Health Organization; WOMAC: Western Ontario and McMaster Universities Osteoarthritis Index.

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Aaronson 2011	This study was excluded as the exercise was aimed toward reduction in treatment-induced menopause rather than for improvement in whole body function or QoL
Adamsen 2006	This study was excluded as it was not an RCT or a CCT and it did not compare an exercise with no exercise, another intervention, or usual care
Aghili 2007	This study was excluded as it was not an RCT or a CCT
Banasik 2011	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Baumann 2008	This study was excluded as it was not an RCT or a CCT
Baumann 2011	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Beurskens 2007	This study was excluded as the exercise was aimed toward reduction in shoulder dysfunction rather than for improvement in whole body function or QoL
Bloom 2011	This study was excluded as the exercise was aimed toward reduction in treatment-related bone loss rather than for improvement in whole body function or QoL
Bourke 2011a	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Box 2002	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care and it did not measure overall HRQoL or an HRQoL domain as a study outcome
Box 2009	This study was excluded as it was not an RCT or a CCT; it did not compare an exercise with no exercise, another intervention, or usual care; and it did not measure overall HRQoL or an HRQoL domain as a study outcome
Carmack Taylor 2004	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Carmack Taylor 2006	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Carmack Taylor 2007	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Chen 2010	This study was excluded as the exercise was aimed toward reduction in treatment-related ill limb rather than for improvement in whole body function or QoL, it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Cho 2004	This study was excluded as it was not an RCT or a CCT
Cho 2006	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment

Study	Reason for exclusion
Crevenna 2003	This study was excluded as it was not an RCT or a CCT, and it only included people who had completed active cancer treatment for either the primary or recurrent cancer
Culos-Reed 2007	This study was excluded as it was not an RCT or a CCT, and it did not compare an exercise with no exercise, another intervention, or usual care
Daley 2004	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Daley 2007	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Daley 2007a	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Daubenmier 2006	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Demark-Wahnefried 2008	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Dhillon 2011	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care; it only included people who had completed active cancer treatment for either the primary or recurrent cancer; and the exercise intervention was initiated after completion of active treatment
Dimeo 1997	This study was excluded as it did not measure overall HRQoL or an HRQoL domain as a study outcome
Dimeo 2004	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Dong 2006	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer; it did not compare an exercise with no exercise, another intervention, or usual care; and the exercise intervention was initiated after completion of active treatment
Duijts 2009	This study was excluded as the exercise was aimed toward reduction in treatment-induced menopause rather than for improvement in whole body function or QoL
Duijts 2009a	This study was excluded as the exercise was aimed toward reduction in treatment-induced menopause rather than for improvement in whole body function or QoL
Duijts 2010	This study was excluded as the exercise was aimed toward reduction in treatment-induced menopause rather than for improvement in whole body function or QoL
Duijts 2010a	This study was excluded as the exercise was aimed toward reduction in treatment-induced menopause rather than for improvement in whole body function or QoL
Eyigor 2010	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care; it only included people who had completed active cancer treatment for either the

Study	Reason for exclusion
	primary or recurrent cancer; and the exercise intervention was initiated after completion of active treatment
Frattaroli 2008	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Galantino 2003	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Galvao 2006	This study was excluded as it was not an RCT or a CCT; it did not compare an exercise with no exercise, another intervention, or usual care; and it did not measure overall HRQoL or an HRQoL domain as a study outcome
Greenfield 2010	This study was excluded as it was not an RCT or a CCT; it did not compare an exercise with no exercise, another intervention, or usual care; it only included people who had completed active cancer treatment for either the primary or recurrent cancer; the exercise intervention was initiated after completion of active treatment; and it did not measure overall HRQoL or an HRQoL domain as a study outcome
Guo 2004	This study was excluded as it was not an RCT or a CCT, and it did not compare an exercise with no exercise, another intervention, or usual care
Haines 2010	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Hartmann 2007	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Hayes 2004	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, it did not exclude people below the age of 18 years, and the exercise intervention was initiated after completion of active treatment
Hayes 2011	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Heim 2007	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Heim 2011	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Heislein 2009	This study was excluded as it was not an RCT or a CCT, and it did not compare an exercise with no exercise, another intervention, or usual care
Henderson 2012	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Herdman 1995	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer; the exercise intervention was initiated after completion of active treatment; and it did not measure overall HRQoL or an HRQoL domain as a study outcome

Study	Reason for exclusion
Herold 2010	This study was excluded as it was not an RCT or a CCT, and it did not compare an exercise with no exercise, another intervention, or usual care
Houborg 2006	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Irwin 2008	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer; the exercise intervention was initiated after completion of active treatment; and it did not measure overall HRQoL or an HRQoL domain as a study outcome
John 2007	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Jones 2008	This study was excluded as it was not an RCT or a CCT, and it did not compare an exercise with no exercise, another intervention, or usual care
Jones 2010	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Kampshoff 2010	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Kilbreath 2006	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer; the exercise intervention was initiated after completion of active treatment; and the exercise was aimed toward reduction in lymphedema rather than for improvement in whole body function or QoL
Kilbreath 2006a	This study was excluded as the exercise was aimed toward reduction in shoulder dysfunction rather than for improvement in whole body function or QoL
Knols 2011	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Koller 2006	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Korstjens 2008	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Latka 2009	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Lau 2010	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Le Vu 1997	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Lee 2007a	This study was excluded as the exercise was aimed toward reduction in shoulder dysfunction rather than for improvement in whole body function or QoL

Study	Reason for exclusion
MacVicar 1989	This study was excluded as it did not measure overall HRQoL or an HRQoL domain as a study outcome
Manassero 2007	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Marchese 2004	This study was excluded as it did not exclude people below the age of 18 years
Mathewson-Chapman 1997	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care, and it did not measure overall HRQoL or an HRQoL domain as a study outcome
McClure 2010	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
McKenzie 2003	This study was excluded as the exercise was aimed toward reduction in lymphedema rather than for improvement in whole body function or QoL
Mehnert 2011	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Midtgaard 2005	This study was excluded as it was not an RCT or a CCT, and it did not compare an exercise with no exercise, another intervention, or usual care
Mina 2010	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Newton 2011	This study was excluded as it was not an RCT or a CCT, and it did not compare an exercise with no exercise, another intervention, or usual care
O'Brien 2003	This study was excluded as it was not an RCT or a CCT, and it did not compare an exercise with no exercise, another intervention, or usual care
Park 2006	This study was excluded as it was not an RCT or a CCT
Patel 2005	This study was excluded as there was no exercise intervention, the exercise included 10 to 15 minutes of gentle stretching
Peddle 2009	This study was excluded as it was not an RCT or a CCT, and it did not compare an exercise with no exercise, another intervention, or usual care
Penttinen 2009	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Persoon 2010	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Pickett 2002	This study was excluded as it did not measure overall HRQoL or an HRQoL domain as a study outcome
Pinto 2003	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment

Study	Reason for exclusion
Pinto 2005	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Roscoe 2005	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
San Juan 2008	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care; it did not exclude people below the age of 18 years; it only included people who had completed active cancer treatment for either the primary or recurrent cancer; and the exercise intervention was initiated after completion of active treatment
Scheier 2005	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care; it only included people who had completed active cancer treatment for either the primary or recurrent cancer; and the exercise intervention was initiated after completion of active treatment
Schwartz 1999	This study was excluded as it was not an RCT or a CCT, and it did not compare an exercise with no exercise, another intervention, or usual care
Schwartz 2000	This study was excluded as it was not an RCT or a CCT, and it did not compare an exercise with no exercise, another intervention, or usual care
Schwartz 2009	This study was excluded as it did not measure overall HRQoL or an HRQoL domain as a study outcome
Sekse 2011	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Shelton 2009	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer; the exercise intervention was initiated after completion of active treatment; and it did not compare an exercise with no exercise, another intervention, or usual care
Stephenson 2000	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
Thorsen 2005	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
Todd 2008	This study was excluded as the exercise was aimed toward reduction in lymphedema rather than for improvement in whole body function or QoL
Turner 2004	This study was excluded as it was not an RCT or a CCT; it did not compare an exercise with no exercise, another intervention, or usual care; it only included people who had completed active cancer treatment for either the primary or recurrent cancer; and the exercise intervention was initiated after completion of active treatment
Ulger 2010	This study was excluded as it was not an RCT or a CCT, and it did not compare an exercise with no exercise, another intervention, or usual care
Vallance 2008	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care; it only included people who had completed active cancer treatment for either the primary or recurrent cancer; and the exercise intervention was initiated after completion of active treatment

Study	Reason for exclusion
Vardy 2010	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer, and the exercise intervention was initiated after completion of active treatment
von Gruenigen 2009	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care
von Gruenigen 2011	This study was excluded as it was not an RCT or a CCT, and it did not compare an exercise with no exercise, another intervention, or usual care
Wang 2005	This study was excluded as it only included people who had completed active cancer treatment for either the primary or recurrent cancer; the exercise intervention was initiated after completion of active treatment; and it did not measure overall HRQoL or an HRQoL domain as a study outcome
Xie 2010	This study was excluded as the exercise was aimed toward upper limb function rather than for improvement in whole body function or QoL
Zhang 2006	This study was excluded as it did not compare an exercise with no exercise, another intervention, or usual care; it only included people who had completed active cancer treatment for either the primary or recurrent cancer; and the exercise intervention was initiated after completion of active treatment

CCT: controlled clinical; HRQoL: health-related quality of life; QoL: quality of life; RCT: randomized controlled trial.

Characteristics of studies awaiting classification *[ordered by study ID]*

Courneya 2001

Methods	RCT
Participants	96 participants with colorectal cancer (treatment status unknown)
Interventions	Fitness/exercise, details not provided on the intervention and comparison arm
Outcomes	HRQoL outcomes included psychological distress (anxiety, depression, fatigue) and well-being (physical, functional, emotional)
Notes	Published abstract

Harandi 2010

Methods	RCT
Participants	63 women with breast cancer (treatment status unknown)
Interventions	Home-based exercise therapy compared with control group
Outcomes	QoL assessed using the QLQ-C30 and QLQ-BR23
Notes	Published abstract

Sun 2009

Methods	RCT
Participants	240 women with breast cancer receiving chemotherapy
Interventions	Exercise intervention (specifics not provided)
Outcomes	Fatigue
Notes	Published report

Utz-Billing 2010

Methods	RCT
Participants	93 women who had breast cancer surgery (breast-sparing therapy or mastectomy)
Interventions	Yoga classes compared with waiting list control
Outcomes	QoL assessed by QLQ-C23, physical function assessed by FACT-B (Version 4), and disabilities of upper limbs (DASH)
Notes	Published abstract

DASH: ; FACT-B: Functional Assessment of Cancer Therapy - Breast; HRQoL: health-related quality of life; QLQ-C23; QLQ-C30: QLQ-BR23; QoL: quality of life; RCT: randomized controlled trials

Characteristics of ongoing studies *[ordered by study ID]*

Christensen 2011

Study name	PROTRACT
Methods	RCT
Participants	Men with testicular cancer undergoing 3 cycles of combination chemotherapy with bleomycin, etoposide, and cisplatin (BEP)
Interventions	HIPRT compared to standard care
Outcomes	Primary outcomes include mean fiber area and fiber type composition measured by histochemical analyses, satellite cells and levels of protein and mRNA expression of intracellular mediators of protein turnover. Secondary outcomes include maximum muscle strength and muscle power measured by maximum voluntary contraction and leg-extensor-power tests, body composition assessed by DXA scan, and systemic inflammation analyzed by circulating inflammatory markers, lipid and glucose metabolism in blood samples. HRQoL outcomes assessed using the QLQ-C30 and SF-36
Starting date	Not reported
Contact information	Jesper F Christensen, University Hospital Centre for Nursing and Care Research, Copenhagen University Hospital, Blegdamsvej 9, 2100 Copenhagen, Denmark
Notes	Published protocol. Trial Registration: Current Controlled Trials ISRCTN32132990

Galvao 2009

Study name	RADAR
Methods	RCT
Participants	Cohort undergoing or previously treated for prostate cancer involving androgen deprivation therapy
Interventions	Supervised resistance/aerobic exercise compared to standard physical activity recommendation
Outcomes	Outcomes include aerobic walking capacity, anthropometric measures (abdominal obesity), various blood markers, self-reported physical activity, HRQoL assessed using the QLQ-C30, falls self-efficacy assessed using the activities-specific balance, psychological distress assessed using the BSI, nutrition, and lower body physical function. In addition, at 1 of the study sites, additional outcomes assessed include body composition, muscle strength, balance, and risk of falling
Starting date	Not reported
Contact information	Daniel A. Galvao, Vario Health Institute, School of Exercise, Biomedical and Health Sciences, Edith Cowan University, Joondalup, WA, Australia
Notes	Published protocol. Trial Registration: ACTRN 12609000729224

Haseen 2010

Study name	Dietary and physical activity intervention for prostate cancer patients
Methods	RCT
Participants	Prostate cancer survivors receiving ADT
Interventions	Dietary modification and physical activity compared to standard care
Outcomes	Primary outcomes include body composition, fatigue assessed using the FSS, and QoL assessed using the FACT-P. Secondary outcomes include nutrient intake, physical activity and perceived stress assessed using the PSS-10
Starting date	Not reported
Contact information	Farhana Haseen, Centre for Public Health, Queen's University Belfast, Northern Ireland, UK
Notes	Published protocol. Trial registration: ISRCTN trial number ISCRTN75282423

Newton 2009

Study name	Exercise modalities on treatment side-effects in men receiving therapy for prostate cancer
Methods	RCT
Participants	Men undergoing treatment for prostate cancer involving ADT

Newton 2009 *(Continued)*

Interventions	(1) Resistance/impact loading exercise, (2) resistance/cardiovascular exercise groups, or (3) usual care/delayed exercise
Outcomes	Primary outcomes include whole body and hip and spine BMD, body composition, cardiorespiratory capacity, blood pressure and arterial stiffness, and blood markers. Secondary outcomes include muscle strength and endurance, physical function, balance and risk of falling, physical activity, QoL, and psychological distress. QoL assessed using the QLQ-C30 and QLQ-PR25 as well as a health history questionnaire, and psychological distress (anxiety, depression, and somatization) assessed using the BSI-18
Starting date	Not reported
Contact information	Robert U Newton, Vario Health Institute, Edith Cowan University, Joondalup, WA, Australia
Notes	Published protocol. Clinical Trial Registry: ACTRN12609000200280

van Waart 2010

Study name	PACES
Methods	RCT
Participants	Participants with breast or colon cancer receiving adjuvant chemotherapy
Interventions	(1) Onco-Move, a relatively low-intensity, home-based, individualized, self-managed physical activity program, (2) OnTrack, a relatively high-intensity exercise program that is supervised by a physical therapist in an outpatient or general physical therapy practice setting, or (3) usual care
Outcomes	Primary outcomes include cardiorespiratory fitness, muscle strength, and fatigue assessed using the MFI and the FQL. Secondary outcomes include mood disturbance assessed using the HADS, quality of sleep assessed using the PSQI, HRQoL assessed using the QLQ-C30, functioning in daily life, measured physical activity level, self-reported physical activity level, and anthropometric measures
Starting date	Not reported
Contact information	Hanna van Waart, The Netherlands Cancer Institute, Division of Psychosocial Research and Epidemiology, Amsterdam, The Netherlands
Notes	Published protocol. Trial registration: The Netherlands Trial Register (NTR 2159)

Velthuis 2010

Study name	PACT
Methods	RCT
Participants	Participants with breast or colon cancer undergoing cancer treatment
Interventions	An 18-week supervised group or control group asked to maintain their habitual physical activity pattern

Velthuis 2010 *(Continued)*

Outcomes	Primary outcome is fatigue assessed using the MFI and the FQL. Secondary outcomes include HRQoL assessed using the EORTC QLQ-C30 (Version 3) and the SF-36, perceived impact of the disease on participation and autonomy assessed using the IPA questionnaire, anxiety and depression assessed using the Dutch language version of the HADS, physical fitness, BMI, body fat distribution, self efficacy about the performance of physical activity, and physical activity level
Starting date	Not reported
Contact information	Miranda J Velthuis, Comprehensive Cancer Center Middle Netherlands, Utrecht, the Netherlands
Notes	Published protocol. Trial registration: Current Controlled trials ISRCTN43801571, Dutch Trial Register NTR2138

ADT: androgen deprivation therapy; BMD: bone mineral density; BMI: body mass index; BSI-18: Brief Symptom Inventory-18; DXA: dual energy X-ray absorptiometry; DCIS: ductal carcinoma in situ; EORTC: European Organization for Research and Treatment of Cancer: FACT-P: Functional Assessment of Cancer Therapy - prostate; Functional Assessment of Cancer Therapy - Prostate; FQL: Fatigue Quality List; FSS: Fatigue Severity Scale; GED: general educational development; HADS: Hospital Anxiety and Depression Scale; HIPRT: high-intensity progressive resistance training; HRQoL: health-related quality of life; IPA: Impact on Participation and Autonomy; MFI: Multidimensional Fatigue Inventory; PSQI: Pittsburgh Sleep Quality Index; PSS-10: Perceived Stress Scale; EORTC QLQ-C30: European Organization for Research and Treatment of Cancer: Quality of Life Questionnaire-C30; QoL: quality of life; RCT: randomized controlled Trial; SF-36: Short Form-36.

DATA AND ANALYSES

Comparison 1. Health-related quality of life

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.1 Overall quality of life change score	14		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1.1 Up to 12 weeks' follow-up	11	806	Std. Mean Difference (IV, Random, 95% CI)	0.47 [0.16, 0.79]
1.1.2 More than 12 weeks' to less than 6 months' follow-up	4	442	Std. Mean Difference (IV, Random, 95% CI)	1.25 [-0.03, 2.53]
1.1.3 6 months' follow-up	3	282	Std. Mean Difference (IV, Random, 95% CI)	0.14 [-0.11, 0.39]
1.2 Overall quality of life follow-up values	26		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.2.1 Up to 12 weeks' follow-up	20	1166	Std. Mean Difference (IV, Random, 95% CI)	0.33 [0.12, 0.55]
1.2.2 More than 12 weeks' to less than 6 months' follow-up	6	529	Std. Mean Difference (IV, Random, 95% CI)	0.25 [0.07, 0.43]
1.2.3 6 months' follow-up	8	686	Std. Mean Difference (IV, Random, 95% CI)	0.13 [-0.09, 0.35]

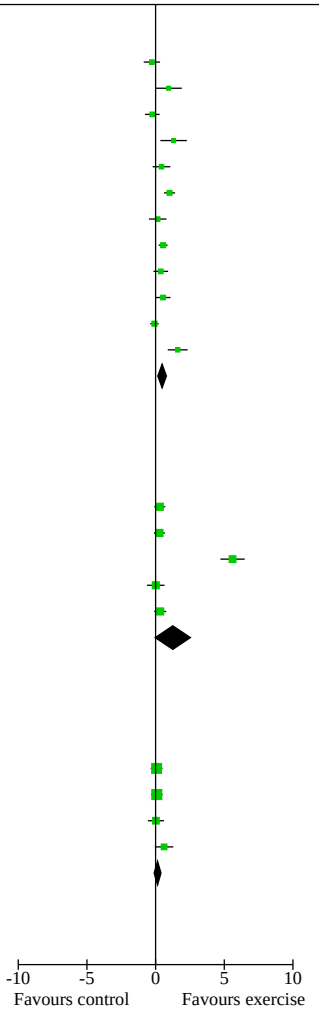
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.3 FACT-An change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.3.1 Up to 12 weeks' follow-up	1	55	Mean Difference (IV, Random, 95% CI)	-6.90 [-21.73, 7.93]
1.3.2 More than 12 weeks' to less than 6 months' follow-up	1	223	Mean Difference (IV, Random, 95% CI)	6.33 [1.31, 11.34]
1.3.3 6 months' follow-up	1	201	Mean Difference (IV, Random, 95% CI)	2.10 [-5.77, 9.97]
1.4 FACT-An follow-up values	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.4.1 Up to 12 weeks' follow-up	3	312	Mean Difference (IV, Random, 95% CI)	4.50 [-4.31, 13.32]
1.4.2 More than 12 weeks' to less than 6 months' follow-up	2	253	Mean Difference (IV, Random, 95% CI)	8.31 [-3.36, 19.98]
1.4.3 6 months' follow-up	2	230	Mean Difference (IV, Random, 95% CI)	5.16 [-4.15, 14.46]
1.5 FACT-B change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.5.1 Up to 12 weeks' follow-up	2	57	Mean Difference (IV, Random, 95% CI)	6.81 [-5.81, 19.43]
1.5.2 6 months' follow-up	1	36	Mean Difference (IV, Random, 95% CI)	8.20 [-0.29, 16.69]
1.6 FACT-B follow-up values	4		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.6.1 Up to 12 weeks' follow-up	3	120	Mean Difference (IV, Random, 95% CI)	0.73 [-8.23, 9.69]
1.6.2 6 months' follow-up	2	170	Mean Difference (IV, Random, 95% CI)	-0.55 [-3.65, 2.55]
1.7 FACT-G change	5		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.7.1 Up to 12 weeks' follow-up	4	286	Mean Difference (IV, Random, 95% CI)	5.70 [2.30, 9.09]
1.7.2 More than 12 weeks' to less than 6 months' follow-up	1	81	Mean Difference (IV, Random, 95% CI)	2.52 [-0.75, 5.79]
1.7.3 6 months' follow-up	2	81	Mean Difference (IV, Random, 95% CI)	3.52 [-2.94, 9.99]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.8 FACT-G follow-up values	10		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.8.1 Up to 12 weeks' follow-up	6	318	Mean Difference (IV, Random, 95% CI)	6.89 [0.44, 13.35]
1.8.2 More than 12 weeks' to less than 6 months' follow-up	2	151	Mean Difference (IV, Random, 95% CI)	6.25 [-0.75, 13.26]
1.8.3 6 months' follow-up	7	485	Mean Difference (IV, Random, 95% CI)	1.89 [-2.38, 6.17]
1.9 FACT-P change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.9.1 Up to 12 weeks' follow-up	2	176	Mean Difference (IV, Random, 95% CI)	8.55 [0.45, 16.65]
1.10 FACT-P follow-up values	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.10.1 Up to 12 weeks' follow-up	2	64	Mean Difference (IV, Random, 95% CI)	7.36 [-1.59, 16.31]
1.11 FACIT-F change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.11.1 Up to 12 weeks' follow-up	2	205	Mean Difference (IV, Random, 95% CI)	1.55 [-6.37, 9.48]
1.11.2 More than 12 weeks' to less than 6 months' follow-up	1	38	Mean Difference (IV, Random, 95% CI)	0.21 [-8.78, 9.20]
1.12 FACIT-F follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.12.1 Up to 12 weeks' follow-up	1	38	Mean Difference (IV, Random, 95% CI)	13.30 [-3.16, 29.76]
1.12.2 More than 12 weeks' to less than 6 months' follow-up	1	38	Mean Difference (IV, Random, 95% CI)	6.83 [-9.26, 22.92]
1.13 QLQ-C30 change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.13.1 Up to 12 weeks' follow-up	1	44	Mean Difference (IV, Random, 95% CI)	-5.14 [-15.97, 5.69]
1.13.2 More than 12 weeks' to less than 6 months' follow-up	1	100	Mean Difference (IV, Random, 95% CI)	5.03 [4.68, 5.38]
1.14 QLQ-C30 follow-up values	7		Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.14.1 Up to 12 weeks' follow-up	5	210	Mean Difference (IV, Random, 95% CI)	7.31 [1.99, 12.63]
1.14.2 More than 12 weeks' to less than 6 months' follow-up	3	147	Mean Difference (IV, Random, 95% CI)	6.00 [0.69, 11.31]
1.14.3 6 months' follow-up	1	29	Mean Difference (IV, Random, 95% CI)	14.50 [-0.75, 29.75]
1.15 FLIC follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.15.1 Up to 12 weeks' follow-up	1	62	Mean Difference (IV, Random, 95% CI)	30.40 [21.03, 39.77]
1.16 WHO BREF follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.16.1 Up to 12 weeks' follow-up	1	37	Mean Difference (IV, Random, 95% CI)	0.17 [-0.05, 0.39]
1.17 Ferrand and Powers follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.17.1 Up to 12 weeks' follow-up	1	17	Mean Difference (IV, Random, 95% CI)	1.00 [-3.33, 5.33]
1.18 Spitzer QoL Uniscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.18.1 Up to 12 weeks' follow-up	1	96	Mean Difference (IV, Random, 95% CI)	3.50 [-5.10, 12.10]
1.19 MDASI-T Symptom Interference change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.19.1 Up to 12 months' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.64 [-2.29, -0.99]
1.20 MDASI-T Symptom Interference follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.20.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.50 [-2.36, -0.64]
1.21 Quality of Life Systemic Inventory follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.21.1 Up to 12 months' follow-up	1	73	Mean Difference (IV, Random, 95% CI)	-0.75 [-3.32, 1.82]

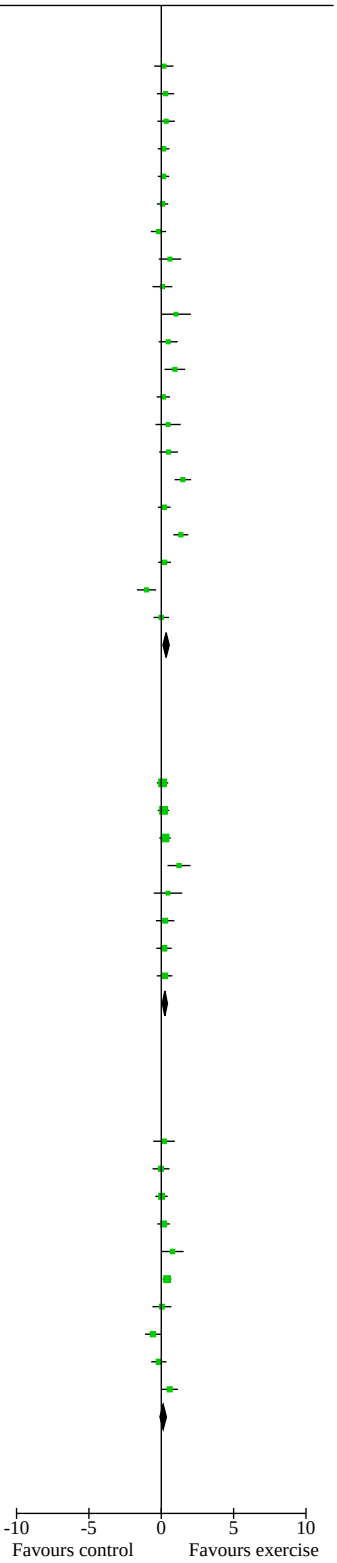
Analysis 1.1. Comparison 1: Health-related quality of life, Outcome 1: Overall quality of life change score

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
1.1.1 Up to 12 weeks' follow-up								
Arbane 2009	-0.79	14.65	21	4.35	21.6	23	8.3%	-0.27 [-0.87 , 0.32]
Campbell 2005	11.9	13.8	10	-2.9	16.1	9	5.6%	0.95 [-0.01 , 1.91]
Courneya 2008	13.4	27	26	20.3	29.1	29	8.8%	-0.24 [-0.77 , 0.29]
Monga 2007	7.4	10.4	11	-6.4	9.8	10	5.6%	1.31 [0.35 , 2.27]
Mustian 2009	6	18.3	19	-0.67	11.51	19	7.9%	0.43 [-0.22 , 1.07]
Oh 2010	8.86	9	54	-0.13	8.6	54	9.9%	1.01 [0.61 , 1.42]
Rogers 2009	4.5	8.4	20	2.9	12	18	7.9%	0.15 [-0.49 , 0.79]
Segal 2003	2	9.1	82	-3.3	10.2	73	10.5%	0.55 [0.23 , 0.87]
Segal 2009	0.75	8.4	40	-2.48	8.5	21	8.8%	0.38 [-0.15 , 0.91]
Segal 2009	2.27	8.8	40	-2.48	8.5	20	8.7%	0.54 [-0.01 , 1.08]
Targ 2002	4.98	16.1	79	6.62	21.7	88	10.6%	-0.08 [-0.39 , 0.22]
Yang 2011	1.41	1.4	19	-0.23	0.36	21	7.3%	1.61 [0.89 , 2.33]
Subtotal (95% CI)			**421**			**385**	**100.0%**	**0.47 [0.16 , 0.79]**
Heterogeneity: Tau² = 0.22; Chi² = 46.31, df = 11 (P < 0.00001); I² = 76%								
Test for overall effect: Z = 2.97 (P = 0.003)								
1.1.2 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	5.9	25.6	76	-1	13.7	37	20.4%	0.31 [-0.09 , 0.70]
Courneya 2007a	4.8	23.3	74	-1	13.7	36	20.4%	0.28 [-0.12 , 0.68]
Culos-Reed 2010	2.7	0.9	53	-2.33	0.88	47	19.0%	5.60 [4.72 , 6.49]
Mustian 2009	8.76	16.51	19	8.55	11.28	19	19.8%	0.01 [-0.62 , 0.65]
Segal 2009	2.35	7.5	40	-0.17	7.5	41	20.3%	0.33 [-0.11 , 0.77]
Subtotal (95% CI)			**262**			**180**	**100.0%**	**1.25 [-0.03 , 2.53]**
Heterogeneity: Tau² = 2.05; Chi² = 132.26, df = 4 (P < 0.00001); I² = 97%								
Test for overall effect: Z = 1.92 (P = 0.06)								
1.1.3 6 months' follow-up								
Courneya 2007a	20.1	26.8	68	18.2	25.69	30	33.7%	0.07 [-0.36 , 0.50]
Courneya 2007a	20.5	27	73	18.2	25.69	30	34.4%	0.09 [-0.34 , 0.51]
Donnelly 2011	3.7	7.3	22	3.4	15	23	18.2%	0.02 [-0.56 , 0.61]
Rogers 2009	3.4	11	19	-3.5	10.8	17	13.8%	0.62 [-0.05 , 1.29]
Subtotal (95% CI)			**182**			**100**	**100.0%**	**0.14 [-0.11 , 0.39]**
Heterogeneity: Tau² = 0.00; Chi² = 2.26, df = 3 (P = 0.52); I² = 0%								
Test for overall effect: Z = 1.13 (P = 0.26)								
Test for subgroup differences: Chi² = 4.83, df = 2 (P = 0.09), I² = 58.6%								



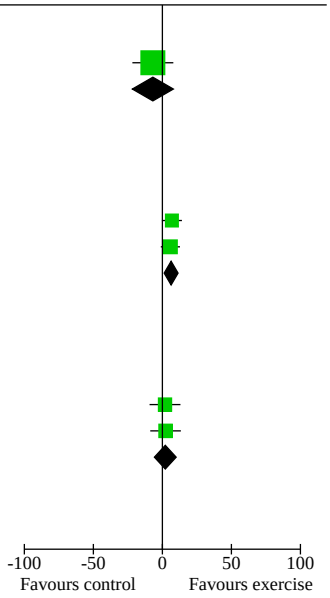
Analysis 1.2. Comparison 1: Health-related quality of life, Outcome 2: Overall quality of life follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
1.2.1 Up to 12 weeks' follow-up								
Adamsen 2009	67.2	20.3	18	63.3	22.4	17	4.3%	0.18 [-0.49 , 0.84]
Arbane 2009	71.03	14.1	21	63.78	30.42	23	4.7%	0.30 [-0.30 , 0.89]
Bourke 2011	91	10	21	86	18	22	4.7%	0.33 [-0.27 , 0.94]
Cheville 2010	71.9	19.41	47	68.4	23.48	49	5.9%	0.16 [-0.24 , 0.56]
Courneya 2007a	135.5	27.2	73	131.1	29.5	38	5.9%	0.16 [-0.24 , 0.55]
Courneya 2007a	132.6	2.4	75	131.1	29.5	37	5.9%	0.09 [-0.31 , 0.48]
Courneya 2008	138.4	29.4	26	143.7	25.8	29	5.1%	-0.19 [-0.72 , 0.34]
Danhauer 2009	114.8	19.1	13	98.4	31.8	14	3.8%	0.60 [-0.17 , 1.38]
Donnelly 2011	80.19	16.93	16	78.71	19.1	17	4.2%	0.08 [-0.60 , 0.76]
Hacker 2011	76	12.2	8	58.3	19.5	9	2.8%	1.02 [-0.01 , 2.05]
Hwang 2008	3.19	0.33	17	3.02	0.36	20	4.4%	0.48 [-0.18 , 1.14]
Jarden 2009	81.6	14.5	17	69	11.5	17	4.1%	0.94 [0.23 , 1.65]
Lanctot 2010	-5.63	3.77	41	-6.38	6.64	32	5.5%	0.14 [-0.32 , 0.61]
Monga 2007	145.9	18.3	11	138.1	12.7	10	3.4%	0.47 [-0.40 , 1.34]
Mustian 2009	130.2	20.13	19	116.9	30.58	19	4.4%	0.50 [-0.14 , 1.15]
Raghavendra 2007	142.1	10.2	28	111.7	25.5	34	4.9%	1.49 [0.92 , 2.06]
Segal 2009	90.2	13.1	40	87.5	13.2	41	5.7%	0.20 [-0.23 , 0.64]
Wang 2010	84.28	13.05	35	66.06	13.6	37	5.2%	1.35 [0.84 , 1.87]
Wiskemann 2011	61.7	22.2	40	57.1	17.3	40	5.6%	0.23 [-0.21 , 0.67]
Yang 2011	0.75	0.79	19	2.25	1.84	21	4.3%	-1.02 [-1.68 , -0.36]
de Oliveira 2010	81.6	12.4	28	81.6	13	27	5.1%	0.00 [-0.53 , 0.53]
Subtotal (95% CI)			**613**			**553**	**100.0%**	**0.33 [0.12 , 0.55]**
Heterogeneity: Tau² = 0.16; Chi² = 62.32, df = 20 (P < 0.00001); I² = 68%								
Test for overall effect: Z = 3.03 (P = 0.002)								
1.2.2 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	132.6	2.4	75	131.1	29.5	37	20.5%	0.09 [-0.31 , 0.48]
Courneya 2007a	135.5	27.2	73	131.1	29.5	38	20.6%	0.16 [-0.24 , 0.55]
Culos-Reed 2010	73.12	16	53	69	15.12	47	20.4%	0.26 [-0.13 , 0.66]
Jarden 2009	85.6	9.9	17	71.3	13	13	5.0%	1.23 [0.43 , 2.02]
Moros 2010	70	18.9	10	60.7	19	7	3.3%	0.47 [-0.52 , 1.45]
Mustian 2009	132.96	16.41	19	126.13	31.81	19	7.8%	0.26 [-0.37 , 0.90]
Segal 2009	91.8	13.1	40	89.3	13.1	21	11.4%	0.19 [-0.34 , 0.72]
Segal 2009	92.4	13.4	40	89.3	13.1	20	11.0%	0.23 [-0.31 , 0.77]
Subtotal (95% CI)			**327**			**202**	**100.0%**	**0.25 [0.07 , 0.43]**
Heterogeneity: Tau² = 0.00; Chi² = 6.93, df = 7 (P = 0.44); I² = 0%								
Test for overall effect: Z = 2.73 (P = 0.006)								
1.2.3 6 months' follow-up								
Bourke 2011	90	13	15	87	17	13	6.5%	0.19 [-0.55 , 0.94]
Cadmus 2009	89.3	11.1	22	89.5	11.8	23	9.0%	-0.02 [-0.60 , 0.57]
Courneya 2007a	152.9	26	73	152.4	26.4	30	12.6%	0.02 [-0.41 , 0.44]
Courneya 2007a	156.3	24	68	152.4	26.4	30	12.5%	0.16 [-0.27 , 0.59]
Jarden 2009	90.1	11.9	16	78.1	18	13	6.2%	0.78 [0.02 , 1.54]
Mutrie 2007	83.2	12.8	82	77.1	17	95	16.5%	0.40 [0.10 , 0.70]
Rogers 2009	86.1	13.6	19	85.4	18.4	17	7.8%	0.04 [-0.61 , 0.70]
Segal 2001	89.19	14.48	40	96.79	9.08	20	9.7%	-0.58 [-1.13 , -0.03]
Segal 2001	95.04	11.3	40	96.79	9.08	21	10.1%	-0.16 [-0.69 , 0.37]
de Oliveira 2010	84.1	10	24	77.1	13.3	25	9.2%	0.58 [0.01 , 1.16]
Subtotal (95% CI)			**399**			**287**	**100.0%**	**0.13 [-0.09 , 0.35]**
Heterogeneity: Tau² = 0.06; Chi² = 16.46, df = 9 (P = 0.06); I² = 45%								
Test for overall effect: Z = 1.16 (P = 0.25)								
Test for subgroup differences: Chi² = 1.64, df = 2 (P = 0.44), I² = 0%								



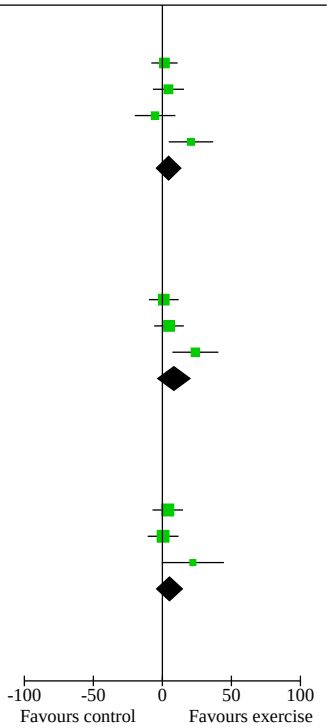
Analysis 1.3. Comparison 1: Health-related quality of life, Outcome 3: FACT-An change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.3.1 Up to 12 weeks' follow-up								
Courneya 2008	13.4	27	26	20.3	29.1	29	100.0%	-6.90 [-21.73 , 7.93]
Subtotal (95% CI)			**26**			**29**	**100.0%**	**-6.90 [-21.73 , 7.93]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.91 (P = 0.36)								
1.3.2 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	5.9	25.6	76	-1	13.7	37	47.8%	6.90 [-0.35 , 14.15]
Courneya 2007a	4.8	23.3	74	-1	13.7	36	52.2%	5.80 [-1.14 , 12.74]
Subtotal (95% CI)			**150**			**73**	**100.0%**	**6.33 [1.31 , 11.34]**
Heterogeneity: Tau² = 0.00; Chi² = 0.05, df = 1 (P = 0.83); I² = 0%								
Test for overall effect: Z = 2.47 (P = 0.01)								
1.3.3 6 months' follow-up								
Courneya 2007a	20.1	26.8	68	18.2	25.69	30	49.6%	1.90 [-9.28 , 13.08]
Courneya 2007a	20.5	27	73	18.2	25.69	30	50.4%	2.30 [-8.78 , 13.38]
Subtotal (95% CI)			**141**			**60**	**100.0%**	**2.10 [-5.77 , 9.97]**
Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 0.96); I² = 0%								
Test for overall effect: Z = 0.52 (P = 0.60)								
Test for subgroup differences: Chi² = 3.12, df = 2 (P = 0.21), I² = 35.8%								



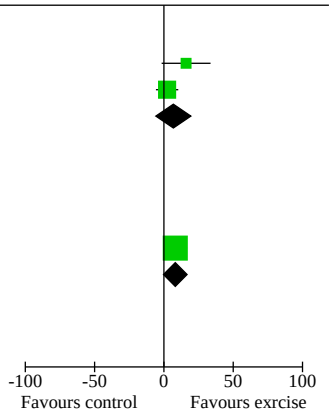
Analysis 1.4. Comparison 1: Health-related quality of life, Outcome 4: FACT-An follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.4.1 Up to 12 weeks' follow-up								
Courneya 2007a	132.6	2.4	75	131.1	29.5	37	32.1%	1.50 [-8.02 , 11.02]
Courneya 2007a	135.5	27.2	73	131.1	29.5	38	27.9%	4.40 [-6.87 , 15.67]
Courneya 2008	138.4	29.4	26	143.7	25.8	29	21.1%	-5.30 [-19.99 , 9.39]
Jarden 2009	136.5	26.1	17	115.8	21.6	17	18.9%	20.70 [4.60 , 36.80]
Subtotal (95% CI)			**191**			**121**	**100.0%**	**4.50 [-4.31 , 13.32]**
Heterogeneity: Tau² = 39.49; Chi² = 5.94, df = 3 (P = 0.11); I² = 49%								
Test for overall effect: Z = 1.00 (P = 0.32)								
1.4.2 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	140.9	24.8	76	139.9	28.2	36	37.1%	1.00 [-9.77 , 11.77]
Courneya 2007a	144.7	25.2	74	139.9	28.2	37	37.1%	4.80 [-5.95 , 15.55]
Jarden 2009	145.6	19.9	17	121.7	25.2	13	25.8%	23.90 [7.25 , 40.55]
Subtotal (95% CI)			**167**			**86**	**100.0%**	**8.31 [-3.36 , 19.98]**
Heterogeneity: Tau² = 65.39; Chi² = 5.29, df = 2 (P = 0.07); I² = 62%								
Test for overall effect: Z = 1.40 (P = 0.16)								
1.4.3 6 months' follow-up								
Courneya 2007a	156.3	24	68	152.4	26.4	30	42.9%	3.90 [-7.14 , 14.94]
Courneya 2007a	152.9	26	73	152.4	26.4	30	42.3%	0.50 [-10.67 , 11.67]
Jarden 2009	153.8	25.1	16	131.7	34.6	13	14.8%	22.10 [-0.37 , 44.57]
Subtotal (95% CI)			**157**			**73**	**100.0%**	**5.16 [-4.15 , 14.46]**
Heterogeneity: Tau² = 20.79; Chi² = 2.86, df = 2 (P = 0.24); I² = 30%								
Test for overall effect: Z = 1.09 (P = 0.28)								
Test for subgroup differences: Chi² = 0.28, df = 2 (P = 0.87), I² = 0%								



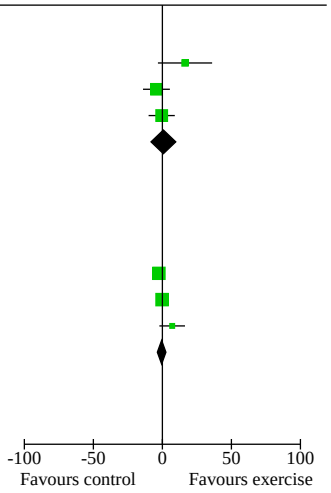
Analysis 1.5. Comparison 1: Health-related quality of life, Outcome 5: FACT-B change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.5.1 Up to 12 weeks' follow-up								
Campbell 2005	14.3	19.8	10	-1.7	19.4	9	32.9%	16.00 [-1.64 , 33.64]
Rogers 2009	5.4	10.8	20	3.1	14.1	18	67.1%	2.30 [-5.75 , 10.35]
Subtotal (95% CI)			**30**			**27**	**100.0%**	**6.81 [-5.81 , 19.43]**
Heterogeneity: Tau² = 44.90; Chi² = 1.92, df = 1 (P = 0.17); I² = 48%								
Test for overall effect: Z = 1.06 (P = 0.29)								
1.5.2 6 months' follow-up								
Rogers 2009	4.1	12	19	-4.1	13.8	17	100.0%	8.20 [-0.29 , 16.69]
Subtotal (95% CI)			**19**			**17**	**100.0%**	**8.20 [-0.29 , 16.69]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.89 (P = 0.06)								
Test for subgroup differences: Chi² = 0.03, df = 1 (P = 0.86), I² = 0%								



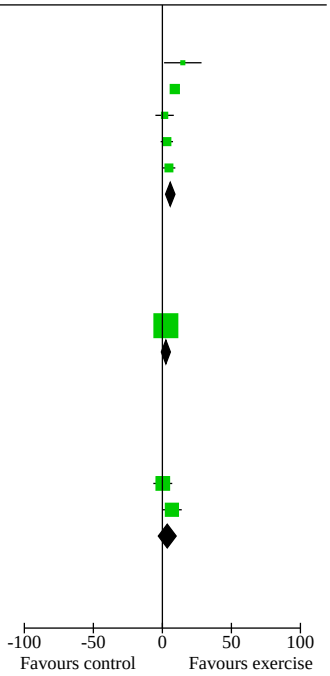
Analysis 1.6. Comparison 1: Health-related quality of life, Outcome 6: FACT-B follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.6.1 Up to 12 weeks' follow-up								
Danhauer 2009	114.8	19.1	13	98.4	31.8	14	16.5%	16.40 [-3.23 , 36.03]
Rogers 2009	114.4	16.2	20	118.7	14.4	18	41.2%	-4.30 [-14.03 , 5.43]
de Oliveira 2010	106.2	18	28	106.7	17.9	27	42.2%	-0.50 [-9.99 , 8.99]
Subtotal (95% CI)			**61**			**59**	**100.0%**	**0.73 [-8.23 , 9.69]**
Heterogeneity: Tau² = 26.05; Chi² = 3.43, df = 2 (P = 0.18); I² = 42%								
Test for overall effect: Z = 0.16 (P = 0.87)								
1.6.2 6 months' follow-up								
Segal 2001	21.3	4.82	40	23.78	4.73	20	44.9%	-2.48 [-5.04 , 0.08]
Segal 2001	23.54	4.73	40	23.78	4.73	21	45.5%	-0.24 [-2.74 , 2.26]
de Oliveira 2010	108.5	14.8	24	101.4	18.2	25	9.5%	7.10 [-2.17 , 16.37]
Subtotal (95% CI)			**104**			**66**	**100.0%**	**-0.55 [-3.65 , 2.55]**
Heterogeneity: Tau² = 3.86; Chi² = 4.58, df = 2 (P = 0.10); I² = 56%								
Test for overall effect: Z = 0.35 (P = 0.73)								
Test for subgroup differences: Chi² = 0.07, df = 1 (P = 0.79), I² = 0%								



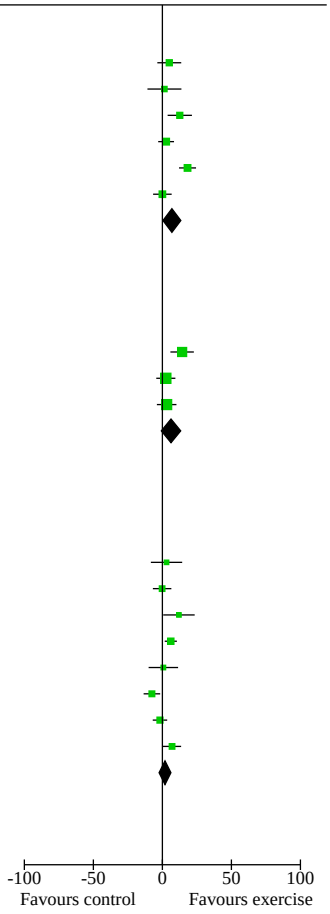
Analysis 1.7. Comparison 1: Health-related quality of life, Outcome 7: FACT-G change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.7.1 Up to 12 weeks' follow-up								
Campbell 2005	11.9	13.8	10	-2.9	16.1	9	5.5%	14.80 [1.24 , 28.36]
Oh 2010	8.86	9	54	-0.13	8.6	54	30.2%	8.99 [5.67 , 12.31]
Rogers 2009	4.5	8.4	20	2.9	12	18	16.1%	1.60 [-5.05 , 8.25]
Segal 2009	0.75	8.4	40	-2.48	8.5	21	24.4%	3.23 [-1.24 , 7.70]
Segal 2009	2.27	8.8	40	-2.48	8.5	20	23.8%	4.75 [0.13 , 9.37]
Subtotal (95% CI)			**164**			**122**	**100.0%**	**5.70 [2.30 , 9.09]**
Heterogeneity: Tau² = 7.07; Chi² = 8.16, df = 4 (P = 0.09); I² = 51%								
Test for overall effect: Z = 3.29 (P = 0.001)								
1.7.2 More than 12 weeks' to less than 6 months' follow-up								
Segal 2009	2.35	7.5	40	-0.17	7.5	41	100.0%	2.52 [-0.75 , 5.79]
Subtotal (95% CI)			**40**			**41**	**100.0%**	**2.52 [-0.75 , 5.79]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.51 (P = 0.13)								
1.7.3 6 months' follow-up								
Donnelly 2011	3.7	7.3	22	3.4	15	23	51.2%	0.30 [-6.55 , 7.15]
Rogers 2009	3.4	11	19	-3.5	10.8	17	48.8%	6.90 [-0.23 , 14.03]
Subtotal (95% CI)			**41**			**40**	**100.0%**	**3.52 [-2.94 , 9.99]**
Heterogeneity: Tau² = 9.06; Chi² = 1.71, df = 1 (P = 0.19); I² = 42%								
Test for overall effect: Z = 1.07 (P = 0.29)								
Test for subgroup differences: Chi² = 1.77, df = 2 (P = 0.41), I² = 0%								



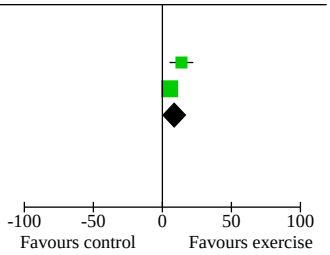
Analysis 1.8. Comparison 1: Health-related quality of life, Outcome 8: FACT-G follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.8.1 Up to 12 weeks' follow-up								
Bourke 2011	91	10	21	86	18	22	16.0%	5.00 [-3.65 , 13.65]
Donnelly 2011	80.19	16.93	16	78.71	19.1	17	12.4%	1.48 [-10.82 , 13.78]
Jarden 2009	81.6	14.5	17	69	11.5	17	15.8%	12.60 [3.80 , 21.40]
Segal 2009	90.2	13.1	40	87.5	13.2	41	19.1%	2.70 [-3.03 , 8.43]
Wang 2010	84.28	13.05	35	66.06	13.6	37	18.6%	18.22 [12.06 , 24.38]
de Oliveira 2010	81.6	12.4	28	81.6	13	27	18.1%	0.00 [-6.72 , 6.72]
Subtotal (95% CI)			**157**			**161**	**100.0%**	**6.89 [0.44 , 13.35]**
Heterogeneity: Tau² = 48.33; Chi² = 21.62, df = 5 (P = 0.0006); I² = 77%								
Test for overall effect: Z = 2.09 (P = 0.04)								
1.8.2 More than 12 weeks' to less than 6 months' follow-up								
Jarden 2009	85.6	9.9	17	71.3	13	13	30.0%	14.30 [5.81 , 22.79]
Segal 2009	91.8	13.1	40	89.3	13.1	21	35.3%	2.50 [-4.42 , 9.42]
Segal 2009	92.4	13.4	40	89.3	13.1	20	34.7%	3.10 [-3.99 , 10.19]
Subtotal (95% CI)			**97**			**54**	**100.0%**	**6.25 [-0.75 , 13.26]**
Heterogeneity: Tau² = 23.77; Chi² = 5.28, df = 2 (P = 0.07); I² = 62%								
Test for overall effect: Z = 1.75 (P = 0.08)								
1.8.3 6 months' follow-up								
Bourke 2011	90	13	15	87	17	13	8.4%	3.00 [-8.34 , 14.34]
Cadmus 2009	89.3	11.1	22	89.5	11.8	23	13.6%	-0.20 [-6.89 , 6.49]
Jarden 2009	90.1	11.9	16	78.1	18	13	8.3%	12.00 [0.61 , 23.39]
Mutrie 2007	83.2	12.8	82	77.1	17	95	16.8%	6.10 [1.70 , 10.50]
Rogers 2009	86.1	13.6	19	85.4	18.4	17	9.0%	0.70 [-9.97 , 11.37]
Segal 2001	89.19	14.48	40	96.79	9.08	20	14.6%	-7.60 [-13.60 , -1.60]
Segal 2001	95.04	11.3	40	96.79	9.08	21	15.6%	-1.75 [-6.98 , 3.48]
de Oliveira 2010	84.1	10	24	77.1	13.3	25	13.8%	7.00 [0.43 , 13.57]
Subtotal (95% CI)			**258**			**227**	**100.0%**	**1.89 [-2.38 , 6.17]**
Heterogeneity: Tau² = 23.39; Chi² = 20.78, df = 7 (P = 0.004); I² = 66%								
Test for overall effect: Z = 0.87 (P = 0.39)								
Test for subgroup differences: Chi² = 2.10, df = 2 (P = 0.35), I² = 4.7%								



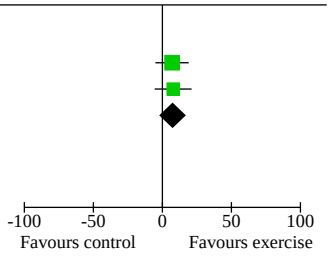
Analysis 1.9. Comparison 1: Health-related quality of life, Outcome 9: FACT-P change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.9.1 Up to 12 weeks' follow-up								
Monga 2007	7.4	10.4	11	-6.4	9.8	10	38.2%	13.80 [5.16 , 22.44]
Segal 2003	2	9.1	82	-3.3	10.2	73	61.8%	5.30 [2.24 , 8.36]
Subtotal (95% CI)			**93**			**83**	**100.0%**	**8.55 [0.45 , 16.65]**
Heterogeneity: Tau² = 25.19; Chi² = 3.30, df = 1 (P = 0.07); I² = 70%								
Test for overall effect: Z = 2.07 (P = 0.04)								
Test for subgroup differences: Not applicable								



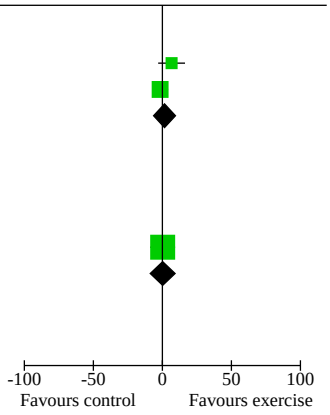
Analysis 1.10. Comparison 1: Health-related quality of life, Outcome 10: FACT-P follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.10.1 Up to 12 weeks' follow-up								
Bourke 2011	128	14	21	121	25	22	55.2%	7.00 [-5.04 , 19.04]
Monga 2007	145.9	18.3	11	138.1	12.7	10	44.8%	7.80 [-5.58 , 21.18]
Subtotal (95% CI)			**32**			**32**	**100.0%**	**7.36 [-1.59 , 16.31]**
Heterogeneity: Tau² = 0.00; Chi² = 0.01, df = 1 (P = 0.93); I² = 0%								
Test for overall effect: Z = 1.61 (P = 0.11)								
Test for subgroup differences: Not applicable								



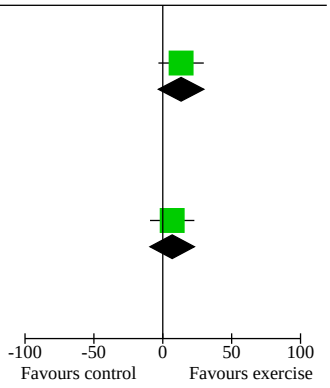
Analysis 1.11. Comparison 1: Health-related quality of life, Outcome 11: FACIT-F change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.11.1 Up to 12 weeks' follow-up								
Mustian 2009	6	18.3	19	-0.67	11.51	19	38.4%	6.67 [-3.05 , 16.39]
Targ 2002	4.98	16.1	79	6.62	21.7	88	61.6%	-1.64 [-7.40 , 4.12]
Subtotal (95% CI)			**98**			**107**	**100.0%**	**1.55 [-6.37 , 9.48]**
Heterogeneity: Tau² = 17.91; Chi² = 2.08, df = 1 (P = 0.15); I² = 52%								
Test for overall effect: Z = 0.38 (P = 0.70)								
1.11.2 More than 12 weeks' to less than 6 months' follow-up								
Mustian 2009	8.76	16.51	19	8.55	11.28	19	100.0%	0.21 [-8.78 , 9.20]
Subtotal (95% CI)			**19**			**19**	**100.0%**	**0.21 [-8.78 , 9.20]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.05 (P = 0.96)								
Test for subgroup differences: Chi² = 0.05, df = 1 (P = 0.83), I² = 0%								



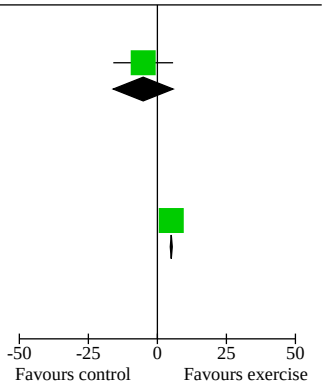
Analysis 1.12. Comparison 1: Health-related quality of life, Outcome 12: FACIT-F follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.12.1 Up to 12 weeks' follow-up								
Mustian 2009	130.2	20.13	19	116.9	30.58	19	100.0%	13.30 [-3.16 , 29.76]
Subtotal (95% CI)			**19**			**19**	**100.0%**	**13.30 [-3.16 , 29.76]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.58 (P = 0.11)								
1.12.2 More than 12 weeks' to less than 6 months' follow-up								
Mustian 2009	132.96	16.41	19	126.13	31.81	19	100.0%	6.83 [-9.26 , 22.92]
Subtotal (95% CI)			**19**			**19**	**100.0%**	**6.83 [-9.26 , 22.92]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.83 (P = 0.41)								
Test for subgroup differences: Chi² = 0.30, df = 1 (P = 0.58), I² = 0%								



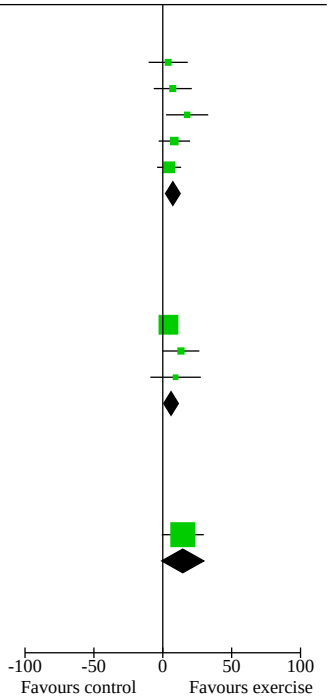
Analysis 1.13. Comparison 1: Health-related quality of life, Outcome 13: QLQ-C30 change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.13.1 Up to 12 weeks' follow-up								
Arbane 2009	-0.79	14.65	21	4.35	21.6	23	100.0%	-5.14 [-15.97 , 5.69]
Subtotal (95% CI)			**21**			**23**	**100.0%**	**-5.14 [-15.97 , 5.69]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.93 (P = 0.35)								
1.13.2 More than 12 weeks' to less than 6 months' follow-up								
Culos-Reed 2010	2.7	0.9	53	-2.33	0.88	47	100.0%	5.03 [4.68 , 5.38]
Subtotal (95% CI)			**53**			**47**	**100.0%**	**5.03 [4.68 , 5.38]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 28.22 (P < 0.00001)								
Test for subgroup differences: Chi² = 3.39, df = 1 (P = 0.07), I² = 70.5%								



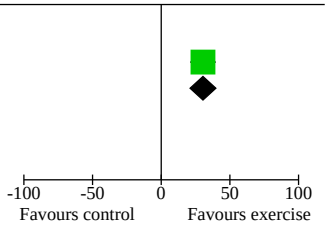
Analysis 1.14. Comparison 1: Health-related quality of life, Outcome 14: QLQ-C30 follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.14.1 Up to 12 weeks' follow-up								
Adamsen 2009	67.2	20.3	18	63.3	22.4	17	14.1%	3.90 [-10.29 , 18.09]
Arbane 2009	71.03	14.1	21	63.78	30.42	23	14.8%	7.25 [-6.57 , 21.07]
Hacker 2011	76	12.2	8	58.3	19.5	9	12.1%	17.70 [2.41 , 32.99]
Jarden 2009	61.3	17.2	17	52.9	16.7	17	21.8%	8.40 [-3.00 , 19.80]
Wiskemann 2011	61.7	22.2	40	57.1	17.3	40	37.2%	4.60 [-4.12 , 13.32]
Subtotal (95% CI)			**104**			**106**	**100.0%**	**7.31 [1.99 , 12.63]**
Heterogeneity: Tau² = 0.00; Chi² = 2.40, df = 4 (P = 0.66); I² = 0%								
Test for overall effect: Z = 2.69 (P = 0.007)								
1.14.2 More than 12 weeks' to less than 6 months' follow-up								
Culos-Reed 2010	73.12	16	53	69	15.12	47	75.7%	4.12 [-1.98 , 10.22]
Jarden 2009	65.1	15.9	17	51.9	20.2	13	15.9%	13.20 [-0.13 , 26.53]
Moros 2010	70	18.9	10	60.7	19	7	8.4%	9.30 [-9.01 , 27.61]
Subtotal (95% CI)			**80**			**67**	**100.0%**	**6.00 [0.69 , 11.31]**
Heterogeneity: Tau² = 0.00; Chi² = 1.61, df = 2 (P = 0.45); I² = 0%								
Test for overall effect: Z = 2.21 (P = 0.03)								
1.14.3 6 months' follow-up								
Jarden 2009	72.8	20	16	58.3	21.5	13	100.0%	14.50 [-0.75 , 29.75]
Subtotal (95% CI)			**16**			**13**	**100.0%**	**14.50 [-0.75 , 29.75]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.86 (P = 0.06)								
Test for subgroup differences: Chi² = 1.08, df = 2 (P = 0.58), I² = 0%								



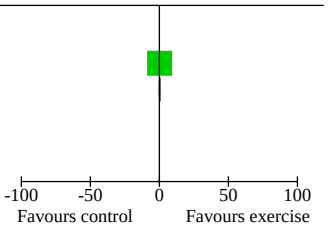
Analysis 1.15. Comparison 1: Health-related quality of life, Outcome 15: FLIC follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.15.1 Up to 12 weeks' follow-up								
Raghavendra 2007	142.1	10.2	28	111.7	25.5	34	100.0%	30.40 [21.03 , 39.77]
Subtotal (95% CI)			**28**			**34**	**100.0%**	**30.40 [21.03 , 39.77]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 6.36 (P < 0.00001)								
Test for subgroup differences: Not applicable								



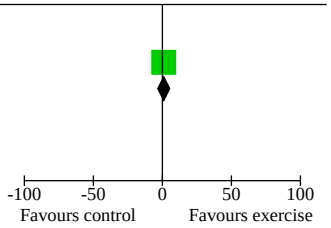
Analysis 1.16. Comparison 1: Health-related quality of life, Outcome 16: WHO BREF follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.16.1 Up to 12 weeks' follow-up								
Hwang 2008	3.19	0.33	17	3.02	0.36	20	100.0%	0.17 [-0.05 , 0.39]
Subtotal (95% CI)			**17**			**20**	**100.0%**	**0.17 [-0.05 , 0.39]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.50 (P = 0.13)								
Test for subgroup differences: Not applicable								



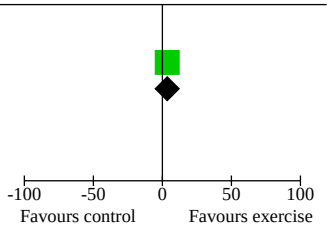
Analysis 1.17. Comparison 1: Health-related quality of life, Outcome 17: Ferrand and Powers follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.17.1 Up to 12 weeks' follow-up								
Hacker 2011	23.3	4.2	8	22.3	4.9	9	100.0%	1.00 [-3.33 , 5.33]
Subtotal (95% CI)			**8**			**9**	**100.0%**	**1.00 [-3.33 , 5.33]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.45 (P = 0.65)								
Test for subgroup differences: Not applicable								



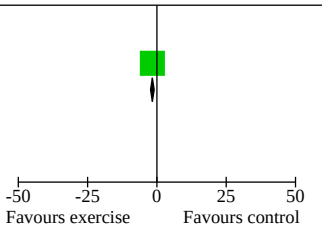
Analysis 1.18. Comparison 1: Health-related quality of life, Outcome 18: Spitzer QoL Uniscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.18.1 Up to 12 weeks' follow-up								
Cheville 2010	71.9	19.41	47	68.4	23.48	49	100.0%	3.50 [-5.10 , 12.10]
Subtotal (95% CI)			**47**			**49**	**100.0%**	**3.50 [-5.10 , 12.10]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.80 (P = 0.43)								
Test for subgroup differences: Not applicable								



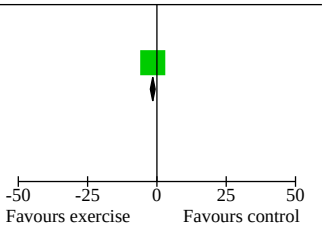
Analysis 1.19. Comparison 1: Health-related quality of life, Outcome 19: MDASI-T Symptom Interference change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.19.1 Up to 12 months' follow-up								
Yang 2011	-1.41	1.4	19	0.23	0.36	21	100.0%	-1.64 [-2.29 , -0.99]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-1.64 [-2.29 , -0.99]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 4.96 (P < 0.00001)								
Test for subgroup differences: Not applicable								



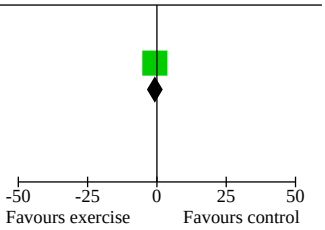
Analysis 1.20. Comparison 1: Health-related quality of life, Outcome 20: MDASI-T Symptom Interference follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.20.1 Up to 12 weeks' follow-up								
Yang 2011	0.75	0.79	19	2.25	1.84	21	100.0%	-1.50 [-2.36 , -0.64]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-1.50 [-2.36 , -0.64]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 3.40 (P = 0.0007)								
Test for subgroup differences: Not applicable								



Analysis 1.21. Comparison 1: Health-related quality of life, Outcome 21: Quality of Life Systemic Inventory follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.21.1 Up to 12 months' follow-up								
Lanctot 2010	5.63	3.77	41	6.38	6.64	32	100.0%	-0.75 [-3.32 , 1.82]
Subtotal (95% CI)			**41**			**32**	**100.0%**	**-0.75 [-3.32 , 1.82]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.57 (P = 0.57)								
Test for subgroup differences: Not applicable								



Comparison 2. Condition-specific quality of life

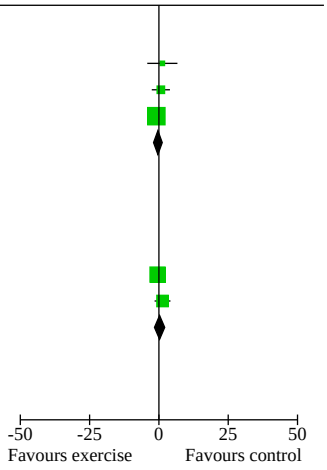
Outcome or subgroup title	No. of studies	No. of partici-pants	Statistical method	Effect size
2.1 Breast cancer change	4		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.1.1 Up to 12 weeks' fol-low-up	3	224	Mean Difference (IV, Random, 95% CI)	-0.37 [-1.93, 1.20]
2.1.2 6 months' follow-up	2	81	Mean Difference (IV, Random, 95% CI)	0.24 [-1.60, 2.08]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.2 Breast cancer follow-up values	5		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.2.1 Up to 12 weeks' follow-up	4	331	Mean Difference (IV, Random, 95% CI)	1.21 [-0.65, 3.07]
2.2.2 6 months' follow-up	4	307	Mean Difference (IV, Random, 95% CI)	1.45 [0.08, 2.81]
2.3 Overall prostate cancer change	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.3.1 Up to 12 weeks' follow-up	3	242	Std. Mean Difference (IV, Random, 95% CI)	0.41 [0.15, 0.67]
2.3.2 More than 12 weeks' to less than 6 months' follow-up	1	121	Std. Mean Difference (IV, Random, 95% CI)	0.28 [-0.10, 0.65]
2.4 Overall prostate cancer follow-up values	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.4.1 Up to 12 weeks' follow-up	3	242	Std. Mean Difference (IV, Random, 95% CI)	0.22 [-0.04, 0.48]
2.4.2 More than 12 weeks' to less than 6 months' follow-up	1	162	Std. Mean Difference (IV, Random, 95% CI)	0.27 [-0.04, 0.58]
2.5 FACT prostate cancer subscale change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.5.1 Up to 12 weeks' follow-up	2	142	Mean Difference (IV, Random, 95% CI)	2.02 [0.12, 3.93]
2.5.2 More than 12 weeks' to less than 6 months' follow-up	1	121	Mean Difference (IV, Random, 95% CI)	1.42 [-0.48, 3.32]
2.6 FACT prostate cancer subscale follow-up values	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.6.1 Up to 12 weeks' follow-up	2	142	Mean Difference (IV, Random, 95% CI)	1.91 [-0.21, 4.03]
2.6.2 More than 12 weeks' to less than 6 months' follow-up	1	162	Mean Difference (IV, Random, 95% CI)	1.75 [-0.25, 3.75]
2.7 Expanded Prostate Cancer Index Composite change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.7.1 Up to 12 weeks' follow-up	1	100	Mean Difference (IV, Random, 95% CI)	6.75 [1.44, 12.06]
2.8 Expanded Prostate Cancer Index Composite follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.8.1 Up to 12 weeks' follow-up	1	100	Mean Difference (IV, Random, 95% CI)	1.73 [-4.19, 7.65]
2.9 QLSI cancer module subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.9.1 Up to 12 weeks' follow-up	1	64	Mean Difference (IV, Random, 95% CI)	-0.52 [-2.24, 1.20]

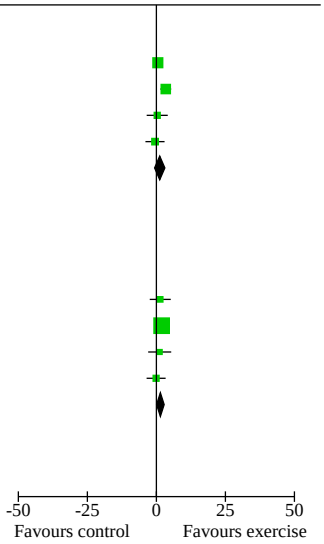
Analysis 2.1. Comparison 2: Condition-specific quality of life, Outcome 1: Breast cancer change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
2.1.1 Up to 12 weeks' follow-up								
Campbell 2005	2.44	6.9	10	1.2	5.14	9	8.3%	1.24 [-4.20 , 6.68]
Rogers 2009	1	5.3	20	0.3	5	18	22.7%	0.70 [-2.58 , 3.98]
Targ 2002	-0.29	5.8	79	0.62	6.6	88	69.0%	-0.91 [-2.79 , 0.97]
Subtotal (95% CI)			**109**			**115**	**100.0%**	**-0.37 [-1.93 , 1.20]**
Heterogeneity: Tau² = 0.00; Chi² = 1.06, df = 2 (P = 0.59); I² = 0%								
Test for overall effect: Z = 0.46 (P = 0.65)								
2.1.2 6 months' follow-up								
Cadmus 2009	0.6	3.7	22	1.1	4.5	23	58.7%	-0.50 [-2.90 , 1.90]
Rogers 2009	0.7	3.7	19	-0.6	4.9	17	41.3%	1.30 [-1.56 , 4.16]
Subtotal (95% CI)			**41**			**40**	**100.0%**	**0.24 [-1.60 , 2.08]**
Heterogeneity: Tau² = 0.00; Chi² = 0.89, df = 1 (P = 0.35); I² = 0%								
Test for overall effect: Z = 0.26 (P = 0.79)								
Test for subgroup differences: Chi² = 0.25, df = 1 (P = 0.62), I² = 0%								



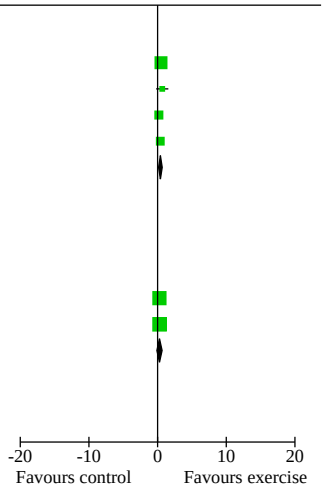
Analysis 2.2. Comparison 2: Condition-specific quality of life, Outcome 2: Breast cancer follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
2.2.1 Up to 12 weeks' follow-up								
Lanctot 2010	-2.83	2.22	35	-3.35	4.27	29	34.4%	0.52 [-1.20 , 2.24]
Mutrie 2007	25.8	6	82	22.4	7.2	92	31.6%	3.40 [1.44 , 5.36]
Rogers 2009	27	5.5	20	26.7	6.4	18	15.9%	0.30 [-3.51 , 4.11]
de Oliveira 2010	24.6	6.7	28	25.1	6.4	27	18.1%	-0.50 [-3.96 , 2.96]
Subtotal (95% CI)			**165**			**166**	**100.0%**	**1.21 [-0.65 , 3.07]**
Heterogeneity: Tau² = 1.84; Chi² = 6.47, df = 3 (P = 0.09); I² = 54%								
Test for overall effect: Z = 1.28 (P = 0.20)								
2.2.2 6 months' follow-up								
Cadmus 2009	27.1	6.2	22	25.7	6.8	23	12.9%	1.40 [-2.40 , 5.20]
Mutrie 2007	26.1	5.6	82	24.2	6.3	95	60.7%	1.90 [0.15 , 3.65]
Rogers 2009	26.5	6	19	25.3	6.7	17	10.7%	1.20 [-2.97 , 5.37]
de Oliveira 2010	24.2	5.9	24	24.3	6.4	25	15.7%	-0.10 [-3.54 , 3.34]
Subtotal (95% CI)			**147**			**160**	**100.0%**	**1.45 [0.08 , 2.81]**
Heterogeneity: Tau² = 0.00; Chi² = 1.05, df = 3 (P = 0.79); I² = 0%								
Test for overall effect: Z = 2.08 (P = 0.04)								
Test for subgroup differences: Chi² = 0.04, df = 1 (P = 0.84), I² = 0%								



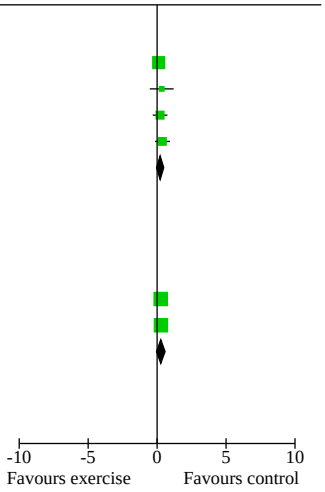
Analysis 2.3. Comparison 2: Condition-specific quality of life, Outcome 3: Overall prostate cancer change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
2.3.1 Up to 12 weeks' follow-up								
Culos-Reed 2010	3.65	14	53	-3.1	13.1	47	43.2%	0.49 [0.09 , 0.89]
Monga 2007	1.8	5.8	11	-1.8	4.2	10	8.8%	0.68 [-0.21 , 1.56]
Segal 2009	-3.17	5.6	40	-4.2	5.6	21	24.6%	0.18 [-0.35 , 0.71]
Segal 2009	-1.91	5.9	40	-4.2	5.6	20	23.4%	0.39 [-0.15 , 0.93]
Subtotal (95% CI)			**144**			**98**	**100.0%**	**0.41 [0.15 , 0.67]**
Heterogeneity: Tau² = 0.00; Chi² = 1.24, df = 3 (P = 0.74); I² = 0%								
Test for overall effect: Z = 3.05 (P = 0.002)								
2.3.2 More than 12 weeks' to less than 6 months' follow-up								
Segal 2009	0.27	5.3	40	-1.13	5	20	49.2%	0.27 [-0.27 , 0.80]
Segal 2009	0.31	5	40	-1.13	5	21	50.8%	0.28 [-0.25 , 0.82]
Subtotal (95% CI)			**80**			**41**	**100.0%**	**0.28 [-0.10 , 0.65]**
Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 0.96); I² = 0%								
Test for overall effect: Z = 1.43 (P = 0.15)								
Test for subgroup differences: Chi² = 0.32, df = 1 (P = 0.57), I² = 0%								



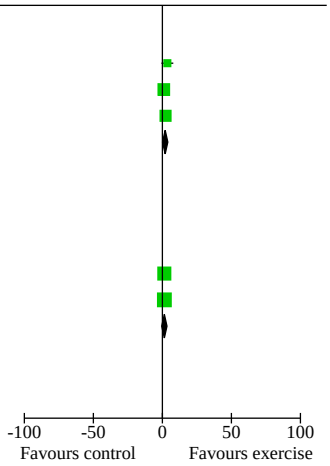
Analysis 2.4. Comparison 2: Condition-specific quality of life, Outcome 4: Overall prostate cancer follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
2.4.1 Up to 12 weeks' follow-up								
Culos-Reed 2010	65.87	15.9	53	64.14	14.3	47	43.8%	0.11 [-0.28 , 0.51]
Monga 2007	39.9	4.9	11	38.2	4.8	10	9.1%	0.34 [-0.53 , 1.20]
Segal 2009	34.3	6.5	40	32.9	6.5	21	24.1%	0.21 [-0.32 , 0.74]
Segal 2009	35.5	6.7	40	32.9	6.5	20	23.1%	0.39 [-0.15 , 0.93]
Subtotal (95% CI)			**144**			**98**	**100.0%**	**0.22 [-0.04 , 0.48]**
Heterogeneity: Tau² = 0.00; Chi² = 0.72, df = 3 (P = 0.87); I² = 0%								
Test for overall effect: Z = 1.66 (P = 0.10)								
2.4.2 More than 12 weeks' to less than 6 months' follow-up								
Segal 2009	37.7	6.7	40	36	6.4	41	50.0%	0.26 [-0.18 , 0.69]
Segal 2009	37.8	6.5	40	36	6.4	41	50.0%	0.28 [-0.16 , 0.71]
Subtotal (95% CI)			**80**			**82**	**100.0%**	**0.27 [-0.04 , 0.58]**
Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 0.95); I² = 0%								
Test for overall effect: Z = 1.69 (P = 0.09)								
Test for subgroup differences: Chi² = 0.05, df = 1 (P = 0.82), I² = 0%								



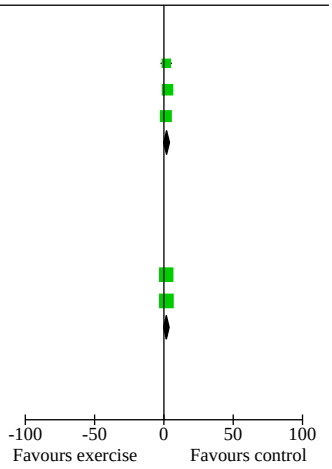
Analysis 2.5. Comparison 2: Condition-specific quality of life, Outcome 5: FACT prostate cancer subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
2.5.1 Up to 12 weeks' follow-up								
Monga 2007	1.8	5.8	11	-1.8	4.2	10	19.6%	3.60 [-0.70 , 7.90]
Segal 2009	-3.17	5.6	40	-4.2	5.6	21	41.6%	1.03 [-1.93 , 3.99]
Segal 2009	-1.91	5.9	40	-4.2	5.6	20	38.8%	2.29 [-0.77 , 5.35]
Subtotal (95% CI)			**91**			**51**	**100.0%**	**2.02 [0.12 , 3.93]**
Heterogeneity: Tau² = 0.00; Chi² = 0.98, df = 2 (P = 0.61); I² = 0%								
Test for overall effect: Z = 2.08 (P = 0.04)								
2.5.2 More than 12 weeks' to less than 6 months' follow-up								
Segal 2009	0.27	5.3	40	-1.13	5	20	48.2%	1.40 [-1.34 , 4.14]
Segal 2009	0.31	5	40	-1.13	5	21	51.8%	1.44 [-1.20 , 4.08]
Subtotal (95% CI)			**80**			**41**	**100.0%**	**1.42 [-0.48 , 3.32]**
Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 0.98); I² = 0%								
Test for overall effect: Z = 1.46 (P = 0.14)								
Test for subgroup differences: Chi² = 0.19, df = 1 (P = 0.66), I² = 0%								



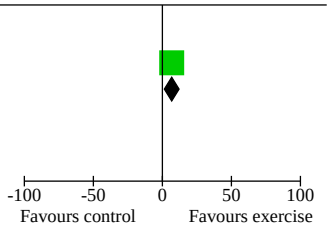
Analysis 2.6. Comparison 2: Condition-specific quality of life, Outcome 6: FACT prostate cancer subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
2.6.1 Up to 12 weeks' follow-up								
Monga 2007	39.9	4.9	11	38.2	4.8	10	26.0%	1.70 [-2.45 , 5.85]
Segal 2009	35.5	6.7	40	32.9	6.5	20	36.0%	2.60 [-0.93 , 6.13]
Segal 2009	34.3	6.5	40	32.9	6.5	21	38.0%	1.40 [-2.03 , 4.83]
Subtotal (95% CI)			**91**			**51**	**100.0%**	**1.91 [-0.21 , 4.03]**
Heterogeneity: Tau² = 0.00; Chi² = 0.24, df = 2 (P = 0.89); I² = 0%								
Test for overall effect: Z = 1.77 (P = 0.08)								
2.6.2 More than 12 weeks' to less than 6 months' follow-up								
Segal 2009	37.7	6.7	40	36	6.4	41	49.2%	1.70 [-1.15 , 4.55]
Segal 2009	37.8	6.5	40	36	6.4	41	50.8%	1.80 [-1.01 , 4.61]
Subtotal (95% CI)			**80**			**82**	**100.0%**	**1.75 [-0.25 , 3.75]**
Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 0.96); I² = 0%								
Test for overall effect: Z = 1.71 (P = 0.09)								
Test for subgroup differences: Chi² = 0.01, df = 1 (P = 0.91), I² = 0%								



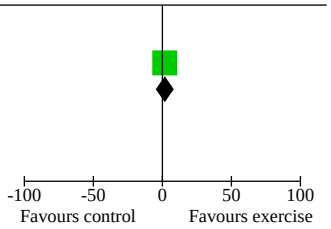
Analysis 2.7. Comparison 2: Condition-specific quality of life, Outcome 7: Expanded Prostate Cancer Index Composite change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
2.7.1 Up to 12 weeks' follow-up								
Culos-Reed 2010	3.65	14	53	-3.1	13.1	47	100.0%	6.75 [1.44 , 12.06]
Subtotal (95% CI)			**53**			**47**	**100.0%**	**6.75 [1.44 , 12.06]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.49 (P = 0.01)								
Test for subgroup differences: Not applicable								

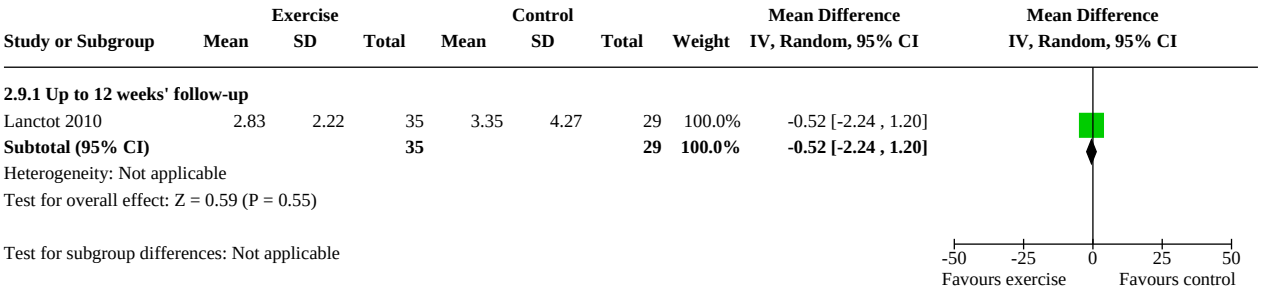


Analysis 2.8. Comparison 2: Condition-specific quality of life, Outcome 8: Expanded Prostate Cancer Index Composite follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
2.8.1 Up to 12 weeks' follow-up								
Culos-Reed 2010	65.87	15.9	53	64.14	14.3	47	100.0%	1.73 [-4.19 , 7.65]
Subtotal (95% CI)			**53**			**47**	**100.0%**	**1.73 [-4.19 , 7.65]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.57 (P = 0.57)								
Test for subgroup differences: Not applicable								



Analysis 2.9. Comparison 2: Condition-specific quality of life, Outcome 9: QLSI cancer module subscale follow-up values



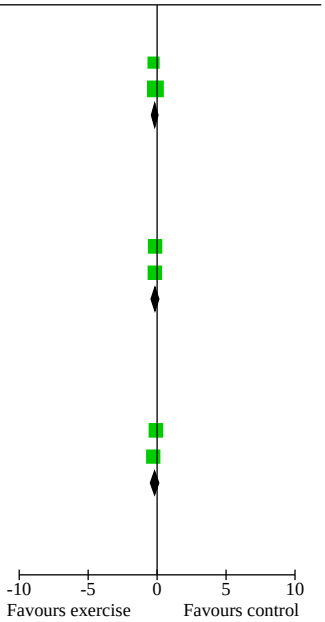
Comparison 3. Anxiety

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.1 Overall anxiety change	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3.1.1 Up to 12 weeks' follow-up	2	275	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.41, 0.06]
3.1.2 More than 12 weeks' to less than 6 months' follow-up	1	223	Std. Mean Difference (IV, Random, 95% CI)	-0.16 [-0.44, 0.12]
3.1.3 6 months' follow-up	1	201	Std. Mean Difference (IV, Random, 95% CI)	-0.18 [-0.49, 0.12]
3.2 Overall anxiety follow-up values	13		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3.2.1 Up to 12 weeks' follow-up	12	1010	Std. Mean Difference (IV, Random, 95% CI)	-0.46 [-0.81, -0.11]
3.2.2 More than 12 weeks' to less than 6 months' follow-up	5	440	Std. Mean Difference (IV, Random, 95% CI)	-0.20 [-0.57, 0.17]
3.2.3 6 months' follow-up	3	286	Std. Mean Difference (IV, Random, 95% CI)	-0.44 [-0.71, -0.17]
3.3 Hospital Anxiety and Depression Scale anxiety subscale follow-up values	4		Mean Difference (IV, Random, 95% CI)	Totals not selected
3.3.1 Up to 12 weeks' follow-up	4		Mean Difference (IV, Random, 95% CI)	Totals not selected
3.3.2 More than 12 weeks' to less than 6 months' follow-up	2		Mean Difference (IV, Random, 95% CI)	Totals not selected
3.3.3 6 months' follow-up	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
3.4 State Trait Anxiety Inventory change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.4.1 More than 12 weeks' to less than 6 months' follow-up	1	223	Mean Difference (IV, Random, 95% CI)	-1.60 [-4.40, 1.20]
3.4.2 6 months' follow-up	1	201	Mean Difference (IV, Random, 95% CI)	-2.45 [-6.38, 1.48]
3.5 State Trait Anxiety Inventory follow-up values	5		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.5.1 Up to 12 weeks' follow-up	5	464	Mean Difference (IV, Random, 95% CI)	-2.96 [-6.16, 0.24]
3.5.2 More than 12 weeks' to less than 6 months' follow-up	3	332	Mean Difference (IV, Random, 95% CI)	-1.11 [-2.30, 0.08]
3.5.3 6 months' follow-up	2	257	Mean Difference (IV, Random, 95% CI)	-2.12 [-3.44, -0.81]
3.6 POMS anxiety subscale change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.6.1 Up to 12 weeks' follow-up	2	275	Mean Difference (IV, Random, 95% CI)	-1.24 [-2.82, 0.33]
3.7 POMS anxiety subscale follow-up values	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.7.1 Up to 12 weeks' follow-up	2	150	Mean Difference (IV, Random, 95% CI)	-0.80 [-1.98, 0.39]
3.8 Symptom Checklist-90 Revised anxiety subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.8.1 Up to 12 weeks' follow-up	1	59	Mean Difference (IV, Random, 95% CI)	-1.00 [-2.76, 0.76]
3.9 Symptom Checklist-90 Revised phobic anxiety subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.9.1 Up to 12 weeks' follow-up	1	59	Mean Difference (IV, Random, 95% CI)	0.29 [-0.38, 0.96]
3.10 General Health Questionnaire anxiety subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.10.1 Up to 12 weeks' follow-up	1	17	Mean Difference (IV, Random, 95% CI)	-1.70 [-4.19, 0.79]

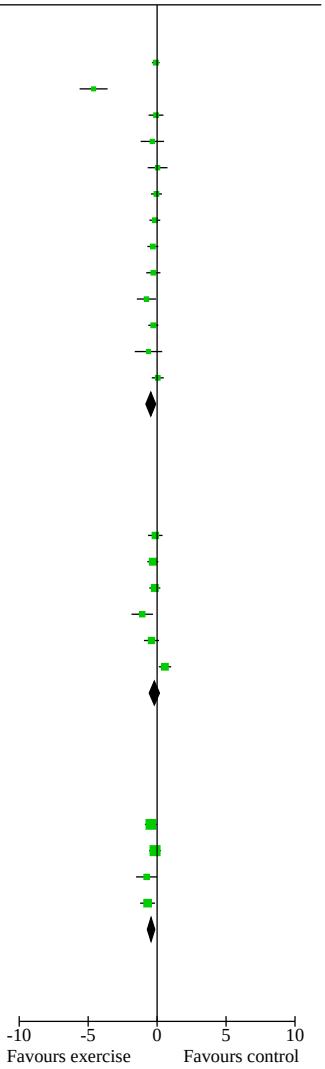
Analysis 3.1. Comparison 3: Anxiety, Outcome 1: Overall anxiety change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
3.1.1 Up to 12 weeks' follow-up								
Oh 2010	-1.71	4.5	54	-0.47	5	54	39.2%	-0.26 [-0.64 , 0.12]
Targ 2002	-3.08	13.1	79	-1.82	7.3	88	60.8%	-0.12 [-0.42 , 0.18]
Subtotal (95% CI)			**133**			**142**	**100.0%**	**-0.17 [-0.41 , 0.06]**
Heterogeneity: Tau² = 0.00; Chi² = 0.31, df = 1 (P = 0.58); I² = 0%								
Test for overall effect: Z = 1.44 (P = 0.15)								
3.1.2 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	-5.7	10.1	76	-4.2	9.9	36	49.8%	-0.15 [-0.55 , 0.25]
Courneya 2007a	-5.9	10.4	74	-4.2	9.9	37	50.2%	-0.16 [-0.56 , 0.23]
Subtotal (95% CI)			**150**			**73**	**100.0%**	**-0.16 [-0.44 , 0.12]**
Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 0.95); I² = 0%								
Test for overall effect: Z = 1.10 (P = 0.27)								
3.1.3 6 months' follow-up								
Courneya 2007a	-6.5	13.7	73	-5.3	12.8	30	50.7%	-0.09 [-0.51 , 0.34]
Courneya 2007a	-9	13.2	68	-5.3	12.8	30	49.3%	-0.28 [-0.71 , 0.15]
Subtotal (95% CI)			**141**			**60**	**100.0%**	**-0.18 [-0.49 , 0.12]**
Heterogeneity: Tau² = 0.00; Chi² = 0.39, df = 1 (P = 0.53); I² = 0%								
Test for overall effect: Z = 1.19 (P = 0.24)								
Test for subgroup differences: Chi² = 0.02, df = 2 (P = 0.99), I² = 0%								



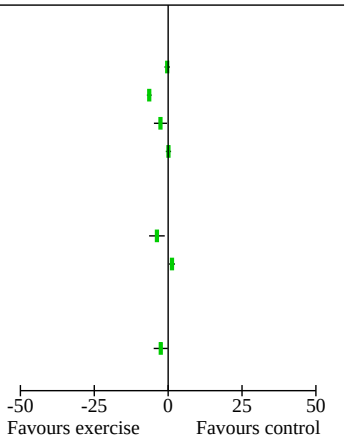
Analysis 3.2. Comparison 3: Anxiety, Outcome 2: Overall anxiety follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
3.2.1 Up to 12 weeks' follow-up								
Adamsen 2009	4.47	3.43	106	4.79	3.42	103	9.3%	-0.09 [-0.36 , 0.18]
Banerjee 2007	4.1	1	35	10.5	1.8	23	5.4%	-4.60 [-5.62 , -3.59]
Chandwani 2010	32.1	11.7	26	33.1	13	27	8.0%	-0.08 [-0.62 , 0.46]
Chang 2008	1.15	1.27	11	1.68	1.65	11	6.3%	-0.35 [-1.19 , 0.50]
Cohen 2004	34.1	8.4	16	33.8	8.5	14	7.0%	0.03 [-0.68 , 0.75]
Courneya 2003a	43.81	12	51	44.34	8.98	45	8.7%	-0.05 [-0.45 , 0.35]
Courneya 2007a	37	12	75	39	11.9	37	8.7%	-0.17 [-0.56 , 0.23]
Courneya 2007a	35.3	11.9	73	39	11.9	38	8.7%	-0.31 [-0.70 , 0.09]
Dimeo 1999	2	2.5	27	3	4.3	32	8.1%	-0.27 [-0.79 , 0.24]
Jarden 2009	5.1	2.7	17	7.7	3.8	17	7.1%	-0.77 [-1.47 , -0.07]
Moadel 2007	8.1	7.64	84	10.26	8.08	44	8.9%	-0.28 [-0.64 , 0.09]
Moros 2010	2.3	2.58	10	4	2.58	7	5.5%	-0.63 [-1.62 , 0.37]
Wiskemann 2011	19.6	2.4	40	19.5	1.6	41	8.5%	0.05 [-0.39 , 0.48]
Subtotal (95% CI)			**571**			**439**	**100.0%**	**-0.46 [-0.81 , -0.11]**
Heterogeneity: Tau² = 0.33; Chi² = 78.77, df = 12 (P < 0.00001); I² = 85%								
Test for overall effect: Z = 2.56 (P = 0.01)								
3.2.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	30.2	13.5	27	32.1	15.1	29	16.3%	-0.13 [-0.66 , 0.39]
Courneya 2007a	35.3	11.9	73	39	11.9	37	19.0%	-0.31 [-0.71 , 0.09]
Courneya 2007a	37	12	75	39	11.9	36	19.0%	-0.17 [-0.56 , 0.23]
Jarden 2009	4.1	2.6	17	7.9	4.3	13	11.7%	-1.08 [-1.86 , -0.30]
Raghavendra 2007	32.1	2.3	26	33.1	2.5	27	15.9%	-0.41 [-0.95 , 0.13]
Wiskemann 2011	20.3	2	40	19	2.5	40	18.0%	0.57 [0.12 , 1.02]
Subtotal (95% CI)			**258**			**182**	**100.0%**	**-0.20 [-0.57 , 0.17]**
Heterogeneity: Tau² = 0.15; Chi² = 16.84, df = 5 (P = 0.005); I² = 70%								
Test for overall effect: Z = 1.07 (P = 0.29)								
3.2.3 6 months' follow-up								
Courneya 2007a	32.2	11.2	68	37.4	12	30	32.6%	-0.45 [-0.89 , -0.02]
Courneya 2007a	35.5	13	73	37.4	12	30	33.7%	-0.15 [-0.57 , 0.28]
Jarden 2009	4.4	2.8	16	6.9	3.6	13	11.6%	-0.76 [-1.53 , -0.00]
Raghavendra 2007	30.2	2.6	27	32.1	2.8	29	22.1%	-0.69 [-1.23 , -0.15]
Subtotal (95% CI)			**184**			**102**	**100.0%**	**-0.44 [-0.71 , -0.17]**
Heterogeneity: Tau² = 0.01; Chi² = 3.34, df = 3 (P = 0.34); I² = 10%								
Test for overall effect: Z = 3.22 (P = 0.001)								
Test for subgroup differences: Chi² = 1.29, df = 2 (P = 0.53), I² = 0%								



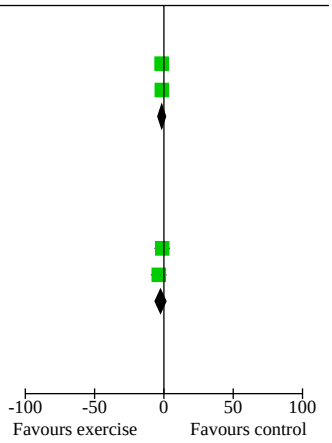
Analysis 3.3. Comparison 3: Anxiety, Outcome 3: Hospital Anxiety and Depression Scale anxiety subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Mean Difference IV, Random, 95% CI
3.3.1 Up to 12 weeks' follow-up							
Adamsen 2009	4.47	3.43	106	4.79	3.42	103	-0.32 [-1.25 , 0.61]
Banerjee 2007	4.1	1	35	10.5	1.8	23	-6.40 [-7.21 , -5.59]
Jarden 2009	5.1	2.7	17	7.7	3.8	17	-2.60 [-4.82 , -0.38]
Wiskemann 2011	19.6	2.4	40	19.5	1.6	41	0.10 [-0.79 , 0.99]
3.3.2 More than 12 weeks' to less than 6 months' follow-up							
Jarden 2009	4.1	2.6	17	7.9	4.3	13	-3.80 [-6.44 , -1.16]
Wiskemann 2011	20.3	2	40	19	2.5	40	1.30 [0.31 , 2.29]
3.3.3 6 months' follow-up							
Jarden 2009	4.4	2.8	16	6.9	3.6	13	-2.50 [-4.89 , -0.11]



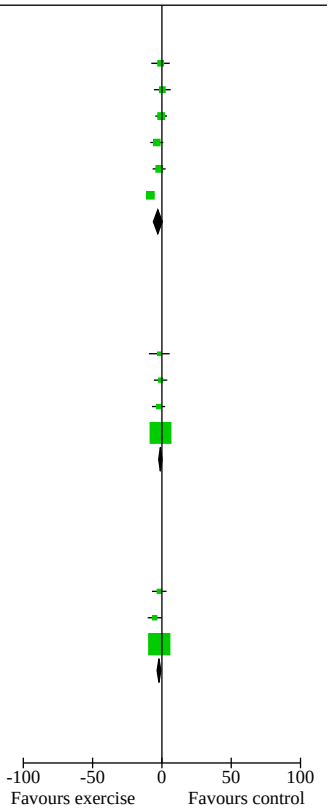
Analysis 3.4. Comparison 3: Anxiety, Outcome 4: State Trait Anxiety Inventory change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
3.4.1 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	-5.9	10.4	74	-4.2	9.9	37	49.7%	-1.70 [-5.67 , 2.27]
Courneya 2007a	-5.7	10.1	76	-4.2	9.9	36	50.3%	-1.50 [-5.45 , 2.45]
Subtotal (95% CI)			**150**			**73**	**100.0%**	**-1.60 [-4.40 , 1.20]**
Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 0.94); I² = 0%								
Test for overall effect: Z = 1.12 (P = 0.26)								
3.4.2 6 months' follow-up								
Courneya 2007a	-6.5	13.7	73	-5.3	12.8	30	50.0%	-1.20 [-6.75 , 4.35]
Courneya 2007a	-9	13.2	68	-5.3	12.8	30	50.0%	-3.70 [-9.25 , 1.85]
Subtotal (95% CI)			**141**			**60**	**100.0%**	**-2.45 [-6.38 , 1.48]**
Heterogeneity: Tau² = 0.00; Chi² = 0.39, df = 1 (P = 0.53); I² = 0%								
Test for overall effect: Z = 1.22 (P = 0.22)								
Test for subgroup differences: Chi² = 0.12, df = 1 (P = 0.73), I² = 0%								



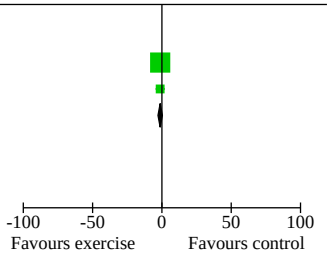
Analysis 3.5. Comparison 3: Anxiety, Outcome 5: State Trait Anxiety Inventory follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
3.5.1 Up to 12 weeks' follow-up								
Chandwani 2010	32.1	11.7	26	33.1	13	27	12.4%	-1.00 [-7.65 , 5.65]
Cohen 2004	34.1	8.4	16	33.8	8.5	14	13.6%	0.30 [-5.76 , 6.36]
Courneya 2003a	43.81	12	51	44.34	8.98	45	18.2%	-0.53 [-4.74 , 3.68]
Courneya 2007a	35.3	11.9	73	39	11.9	38	17.0%	-3.70 [-8.37 , 0.97]
Courneya 2007a	37	12	75	39	11.9	37	16.9%	-2.00 [-6.70 , 2.70]
Raghavendra 2007	29.2	3.8	28	37.5	7.6	34	21.8%	-8.30 [-11.22 , -5.38]
Subtotal (95% CI)			**269**			**195**	**100.0%**	**-2.96 [-6.16 , 0.24]**
Heterogeneity: Tau² = 10.01; Chi² = 14.38, df = 5 (P = 0.01); I² = 65%								
Test for overall effect: Z = 1.81 (P = 0.07)								
3.5.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	30.2	13.5	27	32.1	15.1	29	2.5%	-1.90 [-9.39 , 5.59]
Courneya 2007a	36.4	12.7	76	37.4	12	37	6.1%	-1.00 [-5.81 , 3.81]
Courneya 2007a	35	11.7	74	37.4	12	36	6.3%	-2.40 [-7.14 , 2.34]
Raghavendra 2007	32.1	2.3	26	33.1	2.5	27	85.0%	-1.00 [-2.29 , 0.29]
Subtotal (95% CI)			**203**			**129**	**100.0%**	**-1.11 [-2.30 , 0.08]**
Heterogeneity: Tau² = 0.00; Chi² = 0.36, df = 3 (P = 0.95); I² = 0%								
Test for overall effect: Z = 1.83 (P = 0.07)								
3.5.3 6 months' follow-up								
Courneya 2007a	35.5	13	73	37.4	12	30	6.4%	-1.90 [-7.13 , 3.33]
Courneya 2007a	32.2	11.2	68	37.4	12	30	6.8%	-5.20 [-10.25 , -0.15]
Raghavendra 2007	30.2	2.6	27	32.1	2.8	29	86.8%	-1.90 [-3.31 , -0.49]
Subtotal (95% CI)			**168**			**89**	**100.0%**	**-2.12 [-3.44 , -0.81]**
Heterogeneity: Tau² = 0.00; Chi² = 1.53, df = 2 (P = 0.47); I² = 0%								
Test for overall effect: Z = 3.16 (P = 0.002)								
Test for subgroup differences: Chi² = 1.92, df = 2 (P = 0.38), I² = 0%								



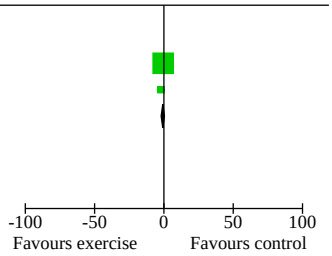
Analysis 3.6. Comparison 3: Anxiety, Outcome 6: POMS anxiety subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
3.6.1 Up to 12 weeks' follow-up								
Oh 2010	-1.71	4.5	54	-0.47	5	54	76.8%	-1.24 [-3.03 , 0.55]
Targ 2002	-3.08	13.1	79	-1.82	7.3	88	23.2%	-1.26 [-4.53 , 2.01]
Subtotal (95% CI)			**133**			**142**	**100.0%**	**-1.24 [-2.82 , 0.33]**
Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 0.99); I² = 0%								
Test for overall effect: Z = 1.55 (P = 0.12)								
Test for subgroup differences: Not applicable								



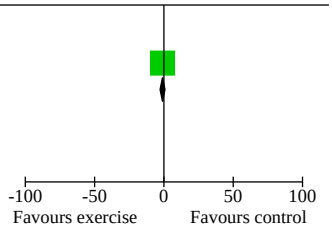
Analysis 3.7. Comparison 3: Anxiety, Outcome 7: POMS anxiety subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
3.7.1 Up to 12 weeks' follow-up								
Chang 2008	1.15	1.27	11	1.68	1.65	11	83.6%	-0.53 [-1.76 , 0.70]
Moadel 2007	8.1	7.64	84	10.26	8.08	44	16.4%	-2.16 [-5.05 , 0.73]
Subtotal (95% CI)			**95**			**55**	**100.0%**	**-0.80 [-1.98 , 0.39]**
Heterogeneity: Tau² = 0.04; Chi² = 1.03, df = 1 (P = 0.31); I² = 3%								
Test for overall effect: Z = 1.32 (P = 0.19)								
Test for subgroup differences: Not applicable								



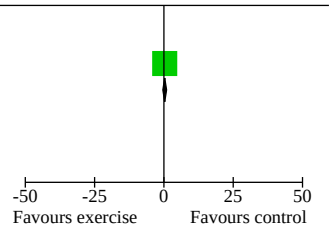
Analysis 3.8. Comparison 3: Anxiety, Outcome 8: Symptom Checklist-90 Revised anxiety subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
3.8.1 Up to 12 weeks' follow-up								
Dimeo 1999	2	2.5	27	3	4.3	32	100.0%	-1.00 [-2.76 , 0.76]
Subtotal (95% CI)			**27**			**32**	**100.0%**	**-1.00 [-2.76 , 0.76]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.11 (P = 0.27)								
Test for subgroup differences: Not applicable								



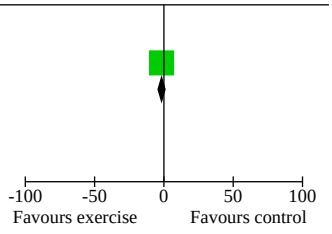
Analysis 3.9. Comparison 3: Anxiety, Outcome 9: Symptom Checklist-90 Revised phobic anxiety subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
3.9.1 Up to 12 weeks' follow-up								
Dimeo 1999	0.89	1.3	27	0.6	1.3	32	100.0%	0.29 [-0.38 , 0.96]
Subtotal (95% CI)			**27**			**32**	**100.0%**	**0.29 [-0.38 , 0.96]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.85 (P = 0.39)								
Test for subgroup differences: Not applicable								



Analysis 3.10. Comparison 3: Anxiety, Outcome 10: General Health Questionnaire anxiety subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
3.10.1 Up to 12 weeks' follow-up								
Moros 2010	2.3	2.58	10	4	2.58	7	100.0%	-1.70 [-4.19 , 0.79]
Subtotal (95% CI)			**10**			**7**	**100.0%**	**-1.70 [-4.19 , 0.79]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.34 (P = 0.18)								
Test for subgroup differences: Not applicable								

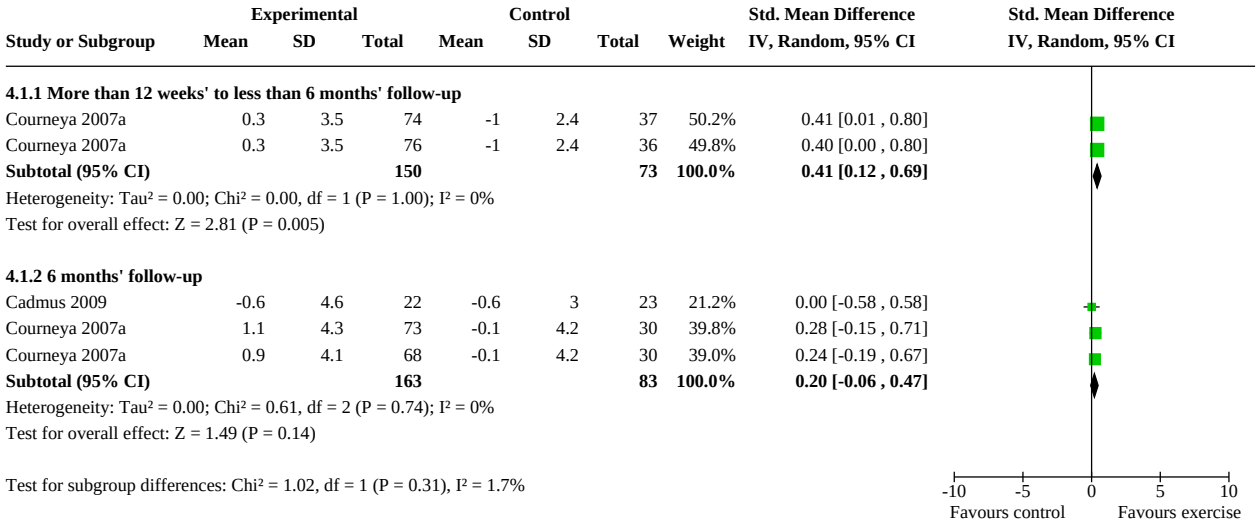


Comparison 4. Body image/self-esteem

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
4.1 Overall body image/self-esteem change	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
4.1.1 More than 12 weeks' to less than 6 months' follow-up	1	223	Std. Mean Difference (IV, Random, 95% CI)	0.41 [0.12, 0.69]
4.1.2 6 months' follow-up	2	246	Std. Mean Difference (IV, Random, 95% CI)	0.20 [-0.06, 0.47]
4.2 Overall body image/self-esteem follow-up values	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
4.2.1 Up to 12 weeks' follow-up	2	237	Std. Mean Difference (IV, Random, 95% CI)	0.29 [-0.06, 0.64]
4.2.2 More than 12 weeks' to less than 6 months' follow-up	1	223	Std. Mean Difference (IV, Random, 95% CI)	0.21 [-0.07, 0.49]
4.2.3 6 months' follow-up	3	260	Std. Mean Difference (IV, Random, 95% CI)	0.19 [-0.08, 0.45]
4.3 Rosenberg self-esteem change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
4.3.1 More than 12 weeks' to less than 6 months' follow-up	1	223	Mean Difference (IV, Random, 95% CI)	1.30 [0.51, 2.09]
4.3.2 6 months' follow-up	2	246	Mean Difference (IV, Random, 95% CI)	0.84 [-0.27, 1.95]
4.4 Rosenberg self-esteem follow-up values	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
4.4.1 Up to 12 weeks' follow-up	1	223	Mean Difference (IV, Random, 95% CI)	1.05 [-0.35, 2.45]
4.4.2 More than 12 weeks' to less than 6 months' follow-up	1	223	Mean Difference (IV, Random, 95% CI)	1.41 [-0.06, 2.87]
4.4.3 6 months' follow-up	2	246	Mean Difference (IV, Random, 95% CI)	0.79 [-0.56, 2.15]
4.5 Body Image Visual Analog Scale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
4.5.1 Up to 12 weeks' follow-up	1	14	Mean Difference (IV, Random, 95% CI)	23.00 [-0.11, 46.11]
4.5.2 6 months' follow-up	1	14	Mean Difference (IV, Random, 95% CI)	9.10 [-23.70, 41.90]
4.6 Tennessee Self concept subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only

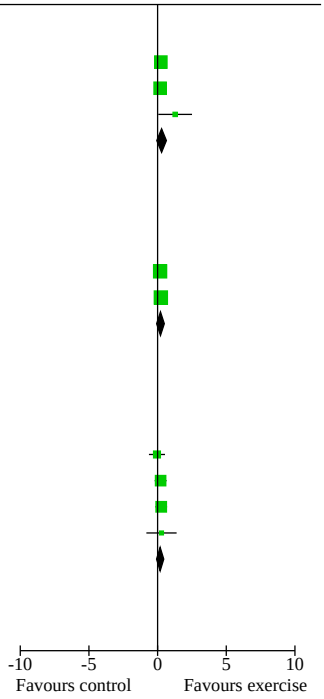
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
4.6.1 Up to 12 weeks' follow-up	1	14	Mean Difference (IV, Random, 95% CI)	7.70 [-23.85, 39.25]
4.6.2 6 months' follow-up	1	14	Mean Difference (IV, Random, 95% CI)	5.20 [-31.26, 41.66]
4.7 Tennessee physical subscale follow-up vales	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
4.7.1 Up to 12 weeks' follow-up	1	14	Mean Difference (IV, Random, 95% CI)	7.70 [-1.69, 17.09]
4.7.2 6 months' follow-up	1	14	Mean Difference (IV, Random, 95% CI)	3.40 [-7.93, 14.73]

Analysis 4.1. Comparison 4: Body image/self-esteem, Outcome 1: Overall body image/self-esteem change



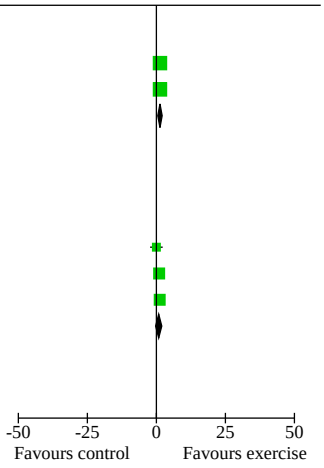
Analysis 4.2. Comparison 4: Body image/self-esteem, Outcome 2: Overall body image/self-esteem follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
4.2.1 Up to 12 weeks' follow-up								
Courneya 2007a	34.1	5	73	32.9	5.1	38	46.3%	0.24 [-0.16 , 0.63]
Courneya 2007a	33.8	4.8	75	32.9	5.1	37	46.1%	0.18 [-0.21 , 0.58]
Mock 1994	79.2	10.4	9	56.2	25.2	5	7.6%	1.28 [0.05 , 2.51]
Subtotal (95% CI)			**157**			**80**	**100.0%**	**0.29 [-0.06 , 0.64]**
Heterogeneity: Tau² = 0.03; Chi² = 2.80, df = 2 (P = 0.25); I² = 29%								
Test for overall effect: Z = 1.63 (P = 0.10)								
4.2.2 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	33.8	4.8	75	32.9	5.1	37	49.9%	0.18 [-0.21 , 0.58]
Courneya 2007a	34.1	5	73	32.9	5.1	38	50.1%	0.24 [-0.16 , 0.63]
Subtotal (95% CI)			**148**			**75**	**100.0%**	**0.21 [-0.07 , 0.49]**
Heterogeneity: Tau² = 0.00; Chi² = 0.04, df = 1 (P = 0.85); I² = 0%								
Test for overall effect: Z = 1.48 (P = 0.14)								
4.2.3 6 months' follow-up								
Cadmus 2009	34.3	4.9	22	34.5	3.6	23	20.0%	-0.05 [-0.63 , 0.54]
Courneya 2007a	35	4.7	68	33.9	5.6	30	36.8%	0.22 [-0.21 , 0.65]
Courneya 2007a	35.2	4.6	73	33.9	5.6	30	37.5%	0.26 [-0.16 , 0.69]
Mock 1994	79.7	30	9	70.6	30	5	5.6%	0.28 [-0.82 , 1.38]
Subtotal (95% CI)			**172**			**88**	**100.0%**	**0.19 [-0.08 , 0.45]**
Heterogeneity: Tau² = 0.00; Chi² = 0.78, df = 3 (P = 0.85); I² = 0%								
Test for overall effect: Z = 1.40 (P = 0.16)								
Test for subgroup differences: Chi² = 0.23, df = 2 (P = 0.89), I² = 0%								



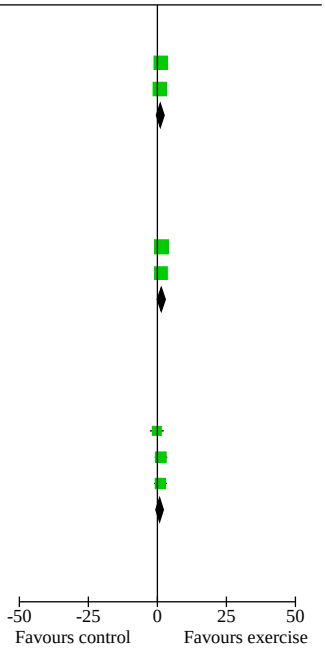
Analysis 4.3. Comparison 4: Body image/self-esteem, Outcome 3: Rosenberg self-esteem change

Study or Subgroup	Exercsie Mean	Exercsie SD	Exercsie Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
4.3.1 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	0.3	3.5	76	-1	2.4	36	50.0%	1.30 [0.19 , 2.41]
Courneya 2007a	0.3	3.5	74	-1	2.4	37	50.0%	1.30 [0.19 , 2.41]
Subtotal (95% CI)			**150**			**73**	**100.0%**	**1.30 [0.51 , 2.09]**
Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 1.00); I² = 0%								
Test for overall effect: Z = 3.24 (P = 0.001)								
4.3.2 6 months' follow-up								
Cadmus 2009	-0.6	4.6	22	-0.6	3	23	23.6%	0.00 [-2.28 , 2.28]
Courneya 2007a	0.9	4.1	68	-0.1	4.2	30	38.3%	1.00 [-0.79 , 2.79]
Courneya 2007a	1.1	4.3	73	-0.1	4.2	30	38.0%	1.20 [-0.60 , 3.00]
Subtotal (95% CI)			**163**			**83**	**100.0%**	**0.84 [-0.27 , 1.95]**
Heterogeneity: Tau² = 0.00; Chi² = 0.71, df = 2 (P = 0.70); I² = 0%								
Test for overall effect: Z = 1.48 (P = 0.14)								
Test for subgroup differences: Chi² = 0.44, df = 1 (P = 0.51), I² = 0%								



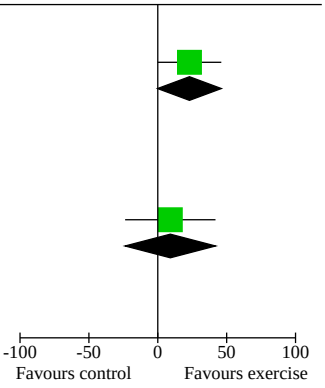
Analysis 4.4. Comparison 4: Body image/self-esteem, Outcome 4: Rosenberg self-esteem follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
4.4.1 Up to 12 weeks' follow-up								
Courneya 2007a	34.1	5	73	32.9	5.1	38	49.6%	1.20 [-0.79 , 3.19]
Courneya 2007a	33.8	4.8	75	32.9	5.1	37	50.4%	0.90 [-1.07 , 2.87]
Subtotal (95% CI)			**148**			**75**	**100.0%**	**1.05 [-0.35 , 2.45]**
Heterogeneity: Tau² = 0.00; Chi² = 0.04, df = 1 (P = 0.83); I² = 0%								
Test for overall effect: Z = 1.47 (P = 0.14)								
4.4.2 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	34.7	4.2	76	33.2	5.5	37	53.2%	1.50 [-0.51 , 3.51]
Courneya 2007a	34.5	5.1	74	33.2	5.5	36	46.8%	1.30 [-0.84 , 3.44]
Subtotal (95% CI)			**150**			**73**	**100.0%**	**1.41 [-0.06 , 2.87]**
Heterogeneity: Tau² = 0.00; Chi² = 0.02, df = 1 (P = 0.89); I² = 0%								
Test for overall effect: Z = 1.88 (P = 0.06)								
4.4.3 6 months' follow-up								
Cadmus 2009	34.3	4.9	22	34.5	3.6	23	29.0%	-0.20 [-2.72 , 2.32]
Courneya 2007a	35.2	4.6	73	33.9	5.6	30	36.0%	1.30 [-0.96 , 3.56]
Courneya 2007a	35	4.7	68	33.9	5.6	30	35.0%	1.10 [-1.19 , 3.39]
Subtotal (95% CI)			**163**			**83**	**100.0%**	**0.79 [-0.56 , 2.15]**
Heterogeneity: Tau² = 0.00; Chi² = 0.86, df = 2 (P = 0.65); I² = 0%								
Test for overall effect: Z = 1.15 (P = 0.25)								
Test for subgroup differences: Chi² = 0.36, df = 2 (P = 0.83), I² = 0%								



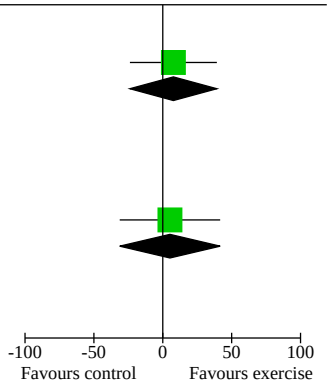
Analysis 4.5. Comparison 4: Body image/self-esteem, Outcome 5: Body Image Visual Analog Scale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
4.5.1 Up to 12 weeks' follow-up								
Mock 1994	79.2	10.4	9	56.2	25.2	5	100.0%	23.00 [-0.11 , 46.11]
Subtotal (95% CI)			**9**			**5**	**100.0%**	**23.00 [-0.11 , 46.11]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.95 (P = 0.05)								
4.5.2 6 months' follow-up								
Mock 1994	79.7	30	9	70.6	30	5	100.0%	9.10 [-23.70 , 41.90]
Subtotal (95% CI)			**9**			**5**	**100.0%**	**9.10 [-23.70 , 41.90]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.54 (P = 0.59)								
Test for subgroup differences: Chi² = 0.46, df = 1 (P = 0.50), I² = 0%								



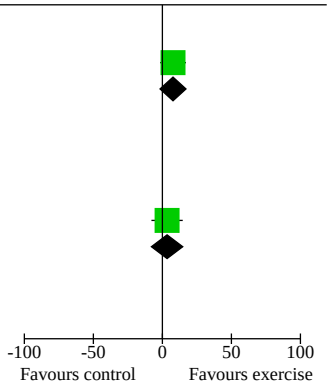
Analysis 4.6. Comparison 4: Body image/self-esteem, Outcome 6: Tennessee Self concept subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
4.6.1 Up to 12 weeks' follow-up								
Mock 1994	387.3	31	9	379.6	27.6	5	100.0%	7.70 [-23.85 , 39.25]
Subtotal (95% CI)			**9**			**5**	**100.0%**	**7.70 [-23.85 , 39.25]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.48 (P = 0.63)								
4.6.2 6 months' follow-up								
Mock 1994	386.2	40	9	381	29	5	100.0%	5.20 [-31.26 , 41.66]
Subtotal (95% CI)			**9**			**5**	**100.0%**	**5.20 [-31.26 , 41.66]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.28 (P = 0.78)								
Test for subgroup differences: Chi² = 0.01, df = 1 (P = 0.92), I² = 0%								



Analysis 4.7. Comparison 4: Body image/self-esteem, Outcome 7: Tennessee physical subscale follow-up vales

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
4.7.1 Up to 12 weeks' follow-up								
Mock 1994	73.7	8	9	66	8.9	5	100.0%	7.70 [-1.69 , 17.09]
Subtotal (95% CI)			**9**			**5**	**100.0%**	**7.70 [-1.69 , 17.09]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.61 (P = 0.11)								
4.7.2 6 months' follow-up								
Mock 1994	71.6	11	9	68.2	10	5	100.0%	3.40 [-7.93 , 14.73]
Subtotal (95% CI)			**9**			**5**	**100.0%**	**3.40 [-7.93 , 14.73]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.59 (P = 0.56)								
Test for subgroup differences: Chi² = 0.33, df = 1 (P = 0.57), I² = 0%								



Comparison 5. Cognitive functioning

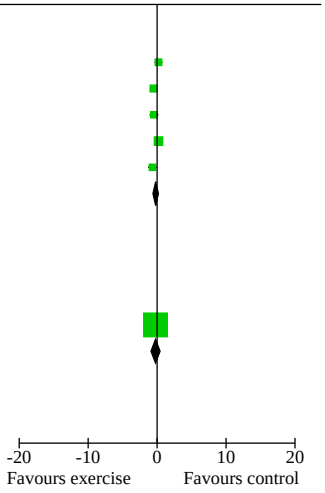
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
5.1 Overall cognitive functioning change	5		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
5.1.1 Up to 12 weeks' follow-up	5	342	Std. Mean Difference (IV, Random, 95% CI)	-0.21 [-0.60, 0.19]
5.1.2 6 months' follow-up	1	36	Std. Mean Difference (IV, Random, 95% CI)	-0.23 [-0.89, 0.43]
5.2 Overall cognitive functioning follow-up values	10		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
5.2.1 Up to 12 weeks' follow-up	9	684	Std. Mean Difference (IV, Random, 95% CI)	-0.16 [-0.31, -0.01]
5.2.2 More than 12 weeks' to less than 6 months' follow-up	3	127	Std. Mean Difference (IV, Random, 95% CI)	-0.26 [-0.79, 0.27]
5.2.3 6 months' follow-up	2	65	Std. Mean Difference (IV, Random, 95% CI)	-0.32 [-0.84, 0.20]
5.3 QLQ-C30 cognitive subscale change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
5.3.1 Up to 12 weeks' follow-up	2	98	Mean Difference (IV, Random, 95% CI)	7.71 [0.21, 15.21]
5.4 QLQ-C30 cognitive subscale follow-up values	6		Mean Difference (IV, Random, 95% CI)	Subtotals only
5.4.1 Up to 12 weeks' follow-up	5	411	Mean Difference (IV, Random, 95% CI)	5.08 [-0.37, 10.53]
5.4.2 More than 12 weeks' to less than 6 months' follow-up	3	127	Mean Difference (IV, Random, 95% CI)	6.04 [-7.24, 19.31]
5.4.3 6 months' follow-up	1	29	Mean Difference (IV, Random, 95% CI)	15.80 [-3.59, 35.19]
5.5 FACT-Cog change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
5.5.1 Up to 12 weeks' follow-up	1	37	Mean Difference (IV, Random, 95% CI)	-8.70 [-21.05, 3.65]
5.5.2 6 months' follow-up	1	36	Mean Difference (IV, Random, 95% CI)	-4.72 [-18.12, 8.68]
5.6 FACT-Cog follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
5.6.1 Up to 12 weeks' follow-up	1	37	Mean Difference (IV, Random, 95% CI)	-10.50 [-27.02, 6.02]
5.6.2 6 months' follow-up	1	36	Mean Difference (IV, Random, 95% CI)	-2.80 [-23.50, 17.90]
5.7 POMS confusion subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
5.7.1 Up to 12 weeks' follow-up	1	167	Mean Difference (IV, Random, 95% CI)	1.20 [-0.67, 3.07]
5.8 POMS confusion subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
5.8.1 Up to 12 weeks' follow-up	1	128	Mean Difference (IV, Random, 95% CI)	-0.43 [-1.83, 0.97]
5.9 QLSI cognitive functioning subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
5.9.1 Up to 12 weeks' follow-up	1	68	Mean Difference (IV, Random, 95% CI)	-3.04 [-8.31, 2.23]
5.10 MDASI-T problem remembering subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
5.10.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-0.37 [-0.72, -0.02]
5.11 MDASI-T problem remembering subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
5.11.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-0.67 [-2.09, 0.75]

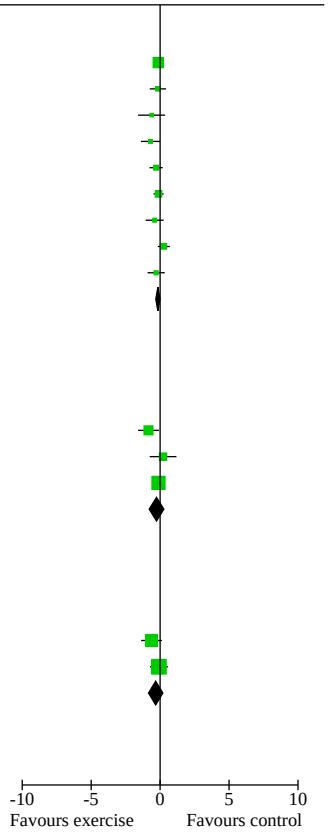
Analysis 5.1. Comparison 5: Cognitive functioning, Outcome 1: Overall cognitive functioning change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
5.1.1 Up to 12 weeks' follow-up								
Arbane 2009	-1.59	37.23	21	-8.7	32.13	23	18.6%	0.20 [-0.39 , 0.79]
Oh 2010	-7.3	15.1	23	0.5	14.7	31	19.8%	-0.52 [-1.07 , 0.03]
Rogers 2009	-4	6.8	19	4.7	25.9	18	17.1%	-0.46 [-1.11 , 0.20]
Targ 2002	-2	7.2	79	-3.2	4.7	88	27.0%	0.20 [-0.11 , 0.50]
Yang 2011	-0.32	0.77	19	0.05	0.04	21	17.4%	-0.68 [-1.32 , -0.04]
Subtotal (95% CI)			**161**			**181**	**100.0%**	**-0.21 [-0.60 , 0.19]**
Heterogeneity: Tau² = 0.13; Chi² = 11.19, df = 4 (P = 0.02); I² = 64%								
Test for overall effect: Z = 1.04 (P = 0.30)								
5.1.2 6 months' follow-up								
Rogers 2009	-5.4	16.3	19	-0.68	23.6	17	100.0%	-0.23 [-0.89 , 0.43]
Subtotal (95% CI)			**19**			**17**	**100.0%**	**-0.23 [-0.89 , 0.43]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.69 (P = 0.49)								
Test for subgroup differences: Chi² = 0.00, df = 1 (P = 0.96), I² = 0%								



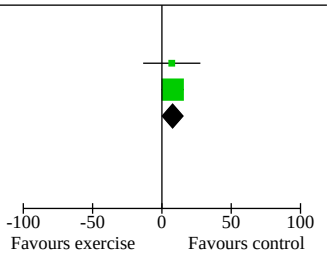
Analysis 5.2. Comparison 5: Cognitive functioning, Outcome 2: Overall cognitive functioning follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
5.2.1 Up to 12 weeks' follow-up								
Adamsen 2009	-83.8	16.7	118	-81.3	19.8	117	35.3%	-0.14 [-0.39 , 0.12]
Arbane 2009	87.3	32.45	21	92.03	25.06	23	6.6%	-0.16 [-0.75 , 0.43]
Hacker 2011	-95.8	7.7	8	-85.2	21.2	9	2.4%	-0.62 [-1.60 , 0.37]
Jarden 2009	-79.4	25.4	17	-61.8	24.1	17	4.8%	-0.69 [-1.39 , 0.00]
Lanctot 2010	5.18	6.25	37	8.22	13.83	31	10.1%	-0.29 [-0.77 , 0.19]
Moadel 2007	3.17	3.77	84	3.6	3.88	44	17.4%	-0.11 [-0.48 , 0.25]
Rogers 2009	125	30.8	19	135.5	19.5	18	5.4%	-0.40 [-1.05 , 0.26]
Wiskemann 2011	69.6	26.7	40	62.1	28	41	12.1%	0.27 [-0.17 , 0.71]
Yang 2011	2	2.13	19	2.67	2.44	21	5.9%	-0.29 [-0.91 , 0.34]
Subtotal (95% CI)			**363**			**321**	**100.0%**	**-0.16 [-0.31 , -0.01]**
Heterogeneity: Tau² = 0.00; Chi² = 7.87, df = 8 (P = 0.45); I² = 0%								
Test for overall effect: Z = 2.08 (P = 0.04)								
5.2.2 More than 12 weeks' to less than 6 months' follow-up								
Jarden 2009	-86.5	20.4	17	-64.1	31.8	13	29.5%	-0.84 [-1.60 , -0.08]
Moros 2010	-83.3	17.5	10	-88	24.9	7	21.3%	0.21 [-0.75 , 1.18]
Wiskemann 2011	-73.8	22.3	40	-71.3	19.6	40	49.2%	-0.12 [-0.56 , 0.32]
Subtotal (95% CI)			**67**			**60**	**100.0%**	**-0.26 [-0.79 , 0.27]**
Heterogeneity: Tau² = 0.10; Chi² = 3.56, df = 2 (P = 0.17); I² = 44%								
Test for overall effect: Z = 0.96 (P = 0.34)								
5.2.3 6 months' follow-up								
Jarden 2009	-88.9	15	16	-73.1	33	13	43.8%	-0.62 [-1.37 , 0.13]
Rogers 2009	126.4	31.8	19	129.2	31.5	17	56.2%	-0.09 [-0.74 , 0.57]
Subtotal (95% CI)			**35**			**30**	**100.0%**	**-0.32 [-0.84 , 0.20]**
Heterogeneity: Tau² = 0.01; Chi² = 1.11, df = 1 (P = 0.29); I² = 10%								
Test for overall effect: Z = 1.21 (P = 0.23)								
Test for subgroup differences: Chi² = 0.43, df = 2 (P = 0.81), I² = 0%								



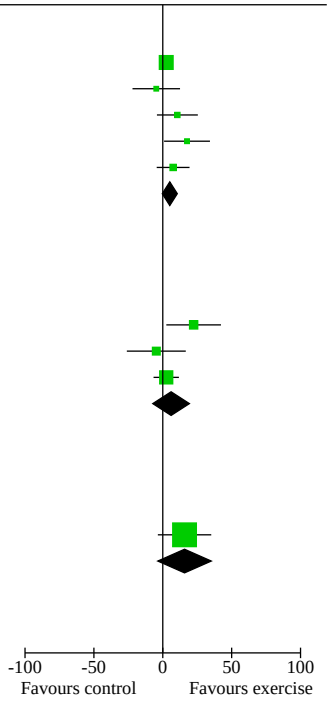
Analysis 5.3. Comparison 5: Cognitive functioning, Outcome 3: QLQ-C30 cognitive subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
5.3.1 Up to 12 weeks' follow-up								
Arbane 2009	-1.59	37.23	21	-8.7	32.13	23	13.2%	7.11 [-13.53 , 27.75]
Oh 2010	7.3	15.1	23	-0.5	14.7	31	86.8%	7.80 [-0.25 , 15.85]
Subtotal (95% CI)			**44**			**54**	**100.0%**	**7.71 [0.21 , 15.21]**
Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 0.95); I² = 0%								
Test for overall effect: Z = 2.01 (P = 0.04)								
Test for subgroup differences: Not applicable								



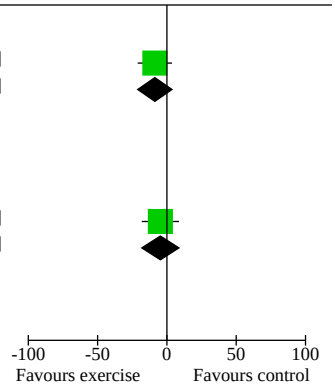
Analysis 5.4. Comparison 5: Cognitive functioning, Outcome 4: QLQ-C30 cognitive subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
5.4.1 Up to 12 weeks' follow-up								
Adamsen 2009	83.8	16.7	118	81.3	19.8	117	53.0%	2.50 [-2.19 , 7.19]
Arbane 2009	87.3	32.45	21	92.03	25.06	23	9.0%	-4.73 [-21.98 , 12.52]
Hacker 2011	95.8	7.7	8	85.2	21.2	9	11.7%	10.60 [-4.24 , 25.44]
Jarden 2009	79.4	25.4	17	61.8	24.1	17	9.5%	17.60 [0.96 , 34.24]
Wiskemann 2011	69.6	26.7	40	62.1	28	41	16.9%	7.50 [-4.41 , 19.41]
Subtotal (95% CI)			**204**			**207**	**100.0%**	**5.08 [-0.37 , 10.53]**
Heterogeneity: Tau² = 8.87; Chi² = 5.03, df = 4 (P = 0.28); I² = 21%								
Test for overall effect: Z = 1.83 (P = 0.07)								
5.4.2 More than 12 weeks' to less than 6 months' follow-up								
Jarden 2009	86.5	20.4	17	64.1	31.8	13	26.5%	22.40 [2.58 , 42.22]
Moros 2010	83.3	17.5	10	88	24.9	7	24.1%	-4.70 [-26.10 , 16.70]
Wiskemann 2011	73.8	22.3	40	71.3	19.6	40	49.4%	2.50 [-6.70 , 11.70]
Subtotal (95% CI)			**67**			**60**	**100.0%**	**6.04 [-7.24 , 19.31]**
Heterogeneity: Tau² = 70.94; Chi² = 4.02, df = 2 (P = 0.13); I² = 50%								
Test for overall effect: Z = 0.89 (P = 0.37)								
5.4.3 6 months' follow-up								
Jarden 2009	88.9	15	16	73.1	33	13	100.0%	15.80 [-3.59 , 35.19]
Subtotal (95% CI)			**16**			**13**	**100.0%**	**15.80 [-3.59 , 35.19]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.60 (P = 0.11)								
Test for subgroup differences: Chi² = 1.09, df = 2 (P = 0.58), I² = 0%								



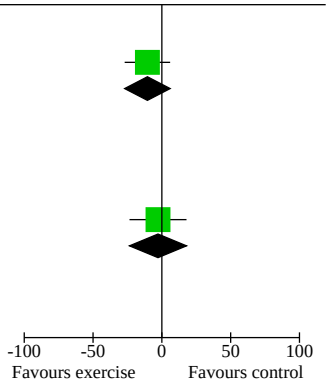
Analysis 5.5. Comparison 5: Cognitive functioning, Outcome 5: FACT-Cog change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
5.5.1 Up to 12 weeks' follow-up								
Rogers 2009	-4	6.8	19	4.7	25.9	18	100.0%	-8.70 [-21.05 , 3.65]
Subtotal (95% CI)			**19**			**18**	**100.0%**	**-8.70 [-21.05 , 3.65]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.38 (P = 0.17)								
5.5.2 6 months' follow-up								
Rogers 2009	-5.4	16.3	19	-0.68	23.6	17	100.0%	-4.72 [-18.12 , 8.68]
Subtotal (95% CI)			**19**			**17**	**100.0%**	**-4.72 [-18.12 , 8.68]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.69 (P = 0.49)								
Test for subgroup differences: Chi² = 0.18, df = 1 (P = 0.67), I² = 0%								



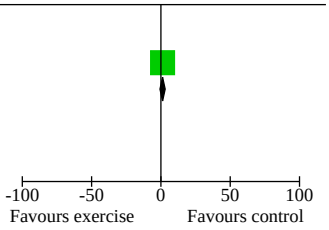
Analysis 5.6. Comparison 5: Cognitive functioning, Outcome 6: FACT-Cog follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
5.6.1 Up to 12 weeks' follow-up								
Rogers 2009	125	30.8	19	135.5	19.5	18	100.0%	-10.50 [-27.02 , 6.02]
Subtotal (95% CI)			**19**			**18**	**100.0%**	**-10.50 [-27.02 , 6.02]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.25 (P = 0.21)								
5.6.2 6 months' follow-up								
Rogers 2009	126.4	31.8	19	129.2	31.5	17	100.0%	-2.80 [-23.50 , 17.90]
Subtotal (95% CI)			**19**			**17**	**100.0%**	**-2.80 [-23.50 , 17.90]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.27 (P = 0.79)								
Test for subgroup differences: Chi² = 0.32, df = 1 (P = 0.57), I² = 0%								



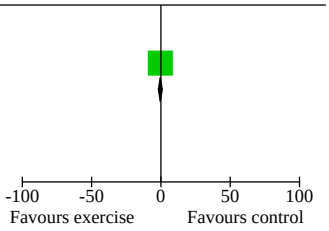
Analysis 5.7. Comparison 5: Cognitive functioning, Outcome 7: POMS confusion subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
5.7.1 Up to 12 weeks' follow-up								
Targ 2002	-2	7.2	79	-3.2	4.7	88	100.0%	1.20 [-0.67 , 3.07]
Subtotal (95% CI)			**79**			**88**	**100.0%**	**1.20 [-0.67 , 3.07]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.26 (P = 0.21)								
Test for subgroup differences: Not applicable								



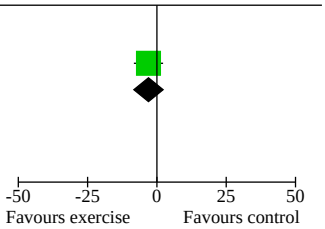
Analysis 5.8. Comparison 5: Cognitive functioning, Outcome 8: POMS confusion subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
5.8.1 Up to 12 weeks' follow-up								
Moadel 2007	3.17	3.77	84	3.6	3.88	44	100.0%	-0.43 [-1.83 , 0.97]
Subtotal (95% CI)			**84**			**44**	**100.0%**	**-0.43 [-1.83 , 0.97]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.60 (P = 0.55)								
Test for subgroup differences: Not applicable								



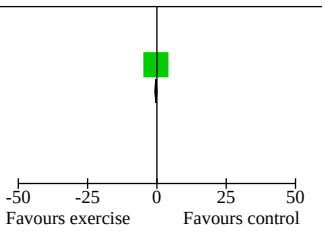
Analysis 5.9. Comparison 5: Cognitive functioning, Outcome 9: QLSI cognitive functioning subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
5.9.1 Up to 12 weeks' follow-up								
Lanctot 2010	5.18	6.25	37	8.22	13.83	31	100.0%	-3.04 [-8.31 , 2.23]
Subtotal (95% CI)			**37**			**31**	**100.0%**	**-3.04 [-8.31 , 2.23]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.13 (P = 0.26)								
Test for subgroup differences: Not applicable								



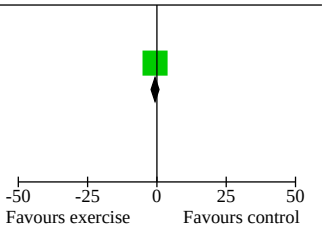
Analysis 5.10. Comparison 5: Cognitive functioning, Outcome 10: MDASI-T problem remembering subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
5.10.1 Up to 12 weeks' follow-up								
Yang 2011	-0.32	0.77	19	0.05	0.04	21	100.0%	-0.37 [-0.72 , -0.02]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-0.37 [-0.72 , -0.02]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.09 (P = 0.04)								
Test for subgroup differences: Not applicable								



Analysis 5.11. Comparison 5: Cognitive functioning, Outcome 11: MDASI-T problem remembering subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
5.11.1 Up to 12 weeks' follow-up								
Yang 2011	2	2.13	19	2.67	2.44	21	100.0%	-0.67 [-2.09 , 0.75]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-0.67 [-2.09 , 0.75]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.93 (P = 0.35)								
Test for subgroup differences: Not applicable								



Comparison 6. Depression

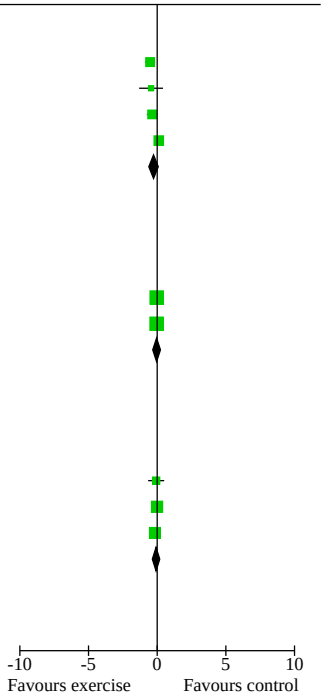
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
6.1 Overall depression change	6		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
6.1.1 Up to 12 weeks' follow-up	4	418	Std. Mean Difference (IV, Random, 95% CI)	-0.27 [-0.61, 0.08]
6.1.2 More than 12 weeks' to less than 6 months' follow-up	1	223	Std. Mean Difference (IV, Random, 95% CI)	-0.04 [-0.32, 0.24]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
6.1.3 6 months' follow-up	2	246	Std. Mean Difference (IV, Random, 95% CI)	-0.08 [-0.35, 0.19]
6.2 Overall depression follow-up values	17		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
6.2.1 Up to 12 weeks' follow-up	15	1250	Std. Mean Difference (IV, Random, 95% CI)	-0.55 [-0.87, -0.22]
6.2.2 More than 12 weeks' to less than 6 months' follow-up	5	406	Std. Mean Difference (IV, Random, 95% CI)	-0.21 [-0.43, 0.01]
6.2.3 6 months' follow-up	4	452	Std. Mean Difference (IV, Random, 95% CI)	-0.29 [-0.48, -0.09]
6.3 Centers for Epidemiological Studies Depression change	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
6.3.1 Up to 12 weeks' follow-up	1	122	Mean Difference (IV, Random, 95% CI)	-2.40 [-4.05, -0.75]
6.3.2 More than 12 weeks' to less than 6 months' follow-up	1	223	Mean Difference (IV, Random, 95% CI)	-0.35 [-2.25, 1.55]
6.3.3 6 months' follow-up	2	246	Mean Difference (IV, Random, 95% CI)	-0.78 [-2.99, 1.42]
6.4 Centers for Epidemiological Studies Depression Scale follow-up values	5		Mean Difference (IV, Random, 95% CI)	Subtotals only
6.4.1 Up to 12 weeks' follow-up	4	425	Mean Difference (IV, Random, 95% CI)	-0.97 [-2.31, 0.37]
6.4.2 More than 12 weeks' to less than 6 months' follow-up	2	279	Mean Difference (IV, Random, 95% CI)	-0.74 [-3.19, 1.70]
6.4.3 6 months' follow-up	2	246	Mean Difference (IV, Random, 95% CI)	-1.95 [-4.29, 0.40]
6.5 Hospital Anxiety and Depression Scale depression subscale follow-up values	4		Mean Difference (IV, Random, 95% CI)	Totals not selected
6.5.1 Up to 12 weeks' follow-up	4		Mean Difference (IV, Random, 95% CI)	Totals not selected
6.5.2 More than 12 weeks' to less than 6 months' follow-up	2		Mean Difference (IV, Random, 95% CI)	Totals not selected
6.5.3 6 months' follow-up	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
6.6 Beck Depression Inventory change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
6.6.1 Up to 12 weeks' follow-up	1	21	Mean Difference (IV, Random, 95% CI)	-1.30 [-3.72, 1.12]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
6.7 Beck Depression Inventory follow-up values	5		Mean Difference (IV, Random, 95% CI)	Subtotals only
6.7.1 Up to 12 weeks' follow-up	5	362	Mean Difference (IV, Random, 95% CI)	-3.36 [-5.87, -0.85]
6.7.2 6 months' follow-up	1	177	Mean Difference (IV, Random, 95% CI)	-2.40 [-4.57, -0.23]
6.8 POMS Depression subscale change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
6.8.1 Up to 12 weeks' follow-up	2	275	Mean Difference (IV, Random, 95% CI)	-0.98 [-5.32, 3.35]
6.9 POMS depression subscale follow-up values	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
6.9.1 Up to 12 weeks' follow-up	3	162	Mean Difference (IV, Random, 95% CI)	-0.23 [-1.32, 0.86]
6.9.2 More than 12 weeks' to less than 6 months' follow-up	1	80	Mean Difference (IV, Random, 95% CI)	-6.30 [-12.62, 0.02]
6.10 Symptom Checklist 90 Revised Depression subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
6.10.1 Up to 12 weeks' follow-up	1	59	Mean Difference (IV, Random, 95% CI)	-1.10 [-3.28, 1.08]
6.11 General Health Questionnaire Depression subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
6.11.1 More than 12 weeks' to less than 6 months' follow-up	1	17	Mean Difference (IV, Random, 95% CI)	-0.28 [-2.65, 2.09]

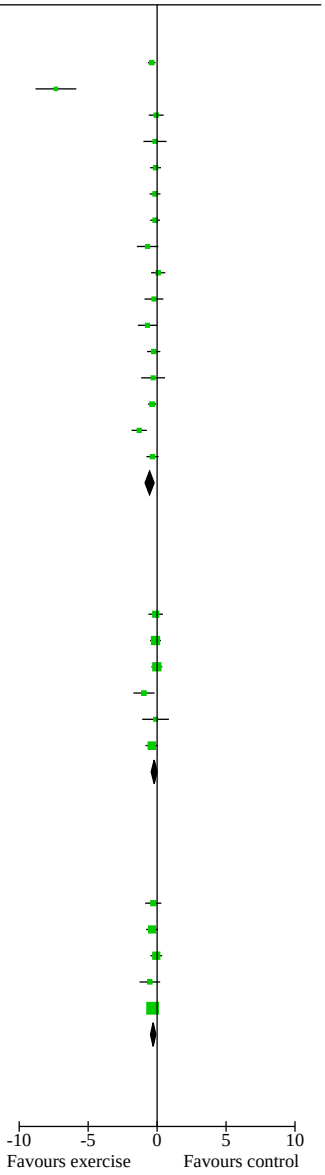
Analysis 6.1. Comparison 6: Depression, Outcome 1: Overall depression change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
6.1.1 Up to 12 weeks' follow-up								
Courneya 2009	-2.2	4.6	60	0.2	4.7	62	28.9%	-0.51 [-0.87 , -0.15]
Monga 2007	-0.7	2.5	11	0.6	3.1	10	11.4%	-0.45 [-1.31 , 0.42]
Oh 2010	-1.01	5.9	54	1.5	7.4	54	27.9%	-0.37 [-0.75 , 0.01]
Targ 2002	-0.38	25.3139	79	-2.6	11.4216	88	31.8%	0.11 [-0.19 , 0.42]
Subtotal (95% CI)			**204**			**214**	**100.0%**	**-0.27 [-0.61 , 0.08]**
Heterogeneity: Tau² = 0.07; Chi² = 8.06, df = 3 (P = 0.04); I² = 63%								
Test for overall effect: Z = 1.52 (P = 0.13)								
6.1.2 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	-2.2	8.6	74	-1.9	5.7	37	50.2%	-0.04 [-0.43 , 0.36]
Courneya 2007a	-2.3	8.8	76	-1.9	5.6	36	49.8%	-0.05 [-0.45 , 0.35]
Subtotal (95% CI)			**150**			**73**	**100.0%**	**-0.04 [-0.32 , 0.24]**
Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 0.97); I² = 0%								
Test for overall effect: Z = 0.31 (P = 0.76)								
6.1.3 6 months' follow-up								
Cadmus 2009	-2.8	9.2	22	-2.2	6.4	23	21.1%	-0.07 [-0.66 , 0.51]
Courneya 2007a	-4.1	10.7	73	-4	7	30	39.9%	-0.01 [-0.44 , 0.41]
Courneya 2007a	-5.6	10.7	68	-4	7	30	39.0%	-0.16 [-0.59 , 0.27]
Subtotal (95% CI)			**163**			**83**	**100.0%**	**-0.08 [-0.35 , 0.19]**
Heterogeneity: Tau² = 0.00; Chi² = 0.25, df = 2 (P = 0.88); I² = 0%								
Test for overall effect: Z = 0.61 (P = 0.54)								
Test for subgroup differences: Chi² = 1.05, df = 2 (P = 0.59), I² = 0%								



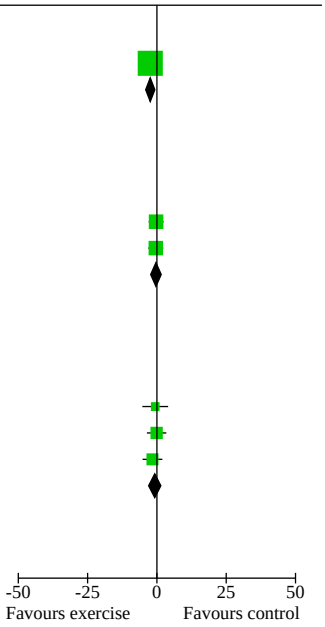
Analysis 6.2. Comparison 6: Depression, Outcome 2: Overall depression follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
6.2.1 Up to 12 weeks' follow-up								
Adamsen 2009	2.74	2.43	106	3.84	3.15	103	7.5%	-0.39 [-0.66 , -0.12]
Banerjee 2007	3.4	0.5	35	9.7	1.2	23	3.0%	-7.34 [-8.82 , -5.86]
Chandwani 2010	7.7	6.6	26	8.2	7.8	27	6.5%	-0.07 [-0.61 , 0.47]
Chang 2008	1.25	1.22	11	1.47	1.51	11	5.2%	-0.15 [-0.99 , 0.68]
Courneya 2007a	12.6	9.4	75	13.7	10.2	37	7.1%	-0.11 [-0.51 , 0.28]
Courneya 2007a	12.2	9.8	73	13.7	10.2	38	7.1%	-0.15 [-0.54 , 0.24]
Courneya 2009	5.4	4.5	60	6.1	5	62	7.2%	-0.15 [-0.50 , 0.21]
Danhauer 2009	8.1	8.9	13	17.8	16.9	14	5.5%	-0.69 [-1.47 , 0.09]
Dimeo 1999	6.9	10	27	6.2	7.8	32	6.6%	0.08 [-0.43 , 0.59]
Donnelly 2011	11.25	8.29	16	13.41	10.1	17	5.9%	-0.23 [-0.91 , 0.46]
Jarden 2009	3.9	3.3	17	6	2.5	17	5.8%	-0.70 [-1.40 , -0.01]
Lanctot 2010	10.23	4.55	39	11.8	8.03	30	6.8%	-0.25 [-0.72 , 0.23]
Monga 2007	2.8	5.5	11	4.2	3.4	10	5.1%	-0.29 [-1.15 , 0.57]
Mutrie 2007	8.6	6.8	82	11.5	8.6	95	7.4%	-0.37 [-0.67 , -0.07]
Raghavendra 2007	6.6	4.6	28	14.2	6.6	34	6.4%	-1.30 [-1.85 , -0.74]
Wiskemann 2011	15.1	2	40	15.8	2.1	41	6.9%	-0.34 [-0.78 , 0.10]
Subtotal (95% CI)			**659**			**591**	**100.0%**	**-0.55 [-0.87 , -0.22]**
Heterogeneity: Tau² = 0.35; Chi² = 106.64, df = 15 (P < 0.00001); I² = 86%								
Test for overall effect: Z = 3.26 (P = 0.001)								
6.2.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	7.7	12	27	9	13.5	29	15.5%	-0.10 [-0.62 , 0.42]
Courneya 2007a	9.7	9.3	74	10.8	9.4	37	25.6%	-0.12 [-0.51 , 0.28]
Courneya 2007a	10.6	9.5	76	10.8	9.4	36	25.4%	-0.02 [-0.42 , 0.38]
Jarden 2009	3.2	2.9	17	6.3	3.5	13	7.6%	-0.95 [-1.72 , -0.18]
Moros 2010	1	2.2	10	1.28	2.62	7	4.9%	-0.11 [-1.08 , 0.86]
Wiskemann 2011	15.6	1.7	40	16.4	2.3	40	21.0%	-0.39 [-0.83 , 0.05]
Subtotal (95% CI)			**244**			**162**	**100.0%**	**-0.21 [-0.43 , 0.01]**
Heterogeneity: Tau² = 0.01; Chi² = 5.53, df = 5 (P = 0.35); I² = 10%								
Test for overall effect: Z = 1.91 (P = 0.06)								
6.2.3 6 months' follow-up								
Cadmus 2009	7.9	7.1	22	10	7.6	23	10.8%	-0.28 [-0.87 , 0.31]
Courneya 2007a	7.2	7.5	68	10.2	9.5	30	19.9%	-0.36 [-0.80 , 0.07]
Courneya 2007a	9.6	10	73	10.2	9.5	30	20.6%	-0.06 [-0.49 , 0.36]
Jarden 2009	3.1	3	16	4.9	3.7	13	6.7%	-0.53 [-1.27 , 0.22]
Mutrie 2007	8.4	7.2	82	10.8	7.5	95	42.1%	-0.32 [-0.62 , -0.03]
Subtotal (95% CI)			**261**			**191**	**100.0%**	**-0.29 [-0.48 , -0.09]**
Heterogeneity: Tau² = 0.00; Chi² = 1.67, df = 4 (P = 0.80); I² = 0%								
Test for overall effect: Z = 2.91 (P = 0.004)								
Test for subgroup differences: Chi² = 2.81, df = 2 (P = 0.24), I² = 28.9%								



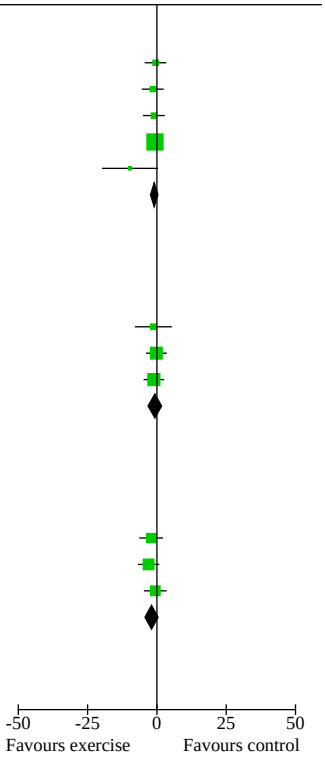
Analysis 6.3. Comparison 6: Depression, Outcome 3: Centers for Epidemiological Studies Depression change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
6.3.1 Up to 12 weeks' follow-up								
Courneya 2009	-2.2	4.6	60	0.2	4.7	62	100.0%	-2.40 [-4.05 , -0.75]
Subtotal (95% CI)			**60**			**62**	**100.0%**	**-2.40 [-4.05 , -0.75]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.85 (P = 0.004)								
6.3.2 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	-2.2	8.6	74	-1.9	5.7	37	50.2%	-0.30 [-2.99 , 2.39]
Courneya 2007a	-2.3	8.8	76	-1.9	5.6	36	49.8%	-0.40 [-3.09 , 2.29]
Subtotal (95% CI)			**150**			**73**	**100.0%**	**-0.35 [-2.25 , 1.55]**
Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 0.96); I² = 0%								
Test for overall effect: Z = 0.36 (P = 0.72)								
6.3.3 6 months' follow-up								
Cadmus 2009	-2.8	9.2	22	-2.2	6.4	23	22.4%	-0.60 [-5.25 , 4.05]
Courneya 2007a	-4.1	10.7	73	-4	7	30	39.5%	-0.10 [-3.61 , 3.41]
Courneya 2007a	-5.6	10.7	68	-4	7	30	38.1%	-1.60 [-5.17 , 1.97]
Subtotal (95% CI)			**163**			**83**	**100.0%**	**-0.78 [-2.99 , 1.42]**
Heterogeneity: Tau² = 0.00; Chi² = 0.35, df = 2 (P = 0.84); I² = 0%								
Test for overall effect: Z = 0.70 (P = 0.49)								
Test for subgroup differences: Chi² = 2.87, df = 2 (P = 0.24), I² = 30.3%								



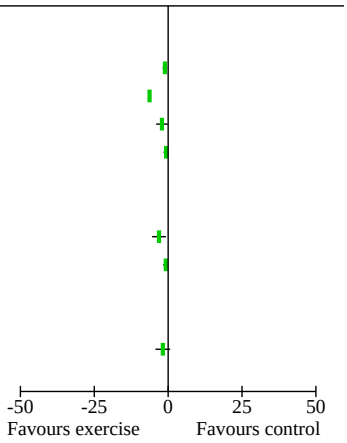
Analysis 6.4. Comparison 6: Depression, Outcome 4: Centers for Epidemiological Studies Depression Scale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
6.4.1 Up to 12 weeks' follow-up								
Chandwani 2010	7.7	6.6	26	8.2	7.8	27	11.9%	-0.50 [-4.38 , 3.38]
Courneya 2007a	12.2	9.8	73	13.7	10.2	38	11.5%	-1.50 [-5.45 , 2.45]
Courneya 2007a	12.6	9.4	75	13.7	10.2	37	11.7%	-1.10 [-5.02 , 2.82]
Courneya 2009	5.4	4.5	60	6.1	5	62	63.1%	-0.70 [-2.39 , 0.99]
Danhauer 2009	8.1	8.9	13	17.8	16.9	14	1.8%	-9.70 [-19.79 , 0.39]
Subtotal (95% CI)			**247**			**178**	**100.0%**	**-0.97 [-2.31 , 0.37]**
Heterogeneity: Tau² = 0.00; Chi² = 3.10, df = 4 (P = 0.54); I² = 0%								
Test for overall effect: Z = 1.42 (P = 0.15)								
6.4.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	7.7	12	27	9	13.5	29	13.4%	-1.30 [-7.98 , 5.38]
Courneya 2007a	10.6	9.5	76	10.8	9.4	36	42.8%	-0.20 [-3.94 , 3.54]
Courneya 2007a	9.7	9.3	74	10.8	9.4	37	43.8%	-1.10 [-4.80 , 2.60]
Subtotal (95% CI)			**177**			**102**	**100.0%**	**-0.74 [-3.19 , 1.70]**
Heterogeneity: Tau² = 0.00; Chi² = 0.14, df = 2 (P = 0.93); I² = 0%								
Test for overall effect: Z = 0.59 (P = 0.55)								
6.4.3 6 months' follow-up								
Cadmus 2009	7.9	7.1	22	10	7.6	23	29.9%	-2.10 [-6.40 , 2.20]
Courneya 2007a	7.2	7.5	68	10.2	9.5	30	37.4%	-3.00 [-6.84 , 0.84]
Courneya 2007a	9.6	10	73	10.2	9.5	30	32.8%	-0.60 [-4.70 , 3.50]
Subtotal (95% CI)			**163**			**83**	**100.0%**	**-1.95 [-4.29 , 0.40]**
Heterogeneity: Tau² = 0.00; Chi² = 0.71, df = 2 (P = 0.70); I² = 0%								
Test for overall effect: Z = 1.62 (P = 0.10)								
Test for subgroup differences: Chi² = 0.61, df = 2 (P = 0.74), I² = 0%								



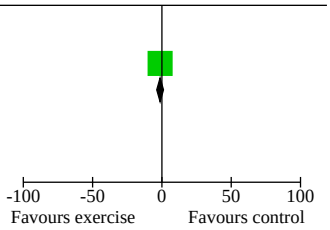
Analysis 6.5. Comparison 6: Depression, Outcome 5: Hospital Anxiety and Depression Scale depression subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Mean Difference IV, Random, 95% CI
6.5.1 Up to 12 weeks' follow-up							
Adamsen 2009	2.74	2.43	106	3.84	3.15	103	-1.10 [-1.86 , -0.34]
Banerjee 2007	3.4	0.5	35	9.7	1.2	23	-6.30 [-6.82 , -5.78]
Jarden 2009	3.9	3.3	17	6	2.5	17	-2.10 [-4.07 , -0.13]
Wiskemann 2011	15.1	2	40	15.8	2.1	41	-0.70 [-1.59 , 0.19]
6.5.2 More than 12 weeks' to less than 6 months' follow-up							
Jarden 2009	3.2	2.9	17	6.3	3.5	13	-3.10 [-5.45 , -0.75]
Wiskemann 2011	15.6	1.7	40	16.4	2.3	40	-0.80 [-1.69 , 0.09]
6.5.3 6 months' follow-up							
Jarden 2009	3.1	3	16	4.9	3.7	13	-1.80 [-4.29 , 0.69]



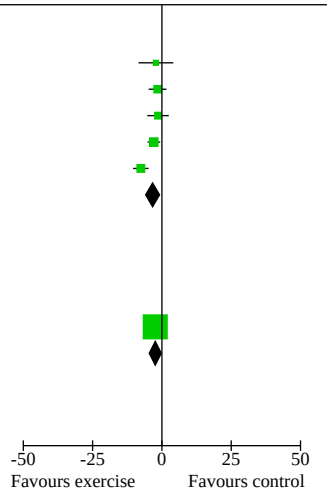
Analysis 6.6. Comparison 6: Depression, Outcome 6: Beck Depression Inventory change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
6.6.1 Up to 12 weeks' follow-up								
Monga 2007	-0.7	2.5	11	0.6	3.1	10	100.0%	-1.30 [-3.72 , 1.12]
Subtotal (95% CI)			**11**			**10**	**100.0%**	**-1.30 [-3.72 , 1.12]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.05 (P = 0.29)								
Test for subgroup differences: Not applicable								



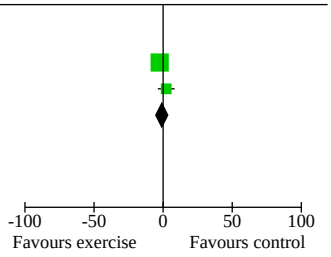
Analysis 6.7. Comparison 6: Depression, Outcome 7: Beck Depression Inventory follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
6.7.1 Up to 12 weeks' follow-up								
Donnelly 2011	11.25	8.29	16	13.41	10.1	17	10.7%	-2.16 [-8.45 , 4.13]
Lanctot 2010	10.23	4.55	39	11.8	8.03	30	21.4%	-1.57 [-4.78 , 1.64]
Monga 2007	2.8	5.5	11	4.2	3.4	10	18.5%	-1.40 [-5.27 , 2.47]
Mutrie 2007	8.6	6.8	82	11.5	8.6	95	26.0%	-2.90 [-5.17 , -0.63]
Raghavendra 2007	6.6	4.6	28	14.2	6.6	34	23.4%	-7.60 [-10.40 , -4.80]
Subtotal (95% CI)			**176**			**186**	**100.0%**	**-3.36 [-5.87 , -0.85]**
Heterogeneity: $Tau^2 = 4.97$; $Chi^2 = 11.20$, df = 4 (P = 0.02); $I^2 = 64\%$								
Test for overall effect: Z = 2.62 (P = 0.009)								
6.7.2 6 months' follow-up								
Mutrie 2007	8.4	7.2	82	10.8	7.5	95	100.0%	-2.40 [-4.57 , -0.23]
Subtotal (95% CI)			**82**			**95**	**100.0%**	**-2.40 [-4.57 , -0.23]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.17 (P = 0.03)								
Test for subgroup differences: $Chi^2 = 0.32$, df = 1 (P = 0.57), $I^2 = 0\%$								



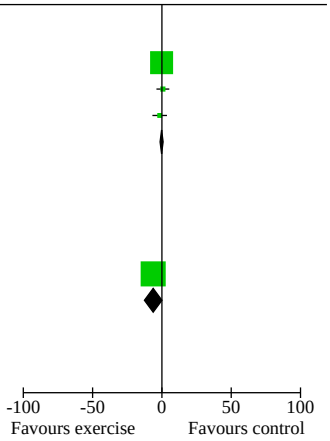
Analysis 6.8. Comparison 6: Depression, Outcome 8: POMS Depression subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
6.8.1 Up to 12 weeks' follow-up								
Oh 2010	-1.01	5.9	54	1.5	7.4	54	67.7%	-2.51 [-5.03 , 0.01]
Targ 2002	-0.38	25.3139	79	-2.6	11.4216	88	32.3%	2.22 [-3.85 , 8.29]
Subtotal (95% CI)			**133**			**142**	**100.0%**	**-0.98 [-5.32 , 3.35]**
Heterogeneity: Tau² = 5.56; Chi² = 1.99, df = 1 (P = 0.16); I² = 50%								
Test for overall effect: Z = 0.44 (P = 0.66)								
Test for subgroup differences: Not applicable								



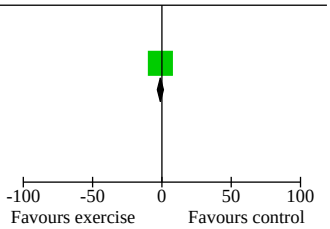
Analysis 6.9. Comparison 6: Depression, Outcome 9: POMS depression subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
6.9.1 Up to 12 weeks' follow-up								
Chang 2008	1.25	1.22	11	1.47	1.51	11	90.2%	-0.22 [-1.37 , 0.93]
Dimeo 1999	6.9	10	27	6.2	7.8	32	5.5%	0.70 [-3.94 , 5.34]
Wiskemann 2011	11.4	12	40	13	12.1	41	4.3%	-1.60 [-6.85 , 3.65]
Subtotal (95% CI)			**78**			**84**	**100.0%**	**-0.23 [-1.32 , 0.86]**
Heterogeneity: Tau² = 0.00; Chi² = 0.42, df = 2 (P = 0.81); I² = 0%								
Test for overall effect: Z = 0.41 (P = 0.68)								
6.9.2 More than 12 weeks' to less than 6 months' follow-up								
Wiskemann 2011	11	13	40	17.3	15.7	40	100.0%	-6.30 [-12.62 , 0.02]
Subtotal (95% CI)			**40**			**40**	**100.0%**	**-6.30 [-12.62 , 0.02]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.95 (P = 0.05)								
Test for subgroup differences: Chi² = 3.45, df = 1 (P = 0.06), I² = 71.0%								

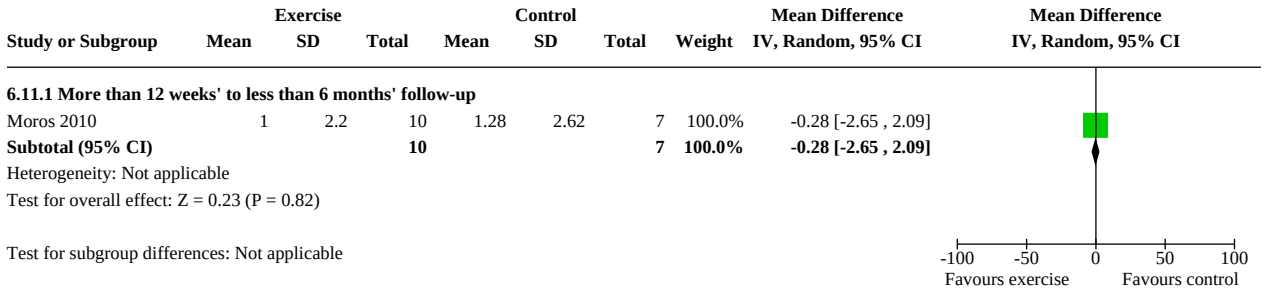


Analysis 6.10. Comparison 6: Depression, Outcome 10: Symptom Checklist 90 Revised Depression subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
6.10.1 Up to 12 weeks' follow-up								
Dimeo 1999	4.9	4.6	27	6	3.8	32	100.0%	-1.10 [-3.28 , 1.08]
Subtotal (95% CI)			**27**			**32**	**100.0%**	**-1.10 [-3.28 , 1.08]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.99 (P = 0.32)								
Test for subgroup differences: Not applicable								



Analysis 6.11. Comparison 6: Depression, Outcome 11: General Health Questionnaire Depression subscale follow-up values



Comparison 7. Emotional well-being/mental health functioning

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
7.1 Overall emotional well-being/mental health change	8		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
7.1.1 Up to 12 weeks' follow-up	6	418	Std. Mean Difference (IV, Random, 95% CI)	0.52 [-0.04, 1.07]
7.1.2 6 months' follow-up	3	202	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.46, 0.11]
7.2 Overall emotional well-being/mental health follow-up values	23		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
7.2.1 Up to 12 weeks' follow-up	21	1343	Std. Mean Difference (IV, Random, 95% CI)	0.05 [-0.18, 0.28]
7.2.2 More than 12 weeks' to less than 6 months' follow-up	5	242	Std. Mean Difference (IV, Random, 95% CI)	0.59 [0.12, 1.07]
7.2.3 6 months' follow-up	6	350	Std. Mean Difference (IV, Random, 95% CI)	0.25 [-0.08, 0.57]
7.3 FACT emotional subscale change	4		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.3.1 Up to 12 weeks' follow-up	3	167	Mean Difference (IV, Random, 95% CI)	0.96 [-0.20, 2.12]
7.3.2 6 months' follow-up	2	81	Mean Difference (IV, Random, 95% CI)	0.25 [-0.81, 1.30]
7.4 FACT emotion subscale follow-up values	7		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.4.1 Up to 12 weeks' follow-up	6	443	Mean Difference (IV, Random, 95% CI)	0.23 [-0.89, 1.36]
7.4.2 6 months' follow-up	4	307	Mean Difference (IV, Random, 95% CI)	0.43 [-0.51, 1.37]
7.5 QLQ-C30 change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
7.5.1 Up to 12 weeks' follow-up	1	44	Mean Difference (IV, Random, 95% CI)	4.73 [-19.39, 28.85]
7.6 QLQ-C30 emotion subscale follow-up values	6		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.6.1 Up to 12 weeks' follow-up	5	411	Mean Difference (IV, Random, 95% CI)	1.74 [-2.02, 5.49]
7.6.2 More than 12 weeks' to less than 6 months' follow-up	3	127	Mean Difference (IV, Random, 95% CI)	13.33 [5.19, 21.47]
7.6.3 6 months' follow-up	1	29	Mean Difference (IV, Random, 95% CI)	19.10 [6.39, 31.81]
7.7 FACIT-E subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.7.1 Up to 12 weeks' follow-up	1	167	Mean Difference (IV, Random, 95% CI)	-0.69 [-3.29, 1.91]
7.8 POMS total mood change	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.8.1 Up to 12 weeks' follow-up	3	315	Mean Difference (IV, Random, 95% CI)	-8.92 [-10.81, -7.03]
7.9 POMS total mood follow-up values	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.9.1 Up to 12 weeks' follow-up	2	168	Mean Difference (IV, Random, 95% CI)	-7.16 [-12.64, -1.69]
7.10 POMS anger subscale change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.10.1 Up to 12 weeks' follow-up	2	275	Mean Difference (IV, Random, 95% CI)	0.05 [-1.48, 1.57]
7.11 POMS anger subscale follow-up values	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.11.1 Up to 12 weeks' follow-up	3	268	Mean Difference (IV, Random, 95% CI)	-1.28 [-3.10, 0.54]
7.11.2 More than 12 weeks' to less than 6 months' follow-up	1	80	Mean Difference (IV, Random, 95% CI)	-3.10 [-6.46, 0.26]
7.12 MOS SF-36 Mental Component Score follow-up values	5		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.12.1 Up to 12 weeks' follow-up	5	443	Mean Difference (IV, Random, 95% CI)	4.08 [1.11, 7.05]
7.12.2 More than 12 weeks' to less than 6 months' follow-up	2	115	Mean Difference (IV, Random, 95% CI)	7.43 [-5.64, 20.50]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
7.13 MOS SF-36 mental health subscale change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.13.1 6 months' follow-up	2	166	Mean Difference (IV, Random, 95% CI)	-3.23 [-6.70, 0.24]
7.14 MOS SF-36 mental health subscale follow-up values	4		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.14.1 Up to 12 weeks' follow-up	3	345	Mean Difference (IV, Random, 95% CI)	2.94 [-6.31, 12.18]
7.14.2 More than 12 weeks' to less than 6 months' follow-up	1	56	Mean Difference (IV, Random, 95% CI)	0.90 [-11.86, 13.66]
7.14.3 6 months' follow-up	1	45	Mean Difference (IV, Random, 95% CI)	2.20 [-2.11, 6.51]
7.15 MOS SF-36 emotional role subscale change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.15.1 6 months' follow-up	2	166	Mean Difference (IV, Random, 95% CI)	-1.88 [-8.47, 4.71]
7.16 MOS SF-36 emotional role subscale follow-up values	4		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.16.1 Up to 12 weeks' follow-up	3	345	Mean Difference (IV, Random, 95% CI)	8.26 [-1.77, 18.30]
7.16.2 More than 12 weeks' to less than 6 months' follow-up	1	56	Mean Difference (IV, Random, 95% CI)	5.80 [-21.26, 32.86]
7.16.3 6 months' follow-up	1	45	Mean Difference (IV, Random, 95% CI)	2.00 [-3.76, 7.76]
7.17 Positive and Negative Affect Schedule positivity subscale follow-up values	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.17.1 Up to 12 weeks' follow-up	3	160	Mean Difference (IV, Random, 95% CI)	3.58 [-0.11, 7.28]
7.17.2 6 months' follow-up	1	177	Mean Difference (IV, Random, 95% CI)	3.80 [0.98, 6.62]
7.18 Positive and Negative Affect Schedule negativity subscale follow-up values	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.18.1 Up to 12 weeks' follow-up	3	234	Mean Difference (IV, Random, 95% CI)	-2.58 [-4.42, -0.74]
7.18.2 6 months' follow-up	1	177	Mean Difference (IV, Random, 95% CI)	-1.70 [-3.62, 0.22]
7.19 Satisfaction with Life change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
7.19.1 Up to 12 weeks' follow-up	1	19	Mean Difference (IV, Random, 95% CI)	0.42 [-0.30, 1.14]
7.20 Satisfaction with Life follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.20.1 Up to 12 weeks' follow-up	1	96	Mean Difference (IV, Random, 95% CI)	-2.58 [-5.79, 0.63]
7.21 Perceived Stress follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.21.1 Up to 12 weeks' follow-up	1	58	Mean Difference (IV, Random, 95% CI)	-5.50 [-6.79, -4.21]
7.22 Psychosocial Adjustment to Illness Scale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.22.1 Up to 12 weeks' follow-up	1	14	Mean Difference (IV, Random, 95% CI)	-1.20 [-8.20, 5.80]
7.22.2 6 months' follow-up	1	14	Mean Difference (IV, Random, 95% CI)	-2.90 [-9.94, 4.14]
7.23 Brief Symptom Inventory follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.23.1 Up to 12 weeks' follow-up	1	14	Mean Difference (IV, Random, 95% CI)	-0.26 [-0.47, -0.05]
7.23.2 6 months' follow-up	1	14	Mean Difference (IV, Random, 95% CI)	-0.19 [-0.47, 0.09]
7.24 Symptom Distress Scale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.24.1 Up to 12 weeks' follow-up	1	22	Mean Difference (IV, Random, 95% CI)	-0.35 [-0.72, 0.02]
7.25 Symptom Checklist 90 R positive symptom distress subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.25.1 Up to 12 weeks' follow-up	1	59	Mean Difference (IV, Random, 95% CI)	-3.00 [-9.03, 3.03]
7.26 Symptom Checklist 90 R somatization subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.26.1 Up to 12 weeks' follow-up	1	59	Mean Difference (IV, Random, 95% CI)	-2.30 [-4.37, -0.23]

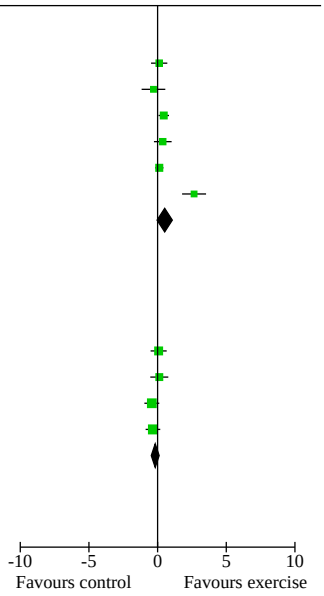
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
7.27 Symptom Checklist 90 R obsessive compulsive subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.27.1 Up to 12 weeks' follow-up	1	59	Mean Difference (IV, Random, 95% CI)	-1.00 [-2.81, 0.81]
7.28 Symptom Checklist 90 R hostility subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.28.1 Up to 12 weeks' follow-up	1	59	Mean Difference (IV, Random, 95% CI)	-0.50 [-1.42, 0.42]
7.29 Fordyce Happiness Scale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.29.1 6 months' follow-up	1	45	Mean Difference (IV, Random, 95% CI)	2.00 [-12.11, 16.11]
7.30 Fordyce Happiness Scale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.30.1 6 months' follow-up	1	45	Mean Difference (IV, Random, 95% CI)	-0.90 [-10.52, 8.72]
7.31 National Comprehensive Cancer Network Distress thermometer follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.31.1 Up to 12 weeks' follow-up	1	81	Mean Difference (IV, Random, 95% CI)	-1.20 [-2.30, -0.10]
7.31.2 More than 12 weeks' to less than 6 months' follow-up	1	80	Mean Difference (IV, Random, 95% CI)	-0.80 [-1.86, 0.26]
7.32 Cohen's Stress change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.32.1 6 months' follow-up	1	45	Mean Difference (IV, Random, 95% CI)	-1.60 [-5.73, 2.53]
7.33 Cohen's Stress follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.33.1 6 months' follow-up	1	45	Mean Difference (IV, Random, 95% CI)	-3.10 [-6.81, 0.61]
7.34 General Health Questionnaire follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.34.1 More than 12 weeks' to less than 6 months' follow-up	1	17	Mean Difference (IV, Random, 95% CI)	-1.47 [-9.38, 6.44]
7.35 General Health Questionnaire somatization subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
7.35.1 More than 12 weeks' to less than 6 months' follow-up	1	17	Mean Difference (IV, Random, 95% CI)	-0.08 [-2.27, 2.11]
7.36 WHO BREF psychological subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.36.1 Up to 12 weeks' follow-up	1	37	Mean Difference (IV, Random, 95% CI)	0.46 [-0.96, 1.88]
7.37 MDASI-T distress subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.37.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.89 [-2.49, -1.29]
7.38 MDASI-T distress subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.38.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-2.29 [-3.54, -1.04]
7.39 MDASI-T mood subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.39.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.42 [-1.97, -0.87]
7.40 MDASI-T mood subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.40.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-2.02 [-3.12, -0.92]
7.41 MDASI-T feeling sad subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.41.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.67 [-2.08, -1.26]
7.42 MDASI-T feeling sad subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.42.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-2.41 [-3.69, -1.13]
7.43 MDASI-T enjoyment of life subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.43.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.35 [-2.28, -0.42]
7.44 MDASI-T enjoyment of life subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
7.44.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.49 [-2.46, -0.52]
7.45 QLSI affective functioning subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.45.1 Up to 12 weeks' follow-up	1	67	Mean Difference (IV, Random, 95% CI)	-4.31 [-10.17, 1.55]

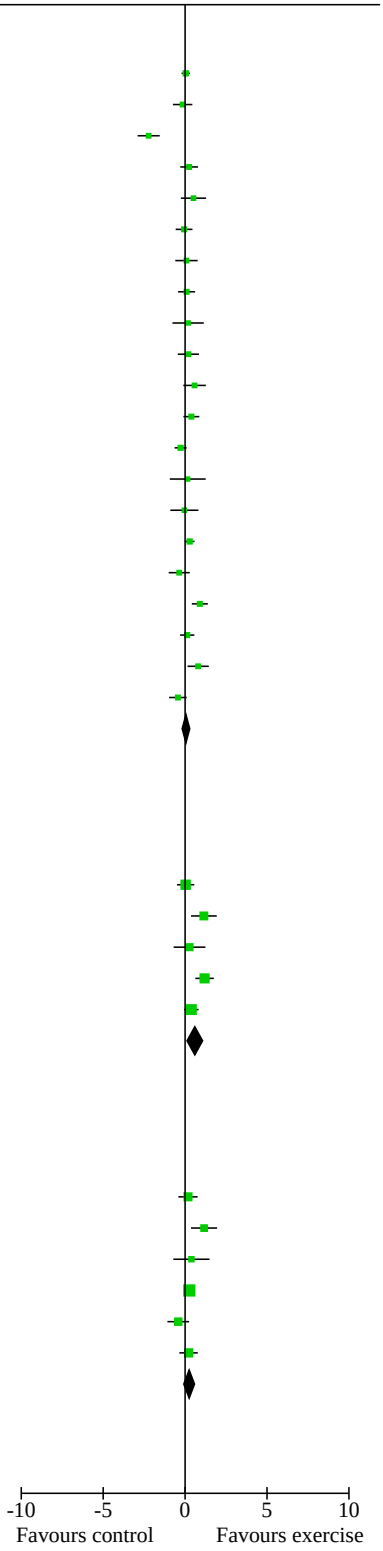
Analysis 7.1. Comparison 7: Emotional well-being/mental health functioning, Outcome 1: Overall emotional well-being/mental health change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
7.1.1 Up to 12 weeks' follow-up								
Arbane 2009	-12.3	44.3	21	-17.03	36.54	23	17.0%	0.11 [-0.48 , 0.71]
Monga 2007	0.1	2	11	1	3.6	10	13.9%	-0.30 [-1.16 , 0.56]
Oh 2010	8.73	20.6	54	-1.91	26.2	54	19.1%	0.45 [0.07 , 0.83]
Rogers 2009	0.9	2.5	20	-0.1	2.7	18	16.4%	0.38 [-0.27 , 1.02]
Targ 2002	12.34	38	79	7.95	34.7	88	19.8%	0.12 [-0.18 , 0.42]
Yang 2011	7.21	0.94	19	-1.77	4.48	21	13.8%	2.66 [1.78 , 3.53]
Subtotal (95% CI)			**204**			**214**	**100.0%**	**0.52 [-0.04 , 1.07]**
Heterogeneity: Tau² = 0.38; Chi² = 32.08, df = 5 (P < 0.00001); I² = 84%								
Test for overall effect: Z = 1.82 (P = 0.07)								
7.1.2 6 months' follow-up								
Cadmus 2009	1.6	3.1	22	1.4	2	23	24.0%	0.08 [-0.51 , 0.66]
Rogers 2009	0	2.7	19	-0.29	1.7	17	19.1%	0.12 [-0.53 , 0.78]
Segal 2001	1.6	16.2	40	7.6	8.3	20	27.9%	-0.42 [-0.96 , 0.12]
Segal 2001	3.4	13.8	40	7.6	8.3	21	29.0%	-0.34 [-0.87 , 0.19]
Subtotal (95% CI)			**121**			**81**	**100.0%**	**-0.17 [-0.46 , 0.11]**
Heterogeneity: Tau² = 0.00; Chi² = 2.66, df = 3 (P = 0.45); I² = 0%								
Test for overall effect: Z = 1.19 (P = 0.23)								
Test for subgroup differences: Chi² = 4.69, df = 1 (P = 0.03), I² = 78.7%								



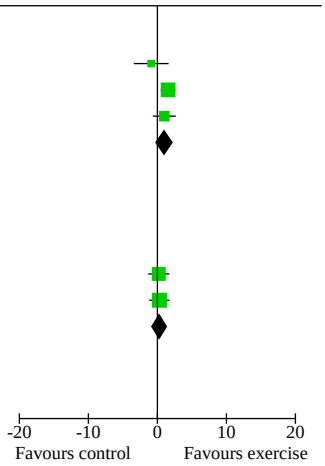
Analysis 7.2. Comparison 7: Emotional well-being/mental health functioning, Outcome 2: Overall emotional well-being/mental health follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
7.2.1 Up to 12 weeks' follow-up								
Adamsen 2009	81.3	17.2	118	80.6	18	117	6.4%	0.04 [-0.22 , 0.30]
Arbane 2009	86.51	34	21	90.94	22.88	23	4.8%	-0.15 [-0.74 , 0.44]
Banerjee 2007	14.9	2.4	35	20.4	2.5	23	4.4%	-2.22 [-2.90 , -1.55]
Chandwani 2010	52.8	8.7	26	50.6	8.8	27	5.0%	0.25 [-0.29 , 0.79]
Danhauer 2009	20.8	3.2	13	18.2	6.1	14	3.9%	0.51 [-0.26 , 1.28]
Dimeo 1999	-2.7	4.8	27	-2.4	4.7	32	5.2%	-0.06 [-0.57 , 0.45]
Donnelly 2011	30.43	8.81	16	29.65	9.3	17	4.3%	0.08 [-0.60 , 0.77]
Galvao 2010	50.2	10.4	29	49.2	11	28	5.2%	0.09 [-0.43 , 0.61]
Hacker 2011	88.5	10.9	8	85.2	21	9	3.2%	0.18 [-0.77 , 1.14]
Hwang 2008	12.71	2.02	17	12.25	2.4	20	4.5%	0.20 [-0.45 , 0.85]
Jarden 2009	79.4	19.8	17	66.7	23	17	4.3%	0.58 [-0.11 , 1.27]
Lanctot 2010	-5.91	4.66	37	-10.22	15.84	30	5.3%	0.38 [-0.10 , 0.87]
Moadel 2007	-17.76	5.06	84	-16.32	5.6	44	5.9%	-0.27 [-0.64 , 0.09]
Mock 1994	-16.5	7.5	9	-17.7	5.7	5	2.7%	0.16 [-0.93 , 1.26]
Monga 2007	22.5	2.6	11	22.6	1.6	10	3.5%	-0.04 [-0.90 , 0.81]
Mutrie 2007	20.1	4.2	82	18.9	4.4	92	6.3%	0.28 [-0.02 , 0.58]
Rogers 2009	20	3.1	20	21.1	2.9	18	4.5%	-0.36 [-1.00 , 0.28]
Tang 2010	55.47	10.07	36	44.92	13	35	5.3%	0.90 [0.41 , 1.39]
Wiskemann 2011	62.3	25.3	40	59.2	22	41	5.6%	0.13 [-0.31 , 0.57]
Yang 2011	-25.74	10.1	19	-36.1	14.74	21	4.5%	0.80 [0.15 , 1.44]
de Oliveira 2010	19.5	3.1	28	20.8	2.7	27	5.1%	-0.44 [-0.98 , 0.10]
Subtotal (95% CI)			**693**			**650**	**100.0%**	**0.05 [-0.18 , 0.28]**
Heterogeneity: Tau² = 0.20; Chi² = 77.53, df = 20 (P < 0.00001); I² = 74%								
Test for overall effect: Z = 0.45 (P = 0.66)								
7.2.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	50.9	14	27	50.4	15.6	29	22.8%	0.03 [-0.49 , 0.56]
Jarden 2009	89.6	12.7	17	68.6	23	13	16.9%	1.14 [0.36 , 1.93]
Moros 2010	70	28.1	10	61.9	29	7	13.6%	0.27 [-0.70 , 1.24]
Tang 2010	57.87	10.7	24	44.02	12	35	21.8%	1.19 [0.62 , 1.75]
Wiskemann 2011	70	24.2	40	60.5	25	40	24.8%	0.38 [-0.06 , 0.82]
Subtotal (95% CI)			**118**			**124**	**100.0%**	**0.59 [0.12 , 1.07]**
Heterogeneity: Tau² = 0.18; Chi² = 11.71, df = 4 (P = 0.02); I² = 66%								
Test for overall effect: Z = 2.45 (P = 0.01)								
7.2.3 6 months' follow-up								
Cadmus 2009	21.1	2.4	22	20.6	3.1	23	17.5%	0.18 [-0.41 , 0.76]
Jarden 2009	92.8	8.8	16	73.7	22	13	11.8%	1.16 [0.36 , 1.95]
Mock 1994	-14.8	7.6	9	-17.7	5.7	5	7.1%	0.39 [-0.72 , 1.49]
Mutrie 2007	19.7	4	82	18.6	4.5	95	30.2%	0.26 [-0.04 , 0.55]
Rogers 2009	19.5	3.1	19	20.8	3	17	15.1%	-0.42 [-1.08 , 0.25]
de Oliveira 2010	19.8	2.8	24	19.1	3.6	25	18.3%	0.21 [-0.35 , 0.77]
Subtotal (95% CI)			**172**			**178**	**100.0%**	**0.25 [-0.08 , 0.57]**
Heterogeneity: Tau² = 0.07; Chi² = 8.95, df = 5 (P = 0.11); I² = 44%								
Test for overall effect: Z = 1.49 (P = 0.14)								
Test for subgroup differences: Chi² = 4.28, df = 2 (P = 0.12), I² = 53.2%								



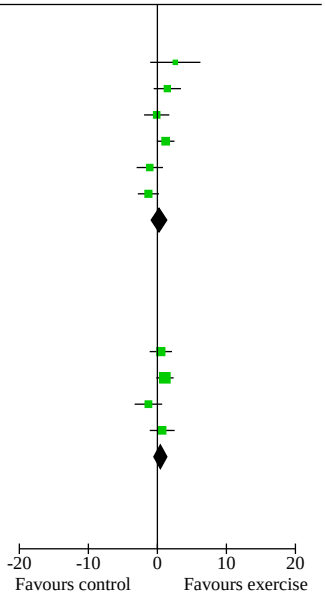
Analysis 7.3. Comparison 7: Emotional well-being/mental health functioning, Outcome 3: FACT emotional subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.3.1 Up to 12 weeks' follow-up								
Monga 2007	0.1	2	11	1	3.6	10	17.1%	-0.90 [-3.42 , 1.62]
Oh 2010	1.6	2.7	54	0.05	2.9	54	51.3%	1.55 [0.49 , 2.61]
Rogers 2009	0.9	2.5	20	-0.1	2.7	18	31.6%	1.00 [-0.66 , 2.66]
Subtotal (95% CI)			**85**			**82**	**100.0%**	**0.96 [-0.20 , 2.12]**
Heterogeneity: Tau² = 0.39; Chi² = 3.11, df = 2 (P = 0.21); I² = 36%								
Test for overall effect: Z = 1.62 (P = 0.11)								
7.3.2 6 months' follow-up								
Cadmus 2009	1.6	3.1	22	1.4	2	23	47.6%	0.20 [-1.33 , 1.73]
Rogers 2009	0	2.7	19	-0.29	1.7	17	52.4%	0.29 [-1.17 , 1.75]
Subtotal (95% CI)			**41**			**40**	**100.0%**	**0.25 [-0.81 , 1.30]**
Heterogeneity: Tau² = 0.00; Chi² = 0.01, df = 1 (P = 0.93); I² = 0%								
Test for overall effect: Z = 0.46 (P = 0.65)								
Test for subgroup differences: Chi² = 0.79, df = 1 (P = 0.37), I² = 0%								



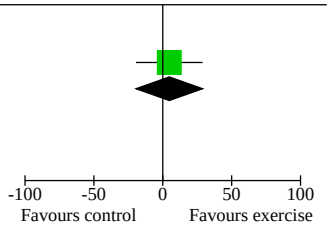
Analysis 7.4. Comparison 7: Emotional well-being/mental health functioning, Outcome 4: FACT emotion subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.4.1 Up to 12 weeks' follow-up								
Danhauer 2009	20.8	3.2	13	18.2	6.1	14	7.4%	2.60 [-1.04 , 6.24]
Moadel 2007	17.76	5.06	84	16.32	5.6	44	16.1%	1.44 [-0.54 , 3.42]
Monga 2007	22.5	2.6	11	22.6	1.6	10	17.3%	-0.10 [-1.93 , 1.73]
Mutrie 2007	20.1	4.2	82	18.9	4.4	92	22.6%	1.20 [-0.08 , 2.48]
Rogers 2009	20	3.1	20	21.1	2.9	18	16.6%	-1.10 [-3.01 , 0.81]
de Oliveira 2010	19.5	3.1	28	20.8	2.7	27	20.0%	-1.30 [-2.83 , 0.23]
Subtotal (95% CI)			**238**			**205**	**100.0%**	**0.23 [-0.89 , 1.36]**
Heterogeneity: Tau² = 1.03; Chi² = 11.09, df = 5 (P = 0.05); I² = 55%								
Test for overall effect: Z = 0.41 (P = 0.68)								
7.4.2 6 months' follow-up								
Cadmus 2009	21.1	2.4	22	20.6	3.1	23	25.1%	0.50 [-1.12 , 2.12]
Mutrie 2007	19.7	4	82	18.6	4.5	95	35.5%	1.10 [-0.15 , 2.35]
Rogers 2009	19.5	3.1	19	20.8	3	17	18.1%	-1.30 [-3.29 , 0.69]
de Oliveira 2010	19.8	2.8	24	19.1	3.6	25	21.3%	0.70 [-1.10 , 2.50]
Subtotal (95% CI)			**147**			**160**	**100.0%**	**0.43 [-0.51 , 1.37]**
Heterogeneity: Tau² = 0.24; Chi² = 4.06, df = 3 (P = 0.26); I² = 26%								
Test for overall effect: Z = 0.89 (P = 0.37)								
Test for subgroup differences: Chi² = 0.07, df = 1 (P = 0.79), I² = 0%								



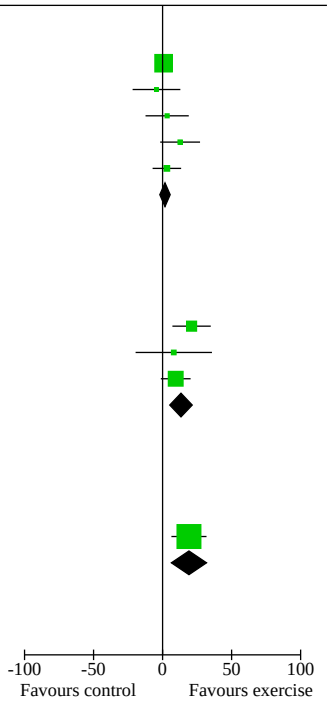
Analysis 7.5. Comparison 7: Emotional well-being/mental health functioning, Outcome 5: QLQ-C30 change

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.5.1 Up to 12 weeks' follow-up								
Arbane 2009	-12.3	44.3	21	-17.03	36.54	23	100.0%	4.73 [-19.39 , 28.85]
Subtotal (95% CI)			**21**			**23**	**100.0%**	**4.73 [-19.39 , 28.85]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.38 (P = 0.70)								
Test for subgroup differences: Not applicable								



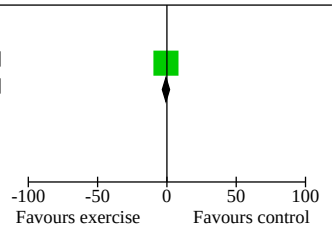
Analysis 7.6. Comparison 7: Emotional well-being/mental health functioning, Outcome 6: QLQ-C30 emotion subscale follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.6.1 Up to 12 weeks' follow-up								
Adamsen 2009	81.3	17.2	118	80.6	18	117	69.6%	0.70 [-3.80 , 5.20]
Arbane 2009	86.51	34	21	90.94	22.88	23	4.7%	-4.43 [-21.72 , 12.86]
Hacker 2011	88.5	10.9	8	85.2	21	9	5.7%	3.30 [-12.36 , 18.96]
Jarden 2009	79.4	19.8	17	66.7	23	17	6.8%	12.70 [-1.73 , 27.13]
Wiskemann 2011	62.3	25.3	40	59.2	22	41	13.2%	3.10 [-7.24 , 13.44]
Subtotal (95% CI)			**204**			**207**	**100.0%**	**1.74 [-2.02 , 5.49]**
Heterogeneity: Tau² = 0.00; Chi² = 3.02, df = 4 (P = 0.56); I² = 0%								
Test for overall effect: Z = 0.91 (P = 0.36)								
7.6.2 More than 12 weeks' to less than 6 months' follow-up								
Jarden 2009	89.6	12.7	17	68.6	23	13	34.4%	21.00 [7.12 , 34.88]
Moros 2010	70	28.1	10	61.9	29	7	8.7%	8.10 [-19.56 , 35.76]
Wiskemann 2011	70	24.2	40	60.5	25	40	57.0%	9.50 [-1.28 , 20.28]
Subtotal (95% CI)			**67**			**60**	**100.0%**	**13.33 [5.19 , 21.47]**
Heterogeneity: Tau² = 0.00; Chi² = 1.79, df = 2 (P = 0.41); I² = 0%								
Test for overall effect: Z = 3.21 (P = 0.001)								
7.6.3 6 months' follow-up								
Jarden 2009	92.8	8.8	16	73.7	22	13	100.0%	19.10 [6.39 , 31.81]
Subtotal (95% CI)			**16**			**13**	**100.0%**	**19.10 [6.39 , 31.81]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.94 (P = 0.003)								
Test for subgroup differences: Chi² = 11.64, df = 2 (P = 0.003), I² = 82.8%								



Analysis 7.7. Comparison 7: Emotional well-being/mental health functioning, Outcome 7: FACIT-E subscale change

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.7.1 Up to 12 weeks' follow-up								
Targ 2002	1.68	10.7	79	2.37	5.2	88	100.0%	-0.69 [-3.29 , 1.91]
Subtotal (95% CI)			**79**			**88**	**100.0%**	**-0.69 [-3.29 , 1.91]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.52 (P = 0.60)								
Test for subgroup differences: Not applicable								

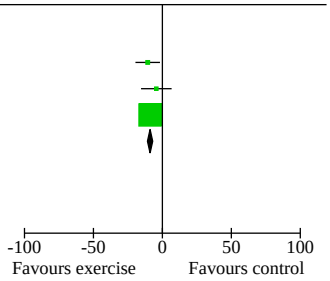


Analysis 7.8. Comparison 7: Emotional well-being/mental health functioning, Outcome 8: POMS total mood change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.8.1 Up to 12 weeks' follow-up								
Oh 2010	-8.73	20.6	54	1.91	26.2	54	4.5%	-10.64 [-19.53 , -1.75]
Targ 2002	-12.34	38	79	-7.95	34.7	88	2.9%	-4.39 [-15.47 , 6.69]
Yang 2011	-7.21	0.94	19	1.77	4.48	21	92.6%	-8.98 [-10.94 , -7.02]
Subtotal (95% CI)			**152**			**163**	**100.0%**	**-8.92 [-10.81 , -7.03]**

Heterogeneity: Tau² = 0.00; Chi² = 0.79, df = 2 (P = 0.67); I² = 0%
Test for overall effect: Z = 9.26 (P < 0.00001)

Test for subgroup differences: Not applicable

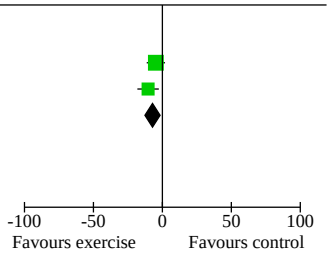


Analysis 7.9. Comparison 7: Emotional well-being/mental health functioning, Outcome 9: POMS total mood follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.9.1 Up to 12 weeks' follow-up								
Moadel 2007	17.16	16.57	84	21.88	19	44	56.7%	-4.72 [-11.36 , 1.92]
Yang 2011	25.74	10.1	19	36.1	14.74	21	43.3%	-10.36 [-18.13 , -2.59]
Subtotal (95% CI)			**103**			**65**	**100.0%**	**-7.16 [-12.64 , -1.69]**

Heterogeneity: Tau² = 2.31; Chi² = 1.17, df = 1 (P = 0.28); I² = 15%
Test for overall effect: Z = 2.56 (P = 0.01)

Test for subgroup differences: Not applicable

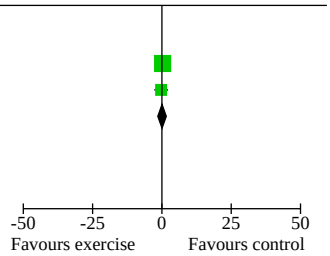


Analysis 7.10. Comparison 7: Emotional well-being/mental health functioning, Outcome 10: POMS anger subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.10.1 Up to 12 weeks' follow-up								
Oh 2010	-0.05	4.6	54	-0.3	5.6	54	62.3%	0.25 [-1.68 , 2.18]
Targ 2002	-1.3	8.9	79	-1.01	7.3	88	37.7%	-0.29 [-2.78 , 2.20]
Subtotal (95% CI)			**133**			**142**	**100.0%**	**0.05 [-1.48 , 1.57]**

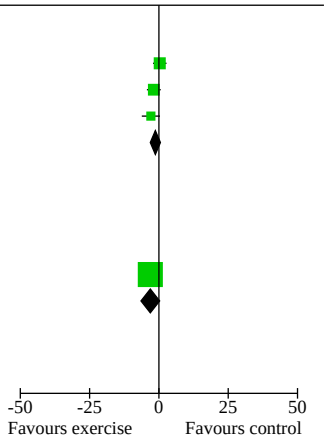
Heterogeneity: Tau² = 0.00; Chi² = 0.11, df = 1 (P = 0.74); I² = 0%
Test for overall effect: Z = 0.06 (P = 0.95)

Test for subgroup differences: Not applicable



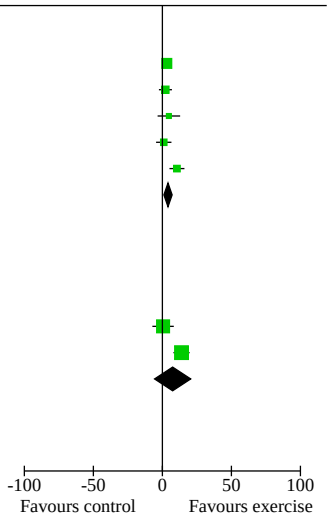
Analysis 7.11. Comparison 7: Emotional well-being/mental health functioning, Outcome 11: POMS anger subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.11.1 Up to 12 weeks' follow-up								
Dimeo 1999	2.7	4.8	27	2.4	4.7	32	38.3%	0.30 [-2.14 , 2.74]
Moadel 2007	5.23	6.07	84	7.07	7.2	44	37.1%	-1.84 [-4.33 , 0.65]
Wiskemann 2011	4.8	6.4	40	7.7	8.5	41	24.7%	-2.90 [-6.17 , 0.37]
Subtotal (95% CI)			**151**			**117**	**100.0%**	**-1.28 [-3.10 , 0.54]**
Heterogeneity: Tau² = 0.71; Chi² = 2.75, df = 2 (P = 0.25); I² = 27%								
Test for overall effect: Z = 1.38 (P = 0.17)								
7.11.2 More than 12 weeks' to less than 6 months' follow-up								
Wiskemann 2011	6	7.1	40	9.1	8.2	40	100.0%	-3.10 [-6.46 , 0.26]
Subtotal (95% CI)			**40**			**40**	**100.0%**	**-3.10 [-6.46 , 0.26]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.81 (P = 0.07)								
Test for subgroup differences: Chi² = 0.87, df = 1 (P = 0.35), I² = 0%								



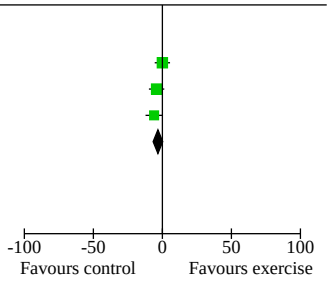
Analysis 7.12. Comparison 7: Emotional well-being/mental health functioning, Outcome 12: MOS SF-36 Mental Component Score follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.12.1 Up to 12 weeks' follow-up								
Adamsen 2009	50.5	9.4	118	47.3	10	117	33.7%	3.20 [0.72 , 5.68]
Chandwani 2010	52.8	8.7	26	50.6	8.8	27	20.9%	2.20 [-2.51 , 6.91]
Danhauer 2009	52.2	6.6	13	47.5	14	14	10.2%	4.70 [-3.46 , 12.86]
Galvao 2010	50.2	10.4	29	49.2	11	28	17.3%	1.00 [-4.56 , 6.56]
Tang 2010	55.47	10.07	36	44.92	13	35	17.9%	10.55 [5.13 , 15.97]
Subtotal (95% CI)			**222**			**221**	**100.0%**	**4.08 [1.11 , 7.05]**
Heterogeneity: Tau² = 5.21; Chi² = 7.64, df = 4 (P = 0.11); I² = 48%								
Test for overall effect: Z = 2.69 (P = 0.007)								
7.12.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	50.9	14	27	50.4	15.6	29	48.1%	0.50 [-7.25 , 8.25]
Tang 2010	57.87	10.7	24	44.02	12	35	51.9%	13.85 [8.01 , 19.69]
Subtotal (95% CI)			**51**			**64**	**100.0%**	**7.43 [-5.64 , 20.50]**
Heterogeneity: Tau² = 76.84; Chi² = 7.26, df = 1 (P = 0.007); I² = 86%								
Test for overall effect: Z = 1.11 (P = 0.27)								
Test for subgroup differences: Chi² = 0.24, df = 1 (P = 0.62), I² = 0%								



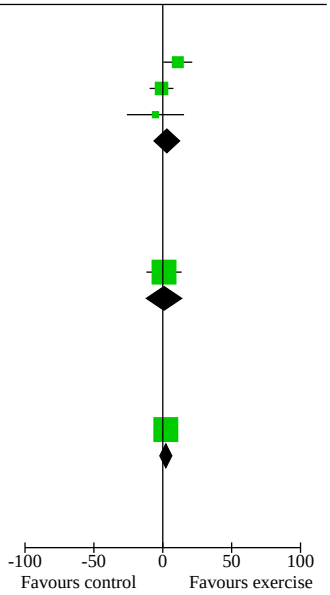
Analysis 7.13. Comparison 7: Emotional well-being/mental health functioning, Outcome 13: MOS SF-36 mental health subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.13.1 6 months' follow-up								
Cadmus 2009	2.3	11	22	2.3	7.6	23	35.6%	0.00 [-5.55 , 5.55]
Segal 2001	3.4	13.8	40	7.6	8.3	21	35.4%	-4.20 [-9.76 , 1.36]
Segal 2001	1.6	16.2	40	7.6	8.3	20	29.0%	-6.00 [-12.20 , 0.20]
Subtotal (95% CI)			**102**			**64**	**100.0%**	**-3.23 [-6.70 , 0.24]**
Heterogeneity: Tau² = 0.80; Chi² = 2.19, df = 2 (P = 0.34); I² = 9%								
Test for overall effect: Z = 1.82 (P = 0.07)								
Test for subgroup differences: Not applicable								



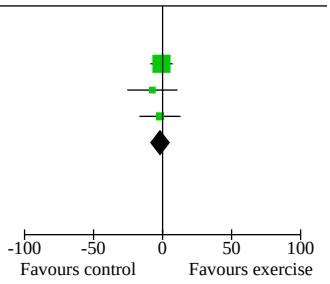
Analysis 7.14. Comparison 7: Emotional well-being/mental health functioning, Outcome 14: MOS SF-36 mental health subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.14.1 Up to 12 weeks' follow-up								
Adamsen 2009	69.6	40.1	118	58.7	42	117	38.4%	10.90 [0.40 , 21.40]
Chandwani 2010	82.1	14.8	26	83	17.1	27	45.9%	-0.90 [-9.50 , 7.70]
Galvao 2010	72.4	39.9	29	77.7	40	28	15.7%	-5.30 [-26.05 , 15.45]
Subtotal (95% CI)			**173**			**172**	**100.0%**	**2.94 [-6.31 , 12.18]**
Heterogeneity: Tau² = 29.24; Chi² = 3.58, df = 2 (P = 0.17); I² = 44%								
Test for overall effect: Z = 0.62 (P = 0.53)								
7.14.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	82.7	22.9	27	81.8	25.8	29	100.0%	0.90 [-11.86 , 13.66]
Subtotal (95% CI)			**27**			**29**	**100.0%**	**0.90 [-11.86 , 13.66]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.14 (P = 0.89)								
7.14.3 6 months' follow-up								
Cadmus 2009	52.4	6.6	22	50.2	8.1	23	100.0%	2.20 [-2.11 , 6.51]
Subtotal (95% CI)			**22**			**23**	**100.0%**	**2.20 [-2.11 , 6.51]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.00 (P = 0.32)								
Test for subgroup differences: Chi² = 0.06, df = 2 (P = 0.97), I² = 0%								



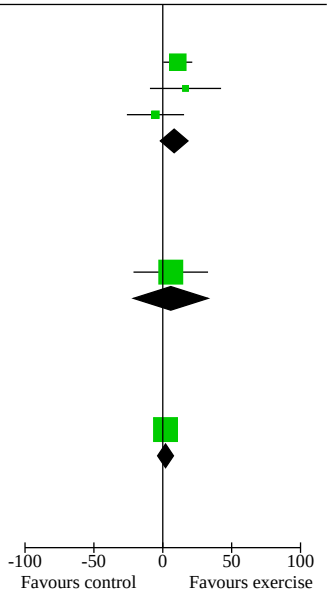
Analysis 7.15. Comparison 7: Emotional well-being/mental health functioning, Outcome 15: MOS SF-36 emotional role subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.15.1 6 months' follow-up								
Cadmus 2009	3.4	14.5	22	4.2	12.9	23	67.3%	-0.80 [-8.83 , 7.23]
Segal 2001	4.8	47.5	40	12.2	25	21	13.1%	-7.40 [-25.59 , 10.79]
Segal 2001	10.3	32.5	40	12.2	25	20	19.6%	-1.90 [-16.78 , 12.98]
Subtotal (95% CI)			**102**			**64**	**100.0%**	**-1.88 [-8.47 , 4.71]**
Heterogeneity: Tau² = 0.00; Chi² = 0.42, df = 2 (P = 0.81); I² = 0%								
Test for overall effect: Z = 0.56 (P = 0.58)								
Test for subgroup differences: Not applicable								



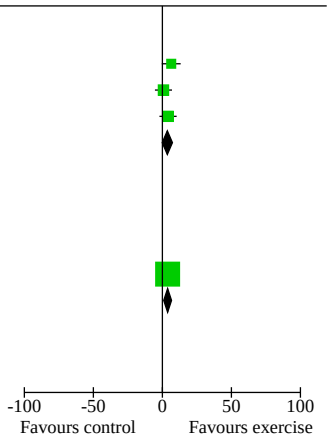
Analysis 7.16. Comparison 7: Emotional well-being/mental health functioning, Outcome 16: MOS SF-36 emotional role subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.16.1 Up to 12 weeks' follow-up								
Adamsen 2009	69.6	40.1	118	58.7	42	117	64.7%	10.90 [0.40 , 21.40]
Chandwani 2010	91.3	44.9	26	74.8	50.9	27	14.1%	16.50 [-9.32 , 42.32]
Galvao 2010	72.4	39.9	29	77.7	40	28	21.2%	-5.30 [-26.05 , 15.45]
Subtotal (95% CI)			**173**			**172**	**100.0%**	**8.26 [-1.77 , 18.30]**
Heterogeneity: Tau² = 11.80; Chi² = 2.27, df = 2 (P = 0.32); I² = 12%								
Test for overall effect: Z = 1.61 (P = 0.11)								
7.16.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	88.8	49.4	27	83	53.9	29	100.0%	5.80 [-21.26 , 32.86]
Subtotal (95% CI)			**27**			**29**	**100.0%**	**5.80 [-21.26 , 32.86]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.42 (P = 0.67)								
7.16.3 6 months' follow-up								
Cadmus 2009	51.1	8.6	22	49.1	11	23	100.0%	2.00 [-3.76 , 7.76]
Subtotal (95% CI)			**22**			**23**	**100.0%**	**2.00 [-3.76 , 7.76]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.68 (P = 0.50)								
Test for subgroup differences: Chi² = 1.15, df = 2 (P = 0.56), I² = 0%								



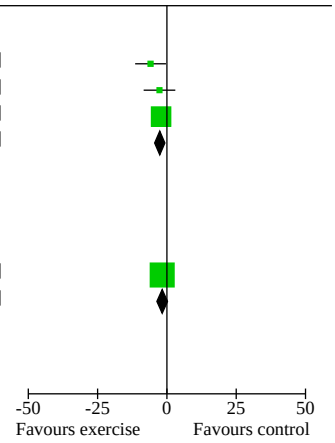
Analysis 7.17. Comparison 7: Emotional well-being/mental health functioning, Outcome 17: Positive and Negative Affect Schedule positivity subscale follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.17.1 Up to 12 weeks' follow-up								
Danhauer 2009	38.2	6.8	13	31.8	11	14	29.1%	6.40 [-0.45 , 13.25]
Donnelly 2011	30.43	8.81	16	29.65	9.3	17	35.7%	0.78 [-5.40 , 6.96]
Mutrie 2007	33.4	8.5	8	29.3	9.8	92	35.2%	4.10 [-2.12 , 10.32]
Subtotal (95% CI)			**37**			**123**	**100.0%**	**3.58 [-0.11 , 7.28]**
Heterogeneity: Tau² = 0.00; Chi² = 1.47, df = 2 (P = 0.48); I² = 0%								
Test for overall effect: Z = 1.90 (P = 0.06)								
7.17.2 6 months' follow-up								
Mutrie 2007	33	8.1	82	29.2	11	95	100.0%	3.80 [0.98 , 6.62]
Subtotal (95% CI)			**82**			**95**	**100.0%**	**3.80 [0.98 , 6.62]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.64 (P = 0.008)								
Test for subgroup differences: Chi² = 0.01, df = 1 (P = 0.93), I² = 0%								



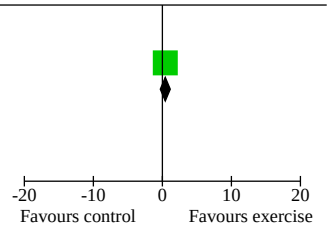
Analysis 7.18. Comparison 7: Emotional well-being/mental health functioning, Outcome 18: Positive and Negative Affect Schedule negativity subscale follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.18.1 Up to 12 weeks' follow-up								
Danhauer 2009	14	3.9	13	19.9	9.8	14	11.0%	-5.90 [-11.45 , -0.35]
Donnelly 2011	15.44	6.46	16	18.12	10	17	10.4%	-2.68 [-8.39 , 3.03]
Mutrie 2007	15.6	6.6	82	17.7	7.4	92	78.6%	-2.10 [-4.18 , -0.02]
Subtotal (95% CI)			**111**			**123**	**100.0%**	**-2.58 [-4.42 , -0.74]**
Heterogeneity: Tau² = 0.00; Chi² = 1.58, df = 2 (P = 0.45); I² = 0%								
Test for overall effect: Z = 2.74 (P = 0.006)								
7.18.2 6 months' follow-up								
Mutrie 2007	15.7	6.1	82	17.4	6.9	95	100.0%	-1.70 [-3.62 , 0.22]
Subtotal (95% CI)			**82**			**95**	**100.0%**	**-1.70 [-3.62 , 0.22]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.74 (P = 0.08)								
Test for subgroup differences: Chi² = 0.42, df = 1 (P = 0.52), I² = 0%								



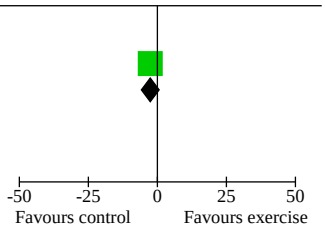
Analysis 7.19. Comparison 7: Emotional well-being/mental health functioning, Outcome 19: Satisfaction with Life change

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.19.1 Up to 12 weeks' follow-up								
Campbell 2005	0.4	0.9	10	-0.02	0.7	9	100.0%	0.42 [-0.30 , 1.14]
Subtotal (95% CI)			**10**			**9**	**100.0%**	**0.42 [-0.30 , 1.14]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.14 (P = 0.25)								
Test for subgroup differences: Not applicable								



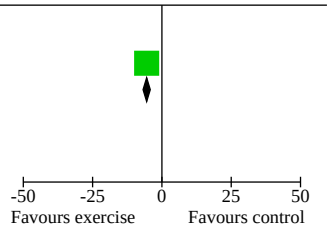
Analysis 7.20. Comparison 7: Emotional well-being/mental health functioning, Outcome 20: Satisfaction with Life follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.20.1 Up to 12 weeks' follow-up								
Courneya 2003a	30.2	9.01	51	32.78	7	45	100.0%	-2.58 [-5.79 , 0.63]
Subtotal (95% CI)			**51**			**45**	**100.0%**	**-2.58 [-5.79 , 0.63]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.58 (P = 0.12)								
Test for subgroup differences: Not applicable								



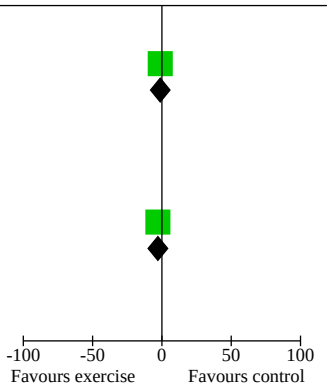
Analysis 7.21. Comparison 7: Emotional well-being/mental health functioning, Outcome 21: Perceived Stress follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.21.1 Up to 12 weeks' follow-up								
Banerjee 2007	14.9	2.4	35	20.4	2.5	23	100.0%	-5.50 [-6.79 , -4.21]
Subtotal (95% CI)			**35**			**23**	**100.0%**	**-5.50 [-6.79 , -4.21]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 8.33 (P < 0.00001)								
Test for subgroup differences: Not applicable								



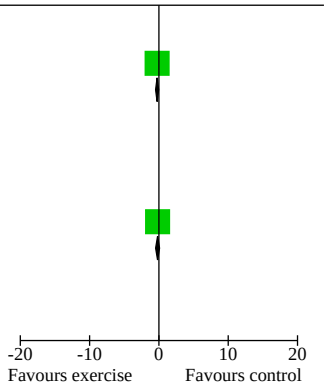
Analysis 7.22. Comparison 7: Emotional well-being/mental health functioning, Outcome 22: Psychosocial Adjustment to Illness Scale follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.22.1 Up to 12 weeks' follow-up								
Mock 1994	16.5	7.5	9	17.7	5.7	5	100.0%	-1.20 [-8.20 , 5.80]
Subtotal (95% CI)			**9**			**5**	**100.0%**	**-1.20 [-8.20 , 5.80]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.34 (P = 0.74)								
7.22.2 6 months' follow-up								
Mock 1994	14.8	7.6	9	17.7	5.7	5	100.0%	-2.90 [-9.94 , 4.14]
Subtotal (95% CI)			**9**			**5**	**100.0%**	**-2.90 [-9.94 , 4.14]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.81 (P = 0.42)								
Test for subgroup differences: Chi² = 0.11, df = 1 (P = 0.74), I² = 0%								



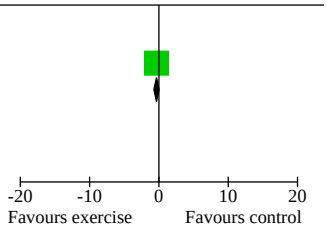
Analysis 7.23. Comparison 7: Emotional well-being/mental health functioning, Outcome 23: Brief Symptom Inventory follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.23.1 Up to 12 weeks' follow-up								
Mock 1994	0.16	0.19	9	0.42	0.2	5	100.0%	-0.26 [-0.47 , -0.05]
Subtotal (95% CI)			**9**			**5**	**100.0%**	**-0.26 [-0.47 , -0.05]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.37 (P = 0.02)								
7.23.2 6 months' follow-up								
Mock 1994	0.16	0.15	9	0.35	0.3	5	100.0%	-0.19 [-0.47 , 0.09]
Subtotal (95% CI)			**9**			**5**	**100.0%**	**-0.19 [-0.47 , 0.09]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.33 (P = 0.18)								
Test for subgroup differences: Chi² = 0.15, df = 1 (P = 0.70), I² = 0%								



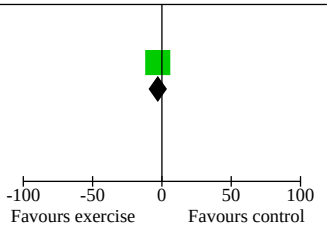
Analysis 7.24. Comparison 7: Emotional well-being/mental health functioning, Outcome 24: Symptom Distress Scale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.24.1 Up to 12 weeks' follow-up								
Chang 2008	1.56	0.38	11	1.91	0.5	11	100.0%	-0.35 [-0.72 , 0.02]
Subtotal (95% CI)			**11**			**11**	**100.0%**	**-0.35 [-0.72 , 0.02]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.85 (P = 0.06)								
Test for subgroup differences: Not applicable								



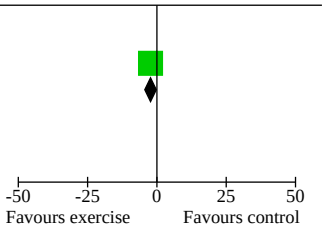
Analysis 7.25. Comparison 7: Emotional well-being/mental health functioning, Outcome 25: Symptom Checklist 90 R positive symptom distress subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.25.1 Up to 12 weeks' follow-up								
Dimeo 1999	17.7	12.4	27	20.7	11	32	100.0%	-3.00 [-9.03 , 3.03]
Subtotal (95% CI)			**27**			**32**	**100.0%**	**-3.00 [-9.03 , 3.03]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.97 (P = 0.33)								
Test for subgroup differences: Not applicable								



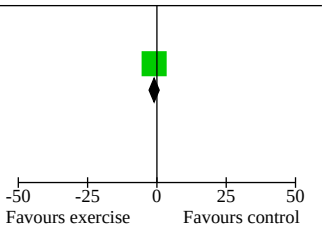
Analysis 7.26. Comparison 7: Emotional well-being/mental health functioning, Outcome 26: Symptom Checklist 90 R somatization subscale follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.26.1 Up to 12 weeks' follow-up								
Dimeo 1999	4.3	3	27	6.6	5	32	100.0%	-2.30 [-4.37 , -0.23]
Subtotal (95% CI)			**27**			**32**	**100.0%**	**-2.30 [-4.37 , -0.23]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.18 (P = 0.03)								
Test for subgroup differences: Not applicable								



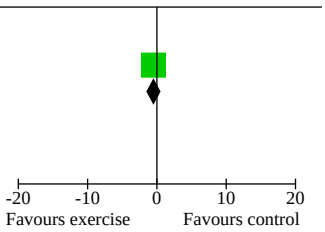
Analysis 7.27. Comparison 7: Emotional well-being/mental health functioning, Outcome 27: Symptom Checklist 90 R obsessive compulsive subscale follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.27.1 Up to 12 weeks' follow-up								
Dimeo 1999	2.7	3.8	27	3.7	3.2	32	100.0%	-1.00 [-2.81 , 0.81]
Subtotal (95% CI)			**27**			**32**	**100.0%**	**-1.00 [-2.81 , 0.81]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.08 (P = 0.28)								
Test for subgroup differences: Not applicable								



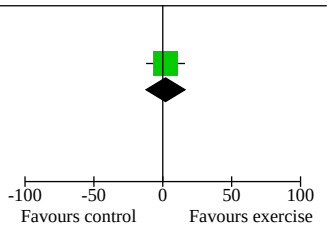
Analysis 7.28. Comparison 7: Emotional well-being/mental health functioning, Outcome 28: Symptom Checklist 90 R hostility subscale follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.28.1 Up to 12 weeks' follow-up								
Dimeo 1999	0.9	1.2	27	1.4	2.3	32	100.0%	-0.50 [-1.42 , 0.42]
Subtotal (95% CI)			**27**			**32**	**100.0%**	**-0.50 [-1.42 , 0.42]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.07 (P = 0.28)								
Test for subgroup differences: Not applicable								



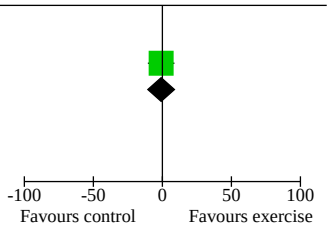
Analysis 7.29. Comparison 7: Emotional well-being/mental health functioning, Outcome 29: Fordyce Happiness Scale change

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.29.1 6 months' follow-up								
Cadmus 2009	9.5	27.1	22	7.5	20.6	23	100.0%	2.00 [-12.11 , 16.11]
Subtotal (95% CI)			**22**			**23**	**100.0%**	**2.00 [-12.11 , 16.11]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.28 (P = 0.78)								
Test for subgroup differences: Not applicable								



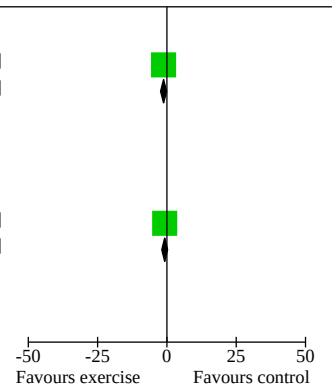
Analysis 7.30. Comparison 7: Emotional well-being/mental health functioning, Outcome 30: Fordyce Happiness Scale follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.30.1 6 months' follow-up								
Cadmus 2009	70.2	16.9	22	71.1	16	23	100.0%	-0.90 [-10.52 , 8.72]
Subtotal (95% CI)			**22**			**23**	**100.0%**	**-0.90 [-10.52 , 8.72]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.18 (P = 0.85)								
Test for subgroup differences: Not applicable								



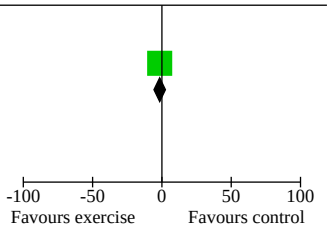
Analysis 7.31. Comparison 7: Emotional well-being/mental health functioning, Outcome 31: National Comprehensive Cancer Network Distress thermometer follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
7.31.1 Up to 12 weeks' follow-up								
Wiskemann 2011	3.4	2.2	40	4.6	2.8	41	100.0%	-1.20 [-2.30 , -0.10]
Subtotal (95% CI)			**40**			**41**	**100.0%**	**-1.20 [-2.30 , -0.10]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.15 (P = 0.03)								
7.31.2 More than 12 weeks' to less than 6 months' follow-up								
Wiskemann 2011	3.2	2.2	40	4	2.6	40	100.0%	-0.80 [-1.86 , 0.26]
Subtotal (95% CI)			**40**			**40**	**100.0%**	**-0.80 [-1.86 , 0.26]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.49 (P = 0.14)								
Test for subgroup differences: Chi² = 0.27, df = 1 (P = 0.61), I² = 0%								



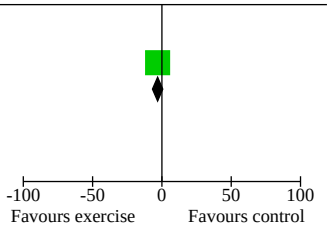
Analysis 7.32. Comparison 7: Emotional well-being/mental health functioning, Outcome 32: Cohen's Stress change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.32.1 6 months' follow-up								
Cadmus 2009	-4	8.1	22	-2.4	5.8	23	100.0%	-1.60 [-5.73 , 2.53]
Subtotal (95% CI)			**22**			**23**	**100.0%**	**-1.60 [-5.73 , 2.53]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.76 (P = 0.45)								
Test for subgroup differences: Not applicable								



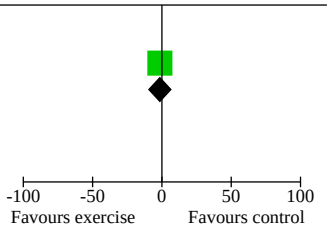
Analysis 7.33. Comparison 7: Emotional well-being/mental health functioning, Outcome 33: Cohen's Stress follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.33.1 6 months' follow-up								
Cadmus 2009	9.5	5.4	22	12.6	7.2	23	100.0%	-3.10 [-6.81 , 0.61]
Subtotal (95% CI)			**22**			**23**	**100.0%**	**-3.10 [-6.81 , 0.61]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.64 (P = 0.10)								
Test for subgroup differences: Not applicable								



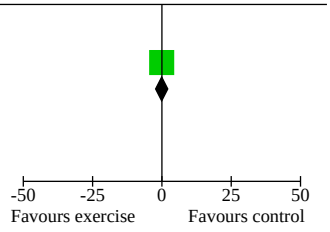
Analysis 7.34. Comparison 7: Emotional well-being/mental health functioning, Outcome 34: General Health Questionnaire follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.34.1 More than 12 weeks' to less than 6 months' follow-up								
Moros 2010	9.1	8.39	10	10.57	8.05	7	100.0%	-1.47 [-9.38 , 6.44]
Subtotal (95% CI)			**10**			**7**	**100.0%**	**-1.47 [-9.38 , 6.44]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.36 (P = 0.72)								
Test for subgroup differences: Not applicable								



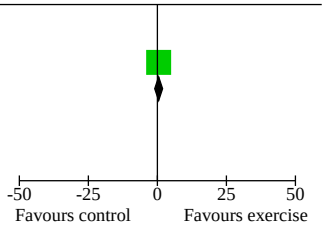
Analysis 7.35. Comparison 7: Emotional well-being/mental health functioning, Outcome 35: General Health Questionnaire somatization subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.35.1 More than 12 weeks' to less than 6 months' follow-up								
Moros 2010	3.2	2.89	10	3.28	1.7	7	100.0%	-0.08 [-2.27 , 2.11]
Subtotal (95% CI)			**10**			**7**	**100.0%**	**-0.08 [-2.27 , 2.11]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.07 (P = 0.94)								
Test for subgroup differences: Not applicable								



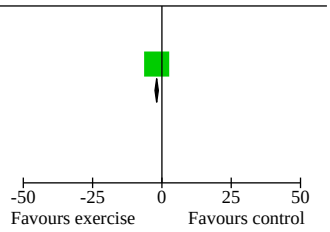
Analysis 7.36. Comparison 7: Emotional well-being/mental health functioning, Outcome 36: WHO BREF psychological subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.36.1 Up to 12 weeks' follow-up								
Hwang 2008	12.71	2.02	17	12.25	2.4	20	100.0%	0.46 [-0.96 , 1.88]
Subtotal (95% CI)			**17**			**20**	**100.0%**	**0.46 [-0.96 , 1.88]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.63 (P = 0.53)								
Test for subgroup differences: Not applicable								



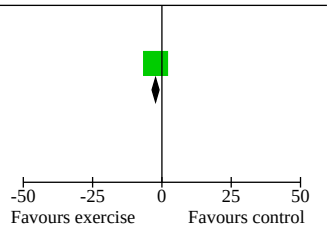
Analysis 7.37. Comparison 7: Emotional well-being/mental health functioning, Outcome 37: MDASI-T distress subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.37.1 Up to 12 weeks' follow-up								
Yang 2011	-1.32	1.32	19	0.57	0.24	21	100.0%	-1.89 [-2.49 , -1.29]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-1.89 [-2.49 , -1.29]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 6.15 (P < 0.00001)								
Test for subgroup differences: Not applicable								



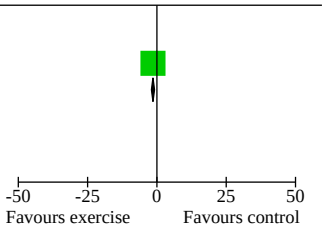
Analysis 7.38. Comparison 7: Emotional well-being/mental health functioning, Outcome 38: MDASI-T distress subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.38.1 Up to 12 weeks' follow-up								
Yang 2011	0.95	1.08	19	3.24	2.7	21	100.0%	-2.29 [-3.54 , -1.04]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-2.29 [-3.54 , -1.04]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 3.58 (P = 0.0003)								
Test for subgroup differences: Not applicable								



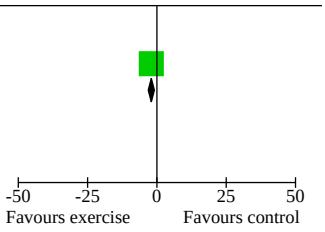
Analysis 7.39. Comparison 7: Emotional well-being/mental health functioning, Outcome 39: MDASI-T mood subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.39.1 Up to 12 weeks' follow-up								
Yang 2011	-1.47	1.12	19	-0.05	0.51	21	100.0%	-1.42 [-1.97 , -0.87]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-1.42 [-1.97 , -0.87]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 5.07 (P < 0.00001)								
Test for subgroup differences: Not applicable								



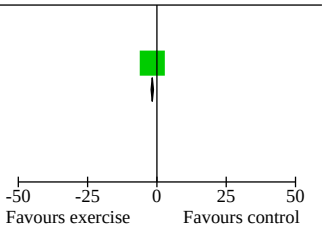
Analysis 7.40. Comparison 7: Emotional well-being/mental health functioning, Outcome 40: MDASI-T mood subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.40.1 Up to 12 weeks' follow-up								
Yang 2011	0.84	1.01	19	2.86	2.35	21	100.0%	-2.02 [-3.12 , -0.92]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-2.02 [-3.12 , -0.92]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 3.59 (P = 0.0003)								
Test for subgroup differences: Not applicable								



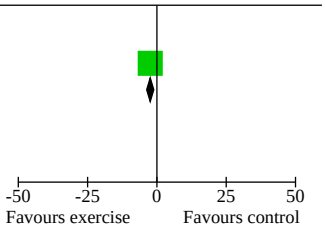
Analysis 7.41. Comparison 7: Emotional well-being/mental health functioning, Outcome 41: MDASI-T feeling sad subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.41.1 Up to 12 weeks' follow-up								
Yang 2011	-1.05	0.7	19	0.62	0.61	21	100.0%	-1.67 [-2.08 , -1.26]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-1.67 [-2.08 , -1.26]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 8.01 (P < 0.00001)								
Test for subgroup differences: Not applicable								



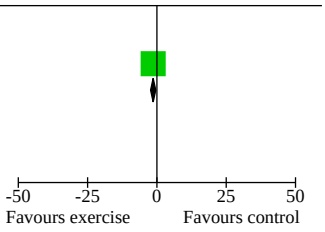
Analysis 7.42. Comparison 7: Emotional well-being/mental health functioning, Outcome 42: MDASI-T feeling sad subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.42.1 Up to 12 weeks' follow-up								
Yang 2011	1.26	1.56	19	3.67	2.5	21	100.0%	-2.41 [-3.69 , -1.13]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-2.41 [-3.69 , -1.13]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 3.69 (P = 0.0002)								
Test for subgroup differences: Not applicable								



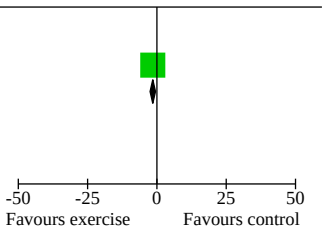
Analysis 7.43. Comparison 7: Emotional well-being/mental health functioning, Outcome 43: MDASI-T enjoyment of life subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.43.1 Up to 12 weeks' follow-up								
Yang 2011	-1.11	1.95	19	0.24	0.71	21	100.0%	-1.35 [-2.28 , -0.42]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-1.35 [-2.28 , -0.42]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.85 (P = 0.004)								
Test for subgroup differences: Not applicable								

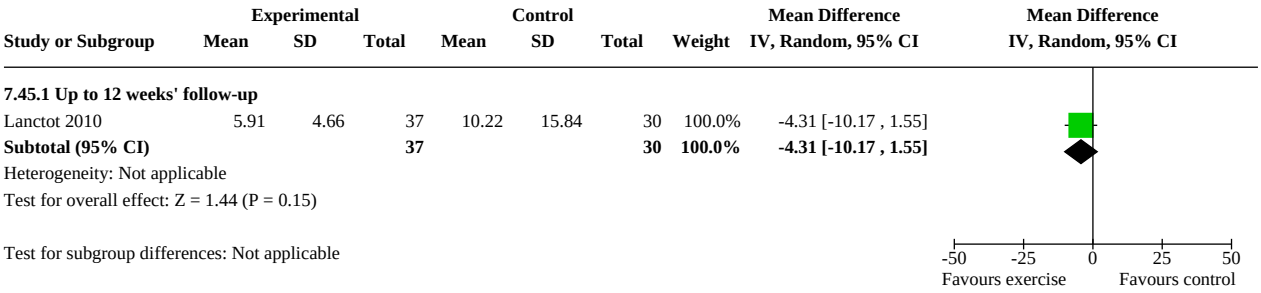


Analysis 7.44. Comparison 7: Emotional well-being/mental health functioning, Outcome 44: MDASI-T enjoyment of life subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
7.44.1 Up to 12 weeks' follow-up								
Yang 2011	0.89	1.1	19	2.38	1.96	21	100.0%	-1.49 [-2.46 , -0.52]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-1.49 [-2.46 , -0.52]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 3.00 (P = 0.003)								
Test for subgroup differences: Not applicable								



Analysis 7.45. Comparison 7: Emotional well-being/mental health functioning, Outcome 45: QLSI affective functioning subscale follow-up values



Comparison 8. Fatigue

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
8.1 Overall fatigue change	17		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
8.1.1 Up to 12 weeks' follow-up	12	971	Std. Mean Difference (IV, Random, 95% CI)	-0.73 [-1.14, -0.31]
8.1.2 More than 12 weeks' to less than 6 months' follow-up	2	261	Std. Mean Difference (IV, Random, 95% CI)	-0.11 [-0.37, 0.14]
8.1.3 6 months' follow-up	6	614	Std. Mean Difference (IV, Random, 95% CI)	0.03 [-0.14, 0.19]
8.2 Overall fatigue follow-up values	28		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
8.2.1 Up to 12 weeks' follow-up	23	1721	Std. Mean Difference (IV, Random, 95% CI)	-0.38 [-0.57, -0.18]
8.2.2 More than 12 weeks' to less than 6 months' follow-up	10	838	Std. Mean Difference (IV, Random, 95% CI)	-0.19 [-0.33, -0.05]
8.2.3 6 months' follow-up	7	633	Std. Mean Difference (IV, Random, 95% CI)	-0.18 [-0.35, -0.00]
8.3 FACT-F subscale change	6		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.3.1 Up to 12 weeks' follow-up	4	439	Mean Difference (IV, Random, 95% CI)	5.35 [2.13, 8.56]
8.3.2 More than 12 weeks' to less than 6 months' follow-up	1	223	Mean Difference (IV, Random, 95% CI)	1.35 [-1.09, 3.79]
8.3.3 6 months' follow-up	2	237	Mean Difference (IV, Random, 95% CI)	-0.13 [-2.58, 2.32]
8.4 FACT-F follow-up values	9		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.4.1 Up to 12 weeks' follow-up	9	884	Mean Difference (IV, Random, 95% CI)	2.79 [0.97, 4.61]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
8.4.2 More than 12 weeks' to less than 6 months' follow-up	3	374	Mean Difference (IV, Random, 95% CI)	2.40 [0.17, 4.64]
8.4.3 6 months' follow-up	5	471	Mean Difference (IV, Random, 95% CI)	2.02 [0.10, 3.95]
8.5 FACIT-F subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.5.1 Up to 12 weeks' follow-up	1	38	Mean Difference (IV, Random, 95% CI)	4.16 [-0.31, 8.63]
8.5.2 More than 12 weeks' to less than 6 months' follow-up	1	38	Mean Difference (IV, Random, 95% CI)	0.01 [-4.69, 4.71]
8.6 FACIT-F subscale follow-up values	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.6.1 Up to 12 weeks' follow-up	3	143	Mean Difference (IV, Random, 95% CI)	5.68 [3.62, 7.74]
8.6.2 More than 12 weeks' to less than 6 months' follow-up	1	38	Mean Difference (IV, Random, 95% CI)	2.82 [-3.68, 9.32]
8.7 QLQ-C30 change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.7.1 Up to 12 weeks' follow-up	1	44	Mean Difference (IV, Random, 95% CI)	-0.36 [-28.87, 28.15]
8.8 QLQ-C30 fatigue subscale follow-up values	6		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.8.1 Up to 12 weeks' follow-up	5	411	Mean Difference (IV, Random, 95% CI)	-7.40 [-12.19, -2.62]
8.8.2 More than 12 weeks' to less than 6 months' follow-up	3	127	Mean Difference (IV, Random, 95% CI)	-9.07 [-18.42, 0.27]
8.8.3 6 months' follow-up	1	29	Mean Difference (IV, Random, 95% CI)	-20.00 [-41.23, 1.23]
8.9 Brief Fatigue Inventory change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.9.1 Up to 12 weeks' follow-up	1	38	Mean Difference (IV, Random, 95% CI)	-0.07 [-0.83, 0.69]
8.9.2 More than 12 weeks' to less than 6 months' follow-up	1	38	Mean Difference (IV, Random, 95% CI)	-0.78 [-1.91, 0.35]
8.10 Brief Fatigue Inventory follow-up values	4		Mean Difference (IV, Random, 95% CI)	Totals not selected
8.10.1 Up to 12 weeks' follow-up	3		Mean Difference (IV, Random, 95% CI)	Totals not selected

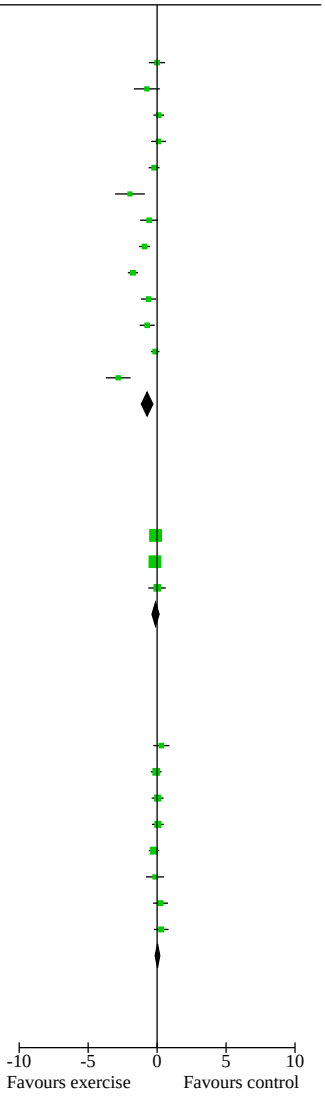
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
8.10.2 More than 12 weeks' to less than 6 months' follow-up	3		Mean Difference (IV, Random, 95% CI)	Totals not selected
8.11 POMS fatigue subscale change	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.11.1 Up to 12 weeks' follow-up	3	378	Mean Difference (IV, Random, 95% CI)	-0.96 [-2.39, 0.47]
8.11.2 6 months' follow-up	1	103	Mean Difference (IV, Random, 95% CI)	-1.60 [-11.34, 8.14]
8.12 POMS fatigue subscale follow-up values	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.12.1 Up to 12 weeks' follow-up	2	140	Mean Difference (IV, Random, 95% CI)	-2.63 [-8.02, 2.76]
8.12.2 More than 12 weeks' to less than 6 months' follow-up	1	80	Mean Difference (IV, Random, 95% CI)	-6.70 [-11.05, -2.35]
8.13 POMS vigor subscale change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.13.1 Up to 12 weeks' follow-up	2	270	Mean Difference (IV, Random, 95% CI)	2.80 [-3.93, 9.53]
8.13.2 6 months' follow-up	1	103	Mean Difference (IV, Random, 95% CI)	-1.10 [-11.21, 9.01]
8.14 POMS vigor subscale follow-up values	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.14.1 Up to 12 weeks' follow-up	2	140	Mean Difference (IV, Random, 95% CI)	3.04 [0.01, 6.08]
8.14.2 More than 12 weeks' to less than 6 months' follow-up	1	80	Mean Difference (IV, Random, 95% CI)	2.60 [-1.74, 6.94]
8.15 Piper Fatigue Scale change	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.15.1 Up to 12 weeks' follow-up	2	40	Mean Difference (IV, Random, 95% CI)	-3.16 [-5.54, -0.77]
8.15.2 More than 12 weeks' to less than 6 months' follow-up	1	108	Mean Difference (IV, Random, 95% CI)	-0.60 [-1.62, 0.42]
8.16 Piper Fatigue Scale follow-up values	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.16.1 Up to 12 weeks' follow-up	1	21	Mean Difference (IV, Random, 95% CI)	-2.00 [-3.73, -0.27]
8.16.2 More than 12 weeks' to less than 6 months' follow-up	1	108	Mean Difference (IV, Random, 95% CI)	-0.20 [-1.14, 0.74]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
8.17 MOS SF-36 vitality subscale change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.17.1 6 months' follow-up	2	166	Mean Difference (IV, Random, 95% CI)	-3.93 [-7.88, 0.03]
8.18 MOS SF-36 vitality subscale follow-up values	4		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.18.1 Up to 12 weeks' follow-up	3	345	Mean Difference (IV, Random, 95% CI)	9.64 [5.30, 13.98]
8.18.2 More than 12 weeks' to less than 6 months' follow-up	1	56	Mean Difference (IV, Random, 95% CI)	4.80 [-10.73, 20.33]
8.18.3 6 months' follow-up	1	45	Mean Difference (IV, Random, 95% CI)	0.70 [-4.74, 6.14]
8.19 Fatigue Severity Scale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.19.1 More than 12 weeks' to less than 6 months' follow-up	1	100	Mean Difference (IV, Random, 95% CI)	-0.30 [-0.83, 0.23]
8.20 Fatigue Severity Scale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.20.1 More than 12 weeks' to less than 6 months' follow-up	1	100	Mean Difference (IV, Random, 95% CI)	-0.31 [-0.84, 0.22]
8.21 Multidimensional Fatigue Inventory follow-up values	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.21.1 Up to 12 weeks' follow-up	2	114	Mean Difference (IV, Random, 95% CI)	-2.09 [-3.82, -0.35]
8.21.2 More than 12 weeks' to less than 6 months' follow-up	1	80	Mean Difference (IV, Random, 95% CI)	-2.50 [-4.34, -0.66]
8.22 Multidimensional Fatigue Inventory physical fatigue subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.22.1 Up to 12 weeks' follow-up	1	81	Mean Difference (IV, Random, 95% CI)	-1.70 [-3.62, 0.22]
8.22.2 More than 12 weeks' to less than 6 months' follow-up	1	80	Mean Difference (IV, Random, 95% CI)	-2.60 [-4.62, -0.58]
8.23 Multidimensional Fatigue Inventory reduced activation subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.23.1 Up to 12 weeks' follow-up	1	81	Mean Difference (IV, Random, 95% CI)	-0.60 [-2.41, 1.21]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
8.23.2 More than 12 weeks' to less than 6 months' follow-up	1	81	Mean Difference (IV, Random, 95% CI)	-0.50 [-2.38, 1.38]
8.24 Multidimensional Fatigue Inventory reduced motivation subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.24.1 Up to 12 weeks' follow-up	1	81	Mean Difference (IV, Random, 95% CI)	-0.50 [-2.02, 1.02]
8.24.2 More than 12 weeks' to less than 6 months' follow-up	1	80	Mean Difference (IV, Random, 95% CI)	-0.40 [-1.93, 1.13]
8.25 Multidimensional Fatigue Inventory mental fatigue subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.25.1 Up to 12 weeks' follow-up	1	81	Mean Difference (IV, Random, 95% CI)	-0.60 [-2.50, 1.30]
8.25.2 More than 12 weeks' to less than 6 months' follow-up	1	80	Mean Difference (IV, Random, 95% CI)	0.00 [-1.78, 1.78]
8.26 Schwartz Fatigue follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.26.1 6 months' follow-up	1	17	Mean Difference (IV, Random, 95% CI)	0.50 [-4.26, 5.26]
8.27 LASA change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.27.1 Up to 12 weeks' follow-up	1	103	Mean Difference (IV, Random, 95% CI)	-1.50 [-12.30, 9.30]
8.27.2 More than 12 weeks' to less than 6 months' follow-up	1	103	Mean Difference (IV, Random, 95% CI)	-3.00 [-13.33, 7.33]
8.28 MDASI-T fatigue subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.28.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-2.11 [-2.57, -1.65]
8.29 MDASI-T fatigue subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
8.29.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.95 [-3.03, -0.87]

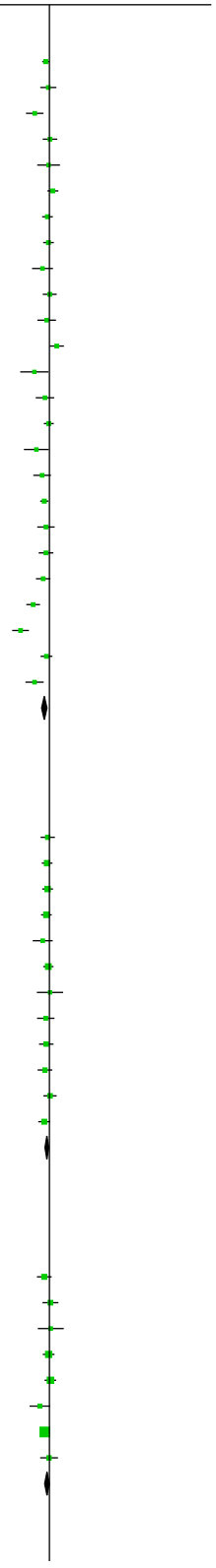
Analysis 8.1. Comparison 8: Fatigue, Outcome 1: Overall fatigue change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
8.1.1 Up to 12 weeks' follow-up								
Arbane 2009	9.79	42.67	21	10.15	53.59	23	7.7%	-0.01 [-0.60 , 0.58]
Campbell 2005	-2.11	2.3	10	-0.25	2.5	9	6.2%	-0.74 [-1.68 , 0.20]
Cheville 2010	-9.3	13.8	49	-11.7	25.08	54	8.5%	0.12 [-0.27 , 0.50]
Courneya 2008	-7.8	12.4	26	-9.1	12.4	29	8.0%	0.10 [-0.43 , 0.63]
Culos-Reed 2010	-0.34	1.6	53	-0.04	1.1	47	8.5%	-0.21 [-0.61 , 0.18]
Monga 2007	-1.6	2	11	2.7	2.2	10	5.6%	-1.97 [-3.05 , -0.89]
Mustian 2009	-3.11	8.69	19	1.05	4.84	19	7.5%	-0.58 [-1.23 , 0.07]
Oh 2010	-6.34	7.2	54	-0.64	5.1	54	8.5%	-0.91 [-1.30 , -0.51]
Segal 2003	-8	5.8	82	2.2	5.8	73	8.5%	-1.75 [-2.12 , -1.38]
Segal 2009	1.46	7.3	40	5.57	4.8	20	7.9%	-0.62 [-1.16 , -0.07]
Segal 2009	0.93	7	40	5.57	4.9	21	7.9%	-0.72 [-1.26 , -0.18]
Targ 2002	-1.27	7.1	79	-0.25	8.2	88	8.7%	-0.13 [-0.44 , 0.17]
Yang 2011	-1.21	0.85	19	0.9	0.61	21	6.4%	-2.82 [-3.72 , -1.92]
Subtotal (95% CI)			**503**			**468**	**100.0%**	**-0.73 [-1.14 , -0.31]**
Heterogeneity: Tau² = 0.48; Chi² = 105.18, df = 12 (P < 0.00001); I² = 89%								
Test for overall effect: Z = 3.44 (P = 0.0006)								
8.1.2 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	-0.4	10.8	74	0.7	7.5	37	42.1%	-0.11 [-0.51 , 0.28]
Courneya 2007a	-0.9	10.9	76	0.7	7.4	36	41.6%	-0.16 [-0.56 , 0.24]
Mustian 2009	-3.89	7.77	19	-3.88	7	19	16.2%	-0.00 [-0.64 , 0.63]
Subtotal (95% CI)			**169**			**92**	**100.0%**	**-0.11 [-0.37 , 0.14]**
Heterogeneity: Tau² = 0.00; Chi² = 0.17, df = 2 (P = 0.92); I² = 0%								
Test for overall effect: Z = 0.87 (P = 0.38)								
8.1.3 6 months' follow-up								
Cadmus 2009	0.1	9.1	22	-2.9	10.1	23	7.8%	0.31 [-0.28 , 0.89]
Cheville 2010	-6.4	25	49	-4.8	25.4	54	18.1%	-0.06 [-0.45 , 0.32]
Courneya 2007a	-6.6	11.6	68	-7	7.8	30	14.7%	0.04 [-0.39 , 0.47]
Courneya 2007a	-6.4	11.6	73	-7	7.8	30	15.0%	0.06 [-0.37 , 0.48]
Mock 2005	1	2.9	54	1.6	2.5	54	19.0%	-0.22 [-0.60 , 0.16]
Rogers 2009	-0.08	7.8	19	1.2	8.6	17	6.3%	-0.15 [-0.81 , 0.50]
Segal 2001	-1.5	23.5	40	-6.7	11.3	20	9.4%	0.25 [-0.29 , 0.79]
Segal 2001	-2.1	16.8	40	-6.7	11.6	21	9.6%	0.30 [-0.23 , 0.83]
Subtotal (95% CI)			**365**			**249**	**100.0%**	**0.03 [-0.14 , 0.19]**
Heterogeneity: Tau² = 0.00; Chi² = 4.69, df = 7 (P = 0.70); I² = 0%								
Test for overall effect: Z = 0.33 (P = 0.74)								
Test for subgroup differences: Chi² = 11.04, df = 2 (P = 0.004), I² = 81.9%								



Analysis 8.2. Comparison 8: Fatigue, Outcome 2: Overall fatigue follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
8.2.1 Up to 12 weeks' follow-up								
Adamsen 2009	34.6	24.3	118	41	22.7	117	5.4%	-0.27 [-0.53 , -0.01]
Arbane 2009	20.11	32.13	21	22.71	30.79	23	3.9%	-0.08 [-0.67 , 0.51]
Bourke 2011	-49	4	21	-42	8	22	3.7%	-1.08 [-1.72 , -0.43]
Chandwani 2010	1.5	2.5	26	1.4	2.1	27	4.1%	0.04 [-0.50 , 0.58]
Chang 2008	4.6	3	11	4.8	3.5	11	2.9%	-0.06 [-0.89 , 0.78]
Courneya 2003a	-19.67	11.31	51	-22.37	9.84	45	4.8%	0.25 [-0.15 , 0.65]
Courneya 2007a	-34	11.5	73	-32.3	12.3	38	4.8%	-0.14 [-0.54 , 0.25]
Courneya 2007a	-33.1	11.3	75	-32.3	12.3	37	4.8%	-0.07 [-0.46 , 0.33]
Danhauer 2009	-39.8	11.5	13	-32.6	15.5	14	3.1%	-0.51 [-1.28 , 0.26]
Dimeo 1999	11.7	8.9	27	11.5	8.6	32	4.3%	0.02 [-0.49 , 0.53]
Donnelly 2011	-36.5	10.61	16	-34	13.3	17	3.5%	-0.20 [-0.89 , 0.48]
Galvao 2010	62.4	20.4	29	50.7	22.6	28	4.2%	0.54 [0.01 , 1.07]
Hacker 2011	23.6	13.9	8	46.9	24.1	9	2.2%	-1.11 [-2.15 , -0.06]
Jarden 2009	50.3	24.6	17	58.8	26	17	3.5%	-0.33 [-1.01 , 0.35]
Moadel 2007	-34.37	11.26	84	-33.82	13	44	5.0%	-0.05 [-0.41 , 0.32]
Monga 2007	0.8	1.8	11	2.8	2.2	10	2.6%	-0.96 [-1.88 , -0.05]
Mustian 2009	-41.79	8.99	19	-35.94	12.1	19	3.6%	-0.54 [-1.19 , 0.11]
Mutrie 2007	-40.3	10.4	82	-36	12.1	92	5.3%	-0.38 [-0.68 , -0.08]
Rogers 2009	-12.4	10.4	20	-10.1	6.6	18	3.7%	-0.26 [-0.90 , 0.38]
Segal 2009	-41.3	9.1	40	-39	8.9	20	4.1%	-0.25 [-0.79 , 0.29]
Segal 2009	-43.1	8.8	40	-39	8.9	21	4.2%	-0.46 [-0.99 , 0.08]
Wang 2010	-45.81	4.29	35	-39.91	5.38	37	4.3%	-1.20 [-1.70 , -0.69]
Windsor 2004	16	1.8	32	21.6	3.2	33	3.8%	-2.12 [-2.74 , -1.51]
Wiskemann 2011	60.3	28.5	40	66.4	27.4	41	4.6%	-0.22 [-0.65 , 0.22]
Yang 2011	1.53	1.58	19	3.48	1.89	21	3.5%	-1.09 [-1.76 , -0.42]
Subtotal (95% CI)			**928**			**793**	**100.0%**	**-0.38 [-0.57 , -0.18]**
Heterogeneity: Tau² = 0.17; Chi² = 87.41, df = 24 (P < 0.00001); I² = 73%								
Test for overall effect: Z = 3.75 (P = 0.0002)								
8.2.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	1.6	3.1	27	2	3.2	29	7.0%	-0.13 [-0.65 , 0.40]
Courneya 2007a	-36.8	10.4	74	-34.9	12.5	37	12.4%	-0.17 [-0.56 , 0.23]
Courneya 2007a	-36.3	9.4	76	-34.9	12.5	36	12.3%	-0.13 [-0.53 , 0.26]
Culos-Reed 2010	4.15	1.58	53	4.46	1.12	47	12.5%	-0.22 [-0.62 , 0.17]
Jarden 2009	44.4	25	17	57.3	26	13	3.6%	-0.49 [-1.23 , 0.24]
Mock 2005	3.5	2.4	54	3.7	2.6	54	13.6%	-0.08 [-0.46 , 0.30]
Moros 2010	31.1	24.4	10	30.1	18.9	7	2.1%	0.04 [-0.92 , 1.01]
Mustian 2009	-43.17	7.74	19	-40.35	12.2	19	4.7%	-0.27 [-0.91 , 0.37]
Segal 2009	-44.2	8.9	40	-42.1	8.8	21	6.9%	-0.23 [-0.76 , 0.30]
Segal 2009	-45.1	9.1	40	-42.1	8.8	20	6.6%	-0.33 [-0.87 , 0.21]
Windsor 2004	1.8	2	32	1.7	2.4	33	8.2%	0.04 [-0.44 , 0.53]
Wiskemann 2011	49.7	28.9	40	60.8	29.2	40	9.9%	-0.38 [-0.82 , 0.06]
Subtotal (95% CI)			**482**			**356**	**100.0%**	**-0.19 [-0.33 , -0.05]**
Heterogeneity: Tau² = 0.00; Chi² = 3.31, df = 11 (P = 0.99); I² = 0%								
Test for overall effect: Z = 2.62 (P = 0.009)								
8.2.3 6 months' follow-up								
Bourke 2011	-43	7	15	-40	8	113	10.1%	-0.38 [-0.92 , 0.16]
Cadmus 2009	51.7	9.6	22	51	9	23	8.7%	0.07 [-0.51 , 0.66]
Caldwell 2009	10.5	6.41	8	10	2.6	9	3.3%	0.10 [-0.85 , 1.05]
Courneya 2007a	-42.1	10.5	68	-41.5	9.8	30	16.0%	-0.06 [-0.49 , 0.37]
Courneya 2007a	-40.8	10.5	73	-41.5	9.8	30	16.4%	0.07 [-0.36 , 0.49]
Jarden 2009	29.6	21.3	16	49.6	34	13	5.2%	-0.70 [-1.46 , 0.05]
Mutrie 2007	-41.3	9.7	82	-37.6	12	95	33.4%	-0.34 [-0.63 , -0.04]
Rogers 2009	-13.8	11.7	19	-13.5	11	17	6.9%	-0.03 [-0.68 , 0.63]
Subtotal (95% CI)			**303**			**330**	**100.0%**	**-0.18 [-0.35 , -0.00]**
Heterogeneity: Tau² = 0.00; Chi² = 6.26, df = 7 (P = 0.51); I² = 0%								
Test for overall effect: Z = 2.02 (P = 0.04)								



Analysis 8.2. (Continued)

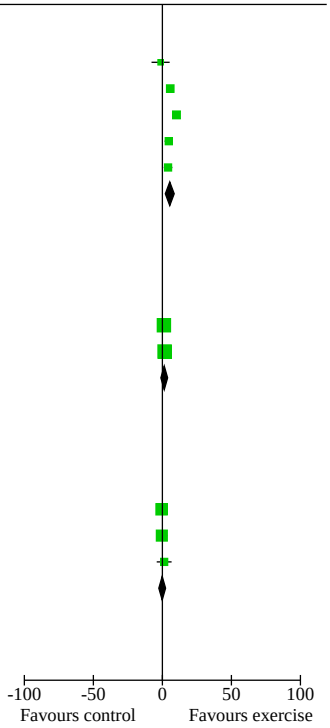
Test for overall effect: Z = 2.02 (P = 0.04)

Test for subgroup differences: Chi² = 2.89, df = 2 (P = 0.24), I² = 30.7%

Analysis 8.3. Comparison 8: Fatigue, Outcome 3: FACT-F subscale change

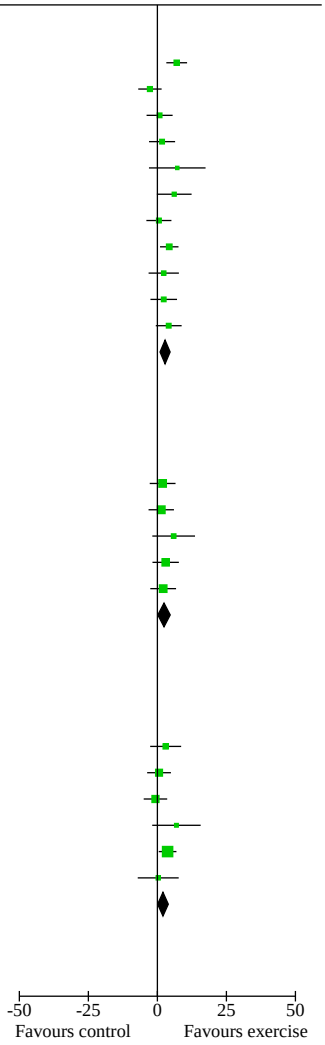
Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
8.3.1 Up to 12 weeks' follow-up								
Courneya 2008	7.8	12.4	26	9.1	12.4	29	12.4%	-1.30 [-7.86 , 5.26]
Oh 2010	6.34	7.2	54	0.64	5.1	54	22.5%	5.70 [3.35 , 8.05]
Segal 2003	8	5.8	82	-2.2	5.8	73	23.6%	10.20 [8.37 , 12.03]
Segal 2009	-0.93	7	40	-5.57	4.9	21	20.9%	4.64 [1.62 , 7.66]
Segal 2009	-1.46	7.3	40	-5.57	4.8	20	20.7%	4.11 [1.02 , 7.20]
Subtotal (95% CI)			**242**			**197**	**100.0%**	**5.35 [2.13 , 8.56]**
Heterogeneity: Tau² = 10.51; Chi² = 24.78, df = 4 (P < 0.0001); I² = 84%								
Test for overall effect: Z = 3.26 (P = 0.001)								
8.3.2 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	0.4	10.8	74	-0.7	7.5	37	49.9%	1.10 [-2.35 , 4.55]
Courneya 2007a	0.9	10.9	76	-0.7	7.4	36	50.1%	1.60 [-1.84 , 5.04]
Subtotal (95% CI)			**150**			**73**	**100.0%**	**1.35 [-1.09 , 3.79]**
Heterogeneity: Tau² = 0.00; Chi² = 0.04, df = 1 (P = 0.84); I² = 0%								
Test for overall effect: Z = 1.09 (P = 0.28)								
8.3.3 6 months' follow-up								
Courneya 2007a	6.4	11.6	73	7	7.8	30	40.3%	-0.60 [-4.46 , 3.26]
Courneya 2007a	6.6	11.6	68	7	7.8	30	39.0%	-0.40 [-4.32 , 3.52]
Rogers 2009	0.08	7.8	19	-1.2	8.6	17	20.7%	1.28 [-4.11 , 6.67]
Subtotal (95% CI)			**160**			**77**	**100.0%**	**-0.13 [-2.58 , 2.32]**
Heterogeneity: Tau² = 0.00; Chi² = 0.34, df = 2 (P = 0.84); I² = 0%								
Test for overall effect: Z = 0.11 (P = 0.92)								

Test for subgroup differences: Chi² = 7.18, df = 2 (P = 0.03), I² = 72.1%



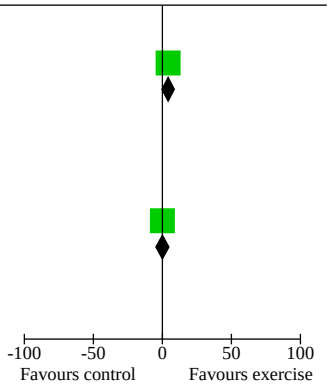
Analysis 8.4. Comparison 8: Fatigue, Outcome 4: FACT-F follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.4.1 Up to 12 weeks' follow-up								
Bourke 2011	49	4	21	42	8	22	12.1%	7.00 [3.24 , 10.76]
Courneya 2003a	19.67	11.31	51	22.37	9.84	45	10.6%	-2.70 [-6.93 , 1.53]
Courneya 2007a	33.1	11.3	75	32.3	12.3	37	9.3%	0.80 [-3.92 , 5.52]
Courneya 2007a	34	11.5	73	32.3	12.3	38	9.3%	1.70 [-3.02 , 6.42]
Danhauer 2009	39.8	11.5	13	32.6	15.5	14	2.8%	7.20 [-3.05 , 17.45]
Jarden 2009	33.9	9.7	17	27.8	9	17	6.3%	6.10 [-0.19 , 12.39]
Moadel 2007	34.37	11.26	84	33.82	13	44	9.8%	0.55 [-3.98 , 5.08]
Mutrie 2007	40.3	10.4	82	36	12.1	92	13.6%	4.30 [0.96 , 7.64]
Rogers 2009	12.4	10.4	20	10.1	6.6	18	7.6%	2.30 [-3.18 , 7.78]
Segal 2009	41.3	9.1	40	39	8.9	20	9.1%	2.30 [-2.51 , 7.11]
Segal 2009	43.1	8.8	40	39	8.9	21	9.4%	4.10 [-0.58 , 8.78]
Subtotal (95% CI)			**516**			**368**	**100.0%**	**2.79 [0.97 , 4.61]**
Heterogeneity: Tau² = 3.45; Chi² = 16.05, df = 10 (P = 0.10); I² = 38%								
Test for overall effect: Z = 3.00 (P = 0.003)								
8.4.2 More than 12 weeks' to less than 6 months' follow-up								
Courneya 2007a	36.8	10.4	74	34.9	12.5	37	22.9%	1.90 [-2.77 , 6.57]
Courneya 2007a	36.3	9.4	76	34.9	12.5	36	23.7%	1.40 [-3.20 , 6.00]
Jarden 2009	37.1	8.9	17	31.2	11.9	13	8.4%	5.90 [-1.83 , 13.63]
Segal 2009	45.1	9.1	40	42.1	8.8	20	22.0%	3.00 [-1.78 , 7.78]
Segal 2009	44.2	8.9	40	42.1	8.8	21	23.0%	2.10 [-2.57 , 6.77]
Subtotal (95% CI)			**247**			**127**	**100.0%**	**2.40 [0.17 , 4.64]**
Heterogeneity: Tau² = 0.00; Chi² = 1.09, df = 4 (P = 0.90); I² = 0%								
Test for overall effect: Z = 2.11 (P = 0.04)								
8.4.3 6 months' follow-up								
Bourke 2011	43	7	15	40	8	13	11.8%	3.00 [-2.61 , 8.61]
Courneya 2007a	42.1	10.5	68	41.5	9.8	30	20.0%	0.60 [-3.70 , 4.90]
Courneya 2007a	40.8	10.5	73	41.5	9.8	30	20.5%	-0.70 [-4.95 , 3.55]
Jarden 2009	40.1	10.6	16	33.2	13	13	4.8%	6.90 [-1.87 , 15.67]
Mutrie 2007	41.3	9.7	82	37.6	12	95	36.2%	3.70 [0.50 , 6.90]
Rogers 2009	13.8	11.7	19	13.5	11	17	6.7%	0.30 [-7.12 , 7.72]
Subtotal (95% CI)			**273**			**198**	**100.0%**	**2.02 [0.10 , 3.95]**
Heterogeneity: Tau² = 0.00; Chi² = 4.56, df = 5 (P = 0.47); I² = 0%								
Test for overall effect: Z = 2.06 (P = 0.04)								
Test for subgroup differences: Chi² = 0.32, df = 2 (P = 0.85), I² = 0%								



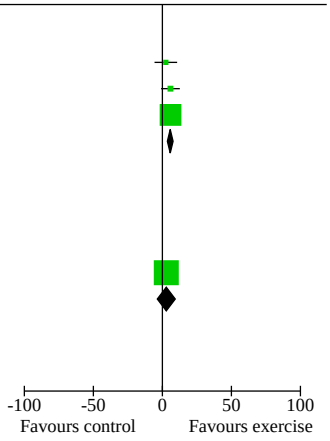
Analysis 8.5. Comparison 8: Fatigue, Outcome 5: FACIT-F subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.5.1 Up to 12 weeks' follow-up								
Mustian 2009	3.11	8.69	19	-1.05	4.84	19	100.0%	4.16 [-0.31 , 8.63]
Subtotal (95% CI)			**19**			**19**	**100.0%**	**4.16 [-0.31 , 8.63]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.82 (P = 0.07)								
8.5.2 More than 12 weeks' to less than 6 months' follow-up								
Mustian 2009	3.89	7.77	19	3.88	7	19	100.0%	0.01 [-4.69 , 4.71]
Subtotal (95% CI)			**19**			**19**	**100.0%**	**0.01 [-4.69 , 4.71]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.00 (P = 1.00)								
Test for subgroup differences: Chi² = 1.57, df = 1 (P = 0.21), I² = 36.3%								



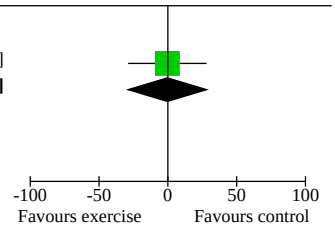
Analysis 8.6. Comparison 8: Fatigue, Outcome 6: FACIT-F subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.6.1 Up to 12 weeks' follow-up								
Donnelly 2011	36.5	10.61	16	34	13.3	17	6.3%	2.50 [-5.69 , 10.69]
Mustian 2009	41.79	8.99	19	35.94	12.1	19	9.2%	5.85 [-0.93 , 12.63]
Wang 2010	45.81	4.29	35	39.91	5.38	37	84.4%	5.90 [3.66 , 8.14]
Subtotal (95% CI)			**70**			**73**	**100.0%**	**5.68 [3.62 , 7.74]**
Heterogeneity: Tau² = 0.00; Chi² = 0.62, df = 2 (P = 0.73); I² = 0%								
Test for overall effect: Z = 5.40 (P < 0.00001)								
8.6.2 More than 12 weeks' to less than 6 months' follow-up								
Mustian 2009	43.17	7.74	19	40.35	12.2	19	100.0%	2.82 [-3.68 , 9.32]
Subtotal (95% CI)			**19**			**19**	**100.0%**	**2.82 [-3.68 , 9.32]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.85 (P = 0.39)								
Test for subgroup differences: Chi² = 0.68, df = 1 (P = 0.41), I² = 0%								



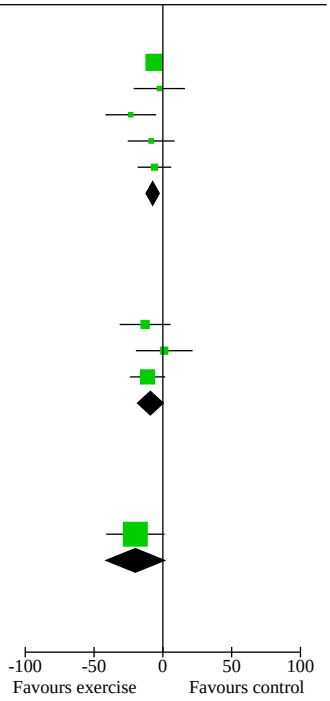
Analysis 8.7. Comparison 8: Fatigue, Outcome 7: QLQ-C30 change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.7.1 Up to 12 weeks' follow-up								
Arbane 2009	9.79	42.67	21	10.15	53.59	23	100.0%	-0.36 [-28.87 , 28.15]
Subtotal (95% CI)			**21**			**23**	**100.0%**	**-0.36 [-28.87 , 28.15]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.02 (P = 0.98)								
Test for subgroup differences: Not applicable								



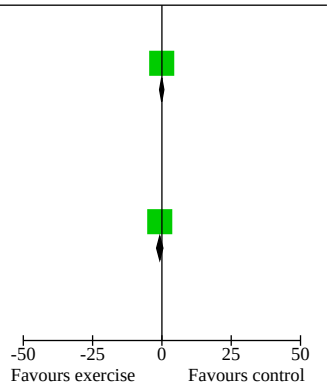
Analysis 8.8. Comparison 8: Fatigue, Outcome 8: QLQ-C30 fatigue subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.8.1 Up to 12 weeks' follow-up								
Adamsen 2009	34.6	24.3	118	41	22.7	117	63.3%	-6.40 [-12.41 , -0.39]
Arbane 2009	20.11	32.13	21	22.71	30.79	23	6.6%	-2.60 [-21.23 , 16.03]
Hacker 2011	23.6	13.9	8	46.9	24.1	9	6.7%	-23.30 [-41.76 , -4.84]
Jarden 2009	50.3	24.6	17	58.8	26	17	7.9%	-8.50 [-25.51 , 8.51]
Wiskemann 2011	60.3	28.5	40	66.4	27.4	41	15.4%	-6.10 [-18.28 , 6.08]
Subtotal (95% CI)			**204**			**207**	**100.0%**	**-7.40 [-12.19 , -2.62]**
Heterogeneity: Tau² = 0.00; Chi² = 3.27, df = 4 (P = 0.51); I² = 0%								
Test for overall effect: Z = 3.03 (P = 0.002)								
8.8.2 More than 12 weeks' to less than 6 months' follow-up								
Jarden 2009	44.4	25	17	57.3	26	13	25.6%	-12.90 [-31.37 , 5.57]
Moros 2010	31.1	24.4	10	30.1	18.9	7	20.6%	1.00 [-19.61 , 21.61]
Wiskemann 2011	49.7	28.9	40	60.8	29.2	40	53.8%	-11.10 [-23.83 , 1.63]
Subtotal (95% CI)			**67**			**60**	**100.0%**	**-9.07 [-18.42 , 0.27]**
Heterogeneity: Tau² = 0.00; Chi² = 1.18, df = 2 (P = 0.55); I² = 0%								
Test for overall effect: Z = 1.90 (P = 0.06)								
8.8.3 6 months' follow-up								
Jarden 2009	29.6	21.3	16	49.6	34	13	100.0%	-20.00 [-41.23 , 1.23]
Subtotal (95% CI)			**16**			**13**	**100.0%**	**-20.00 [-41.23 , 1.23]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.85 (P = 0.06)								
Test for subgroup differences: Chi² = 1.33, df = 2 (P = 0.52), I² = 0%								



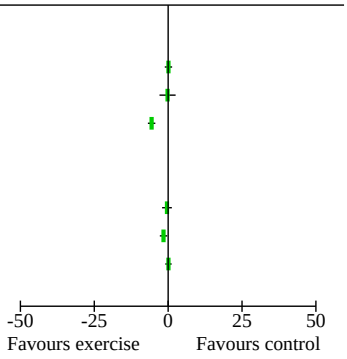
Analysis 8.9. Comparison 8: Fatigue, Outcome 9: Brief Fatigue Inventory change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.9.1 Up to 12 weeks' follow-up								
Mustian 2009	-0.25	1.24	19	-0.18	1.16	19	100.0%	-0.07 [-0.83 , 0.69]
Subtotal (95% CI)			**19**			**19**	**100.0%**	**-0.07 [-0.83 , 0.69]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.18 (P = 0.86)								
8.9.2 More than 12 weeks' to less than 6 months' follow-up								
Mustian 2009	-0.66	1.52	19	0.12	2	19	100.0%	-0.78 [-1.91 , 0.35]
Subtotal (95% CI)			**19**			**19**	**100.0%**	**-0.78 [-1.91 , 0.35]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.35 (P = 0.18)								
Test for subgroup differences: Chi² = 1.04, df = 1 (P = 0.31), I² = 4.0%								



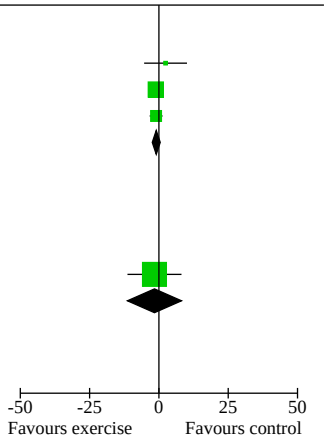
Analysis 8.10. Comparison 8: Fatigue, Outcome 10: Brief Fatigue Inventory follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Mean Difference IV, Random, 95% CI
8.10.1 Up to 12 weeks' follow-up							
Chandwani 2010	1.5	2.5	26	1.4	2.1	27	0.10 [-1.15 , 1.35]
Chang 2008	4.6	3	11	4.8	3.5	11	-0.20 [-2.92 , 2.52]
Windsor 2004	16	1.8	32	21.6	3.2	33	-5.60 [-6.86 , -4.34]
8.10.2 More than 12 weeks' to less than 6 months' follow-up							
Chandwani 2010	1.6	3.1	27	2	3.2	29	-0.40 [-2.05 , 1.25]
Mustian 2009	1.16	0.98	19	2.73	2.6	19	-1.57 [-2.82 , -0.32]
Windsor 2004	1.8	2	32	1.7	2.4	33	0.10 [-0.97 , 1.17]



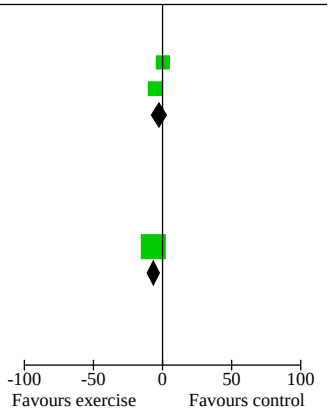
Analysis 8.11. Comparison 8: Fatigue, Outcome 11: POMS fatigue subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.11.1 Up to 12 weeks' follow-up								
Cheville 2010	-9.3	13.8	49	-11.7	25.08	54	3.4%	2.40 [-5.33 , 10.13]
Oh 2010	-2.42	5	54	-1.3	4.9	54	58.6%	-1.12 [-2.99 , 0.75]
Targ 2002	-1.27	7.1	79	-0.25	8.2	88	37.9%	-1.02 [-3.34 , 1.30]
Subtotal (95% CI)			**182**			**196**	**100.0%**	**-0.96 [-2.39 , 0.47]**
Heterogeneity: Tau² = 0.00; Chi² = 0.76, df = 2 (P = 0.68); I² = 0%								
Test for overall effect: Z = 1.32 (P = 0.19)								
8.11.2 6 months' follow-up								
Cheville 2010	-6.4	25	49	-4.8	25.4	54	100.0%	-1.60 [-11.34 , 8.14]
Subtotal (95% CI)			**49**			**54**	**100.0%**	**-1.60 [-11.34 , 8.14]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.32 (P = 0.75)								
Test for subgroup differences: Chi² = 0.02, df = 1 (P = 0.90), I² = 0%								



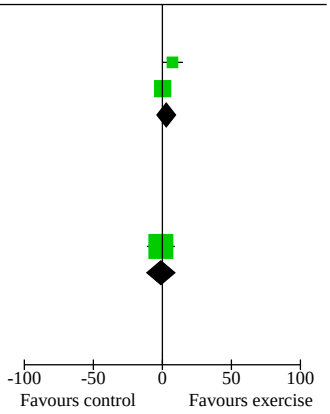
Analysis 8.12. Comparison 8: Fatigue, Outcome 12: POMS fatigue subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.12.1 Up to 12 weeks' follow-up								
Dimeo 1999	11.7	8.9	27	11.5	8.6	32	48.6%	0.20 [-4.29 , 4.69]
Wiskemann 2011	15	8.7	40	20.3	10.1	41	51.4%	-5.30 [-9.40 , -1.20]
Subtotal (95% CI)			**67**			**73**	**100.0%**	**-2.63 [-8.02 , 2.76]**
Heterogeneity: Tau² = 10.31; Chi² = 3.14, df = 1 (P = 0.08); I² = 68%								
Test for overall effect: Z = 0.96 (P = 0.34)								
8.12.2 More than 12 weeks' to less than 6 months' follow-up								
Wiskemann 2011	12.8	9.2	40	19.5	10.6	40	100.0%	-6.70 [-11.05 , -2.35]
Subtotal (95% CI)			**40**			**40**	**100.0%**	**-6.70 [-11.05 , -2.35]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 3.02 (P = 0.003)								
Test for subgroup differences: Chi² = 1.33, df = 1 (P = 0.25), I² = 24.7%								



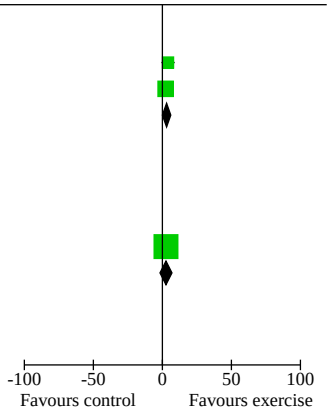
Analysis 8.13. Comparison 8: Fatigue, Outcome 13: POMS vigor subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.13.1 Up to 12 weeks' follow-up								
Cheville 2010	-5.1	16.3	49	-12.4	22.69	54	36.8%	7.30 [-0.28 , 14.88]
Targ 2002	1.08	7.5	79	0.9	8.6	88	63.2%	0.18 [-2.26 , 2.62]
Subtotal (95% CI)			**128**			**142**	**100.0%**	**2.80 [-3.93 , 9.53]**
Heterogeneity: Tau² = 17.09; Chi² = 3.07, df = 1 (P = 0.08); I² = 67%								
Test for overall effect: Z = 0.82 (P = 0.41)								
8.13.2 6 months' follow-up								
Cheville 2010	-1.8	24.6	49	-0.7	27.75	54	100.0%	-1.10 [-11.21 , 9.01]
Subtotal (95% CI)			**49**			**54**	**100.0%**	**-1.10 [-11.21 , 9.01]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.21 (P = 0.83)								
Test for subgroup differences: Chi² = 0.40, df = 1 (P = 0.53), I² = 0%								



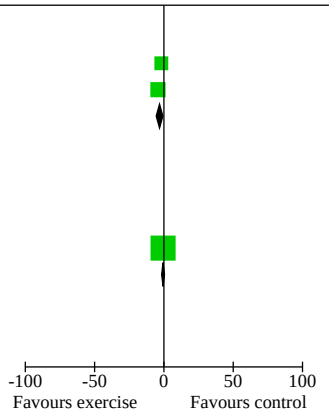
Analysis 8.14. Comparison 8: Fatigue, Outcome 14: POMS vigor subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.14.1 Up to 12 weeks' follow-up								
Dimeo 1999	19.6	9	27	15.5	9.8	32	40.0%	4.10 [-0.70 , 8.90]
Wiskemann 2011	20.83	8.9	40	18.49	9.1	41	60.0%	2.34 [-1.58 , 6.26]
Subtotal (95% CI)			**67**			**73**	**100.0%**	**3.04 [0.01 , 6.08]**
Heterogeneity: Tau² = 0.00; Chi² = 0.31, df = 1 (P = 0.58); I² = 0%								
Test for overall effect: Z = 1.96 (P = 0.05)								
8.14.2 More than 12 weeks' to less than 6 months' follow-up								
Wiskemann 2011	22.8	9.9	40	20.2	9.9	40	100.0%	2.60 [-1.74 , 6.94]
Subtotal (95% CI)			**40**			**40**	**100.0%**	**2.60 [-1.74 , 6.94]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.17 (P = 0.24)								
Test for subgroup differences: Chi² = 0.03, df = 1 (P = 0.87), I² = 0%								



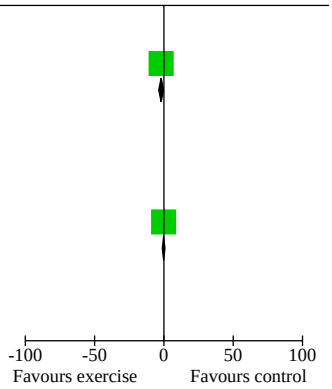
Analysis 8.15. Comparison 8: Fatigue, Outcome 15: Piper Fatigue Scale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.15.1 Up to 12 weeks' follow-up								
Campbell 2005	-2.11	2.3	10	-0.25	2.5	9	46.8%	-1.86 [-4.03 , 0.31]
Monga 2007	-1.6	2	11	2.7	2.2	10	53.2%	-4.30 [-6.10 , -2.50]
Subtotal (95% CI)			**21**			**19**	**100.0%**	**-3.16 [-5.54 , -0.77]**
Heterogeneity: Tau² = 1.94; Chi² = 2.87, df = 1 (P = 0.09); I² = 65%								
Test for overall effect: Z = 2.59 (P = 0.010)								
8.15.2 More than 12 weeks' to less than 6 months' follow-up								
Mock 2005	1	2.9	54	1.6	2.5	54	100.0%	-0.60 [-1.62 , 0.42]
Subtotal (95% CI)			**54**			**54**	**100.0%**	**-0.60 [-1.62 , 0.42]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.15 (P = 0.25)								
Test for subgroup differences: Chi² = 3.73, df = 1 (P = 0.05), I² = 73.2%								



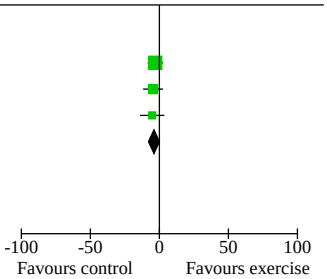
Analysis 8.16. Comparison 8: Fatigue, Outcome 16: Piper Fatigue Scale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.16.1 Up to 12 weeks' follow-up								
Monga 2007	0.8	1.8	11	2.8	2.2	10	100.0%	-2.00 [-3.73 , -0.27]
Subtotal (95% CI)			**11**			**10**	**100.0%**	**-2.00 [-3.73 , -0.27]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.27 (P = 0.02)								
8.16.2 More than 12 weeks' to less than 6 months' follow-up								
Mock 2005	3.5	2.4	54	3.7	2.6	54	100.0%	-0.20 [-1.14 , 0.74]
Subtotal (95% CI)			**54**			**54**	**100.0%**	**-0.20 [-1.14 , 0.74]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.42 (P = 0.68)								
Test for subgroup differences: Chi² = 3.21, df = 1 (P = 0.07), I² = 68.8%								



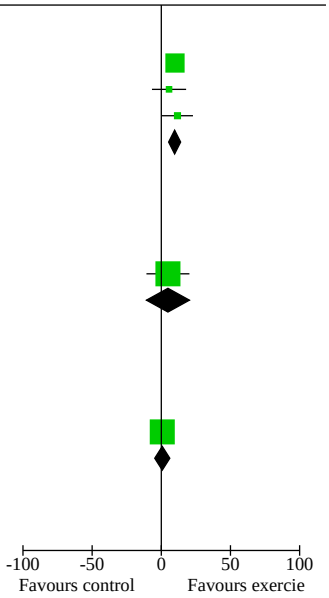
Analysis 8.17. Comparison 8: Fatigue, Outcome 17: MOS SF-36 vitality subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.17.1 6 months' follow-up								
Cadmus 2009	-0.1	9.1	22	2.9	10.1	23	49.6%	-3.00 [-8.61 , 2.61]
Segal 2001	2.1	16.8	40	6.7	11.6	21	30.2%	-4.60 [-11.79 , 2.59]
Segal 2001	1.5	23.5	40	6.7	11.3	20	20.2%	-5.20 [-14.01 , 3.61]
Subtotal (95% CI)			**102**			**64**	**100.0%**	**-3.93 [-7.88 , 0.03]**
Heterogeneity: Tau² = 0.00; Chi² = 0.22, df = 2 (P = 0.90); I² = 0%								
Test for overall effect: Z = 1.95 (P = 0.05)								
Test for subgroup differences: Not applicable								



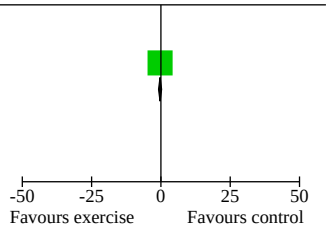
Analysis 8.18. Comparison 8: Fatigue, Outcome 18: MOS SF-36 vitality subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.18.1 Up to 12 weeks' follow-up								
Adamsen 2009	65.5	18.1	118	55.6	21.6	117	72.6%	9.90 [4.80 , 15.00]
Chandwani 2010	65.1	21.4	26	59.5	24.4	27	12.4%	5.60 [-6.74 , 17.94]
Galvao 2010	62.4	20.4	29	50.7	22.6	28	15.1%	11.70 [0.51 , 22.89]
Subtotal (95% CI)			**173**			**172**	**100.0%**	**9.64 [5.30 , 13.98]**
Heterogeneity: Tau² = 0.00; Chi² = 0.55, df = 2 (P = 0.76); I² = 0%								
Test for overall effect: Z = 4.35 (P < 0.0001)								
8.18.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	62	28.1	27	57.2	31.2	29	100.0%	4.80 [-10.73 , 20.33]
Subtotal (95% CI)			**27**			**29**	**100.0%**	**4.80 [-10.73 , 20.33]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.61 (P = 0.54)								
8.18.3 6 months' follow-up								
Cadmus 2009	51.7	9.6	22	51	9	23	100.0%	0.70 [-4.74 , 6.14]
Subtotal (95% CI)			**22**			**23**	**100.0%**	**0.70 [-4.74 , 6.14]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.25 (P = 0.80)								
Test for subgroup differences: Chi² = 6.36, df = 2 (P = 0.04), I² = 68.6%								



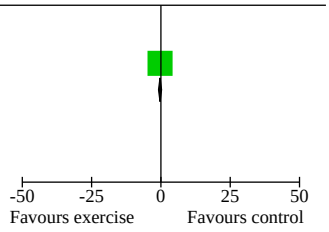
Analysis 8.19. Comparison 8: Fatigue, Outcome 19: Fatigue Severity Scale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.19.1 More than 12 weeks' to less than 6 months' follow-up								
Culos-Reed 2010	-0.34	1.6	53	-0.04	1.1	47	100.0%	-0.30 [-0.83 , 0.23]
Subtotal (95% CI)			**53**			**47**	**100.0%**	**-0.30 [-0.83 , 0.23]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.10 (P = 0.27)								
Test for subgroup differences: Not applicable								



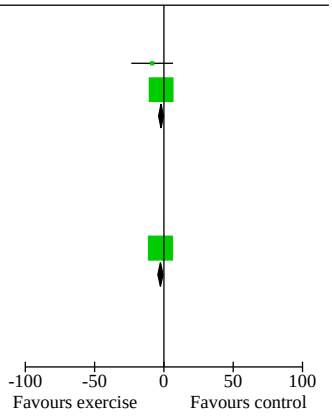
Analysis 8.20. Comparison 8: Fatigue, Outcome 20: Fatigue Severity Scale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.20.1 More than 12 weeks' to less than 6 months' follow-up								
Culos-Reed 2010	4.15	1.58	53	4.46	1.12	47	100.0%	-0.31 [-0.84 , 0.22]
Subtotal (95% CI)			**53**			**47**	**100.0%**	**-0.31 [-0.84 , 0.22]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.14 (P = 0.25)								
Test for subgroup differences: Not applicable								



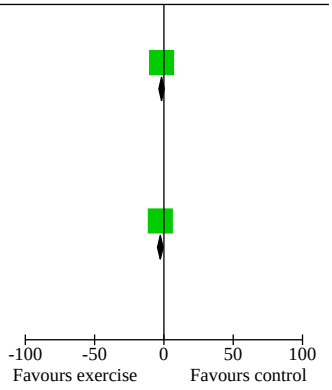
Analysis 8.21. Comparison 8: Fatigue, Outcome 21: Multidimensional Fatigue Inventory follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.21.1 Up to 12 weeks' follow-up								
Donnelly 2011	9.06	17.07	16	17.52	26.4	17	1.3%	-8.46 [-23.54 , 6.62]
Wiskemann 2011	12.7	3.6	40	14.7	4.4	41	98.7%	-2.00 [-3.75 , -0.25]
Subtotal (95% CI)			**56**			**58**	**100.0%**	**-2.09 [-3.82 , -0.35]**
Heterogeneity: Tau² = 0.00; Chi² = 0.70, df = 1 (P = 0.40); I² = 0%								
Test for overall effect: Z = 2.35 (P = 0.02)								
8.21.2 More than 12 weeks' to less than 6 months' follow-up								
Wiskemann 2011	11	4.1	40	13.5	4.3	40	100.0%	-2.50 [-4.34 , -0.66]
Subtotal (95% CI)			**40**			**40**	**100.0%**	**-2.50 [-4.34 , -0.66]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.66 (P = 0.008)								
Test for subgroup differences: Chi² = 0.10, df = 1 (P = 0.75), I² = 0%								



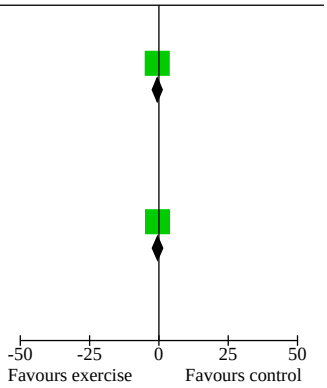
Analysis 8.22. Comparison 8: Fatigue, Outcome 22: Multidimensional Fatigue Inventory physical fatigue subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.22.1 Up to 12 weeks' follow-up								
Wiskemann 2011	12.9	4.1	40	14.6	4.7	41	100.0%	-1.70 [-3.62 , 0.22]
Subtotal (95% CI)			**40**			**41**	**100.0%**	**-1.70 [-3.62 , 0.22]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.74 (P = 0.08)								
8.22.2 More than 12 weeks' to less than 6 months' follow-up								
Wiskemann 2011	11.4	4.7	40	14	4.5	40	100.0%	-2.60 [-4.62 , -0.58]
Subtotal (95% CI)			**40**			**40**	**100.0%**	**-2.60 [-4.62 , -0.58]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.53 (P = 0.01)								
Test for subgroup differences: Chi² = 0.40, df = 1 (P = 0.53), I² = 0%								



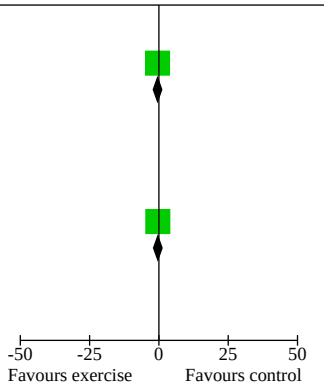
Analysis 8.23. Comparison 8: Fatigue, Outcome 23: Multidimensional Fatigue Inventory reduced activation subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.23.1 Up to 12 weeks' follow-up								
Wiskemann 2011	12.9	4.1	40	13.5	4.2	41	100.0%	-0.60 [-2.41 , 1.21]
Subtotal (95% CI)			**40**			**41**	**100.0%**	**-0.60 [-2.41 , 1.21]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.65 (P = 0.52)								
8.23.2 More than 12 weeks' to less than 6 months' follow-up								
Wiskemann 2011	12	4.5	40	12.5	4.1	41	100.0%	-0.50 [-2.38 , 1.38]
Subtotal (95% CI)			**40**			**41**	**100.0%**	**-0.50 [-2.38 , 1.38]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.52 (P = 0.60)								
Test for subgroup differences: Chi² = 0.01, df = 1 (P = 0.94), I² = 0%								



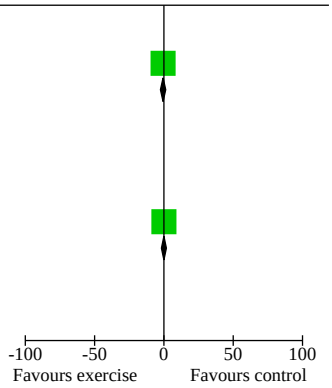
Analysis 8.24. Comparison 8: Fatigue, Outcome 24: Multidimensional Fatigue Inventory reduced motivation subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
8.24.1 Up to 12 weeks' follow-up								
Wiskemann 2011	8.5	3.5	40	9	3.5	41	100.0%	-0.50 [-2.02 , 1.02]
Subtotal (95% CI)			**40**			**41**	**100.0%**	**-0.50 [-2.02 , 1.02]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.64 (P = 0.52)								
8.24.2 More than 12 weeks' to less than 6 months' follow-up								
Wiskemann 2011	8.2	3.5	40	8.6	3.5	40	100.0%	-0.40 [-1.93 , 1.13]
Subtotal (95% CI)			**40**			**40**	**100.0%**	**-0.40 [-1.93 , 1.13]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.51 (P = 0.61)								
Test for subgroup differences: Chi² = 0.01, df = 1 (P = 0.93), I² = 0%								



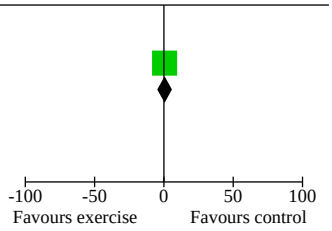
Analysis 8.25. Comparison 8: Fatigue, Outcome 25: Multidimensional Fatigue Inventory mental fatigue subscale follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
8.25.1 Up to 12 weeks' follow-up								
Wiskemann 2011	10.3	4.6	40	10.9	4.1	41	100.0%	-0.60 [-2.50 , 1.30]
Subtotal (95% CI)			**40**			**41**	**100.0%**	**-0.60 [-2.50 , 1.30]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.62 (P = 0.54)								
8.25.2 More than 12 weeks' to less than 6 months' follow-up								
Wiskemann 2011	10.2	4.2	40	10.2	3.9	40	100.0%	0.00 [-1.78 , 1.78]
Subtotal (95% CI)			**40**			**40**	**100.0%**	**0.00 [-1.78 , 1.78]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.00 (P = 1.00)								
Test for subgroup differences: Chi² = 0.20, df = 1 (P = 0.65), I² = 0%								



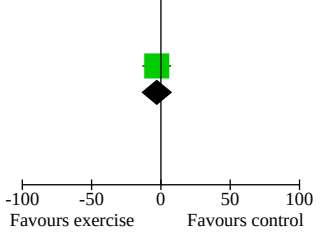
Analysis 8.26. Comparison 8: Fatigue, Outcome 26: Schwartz Fatigue follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
8.26.1 6 months' follow-up								
Caldwell 2009	10.5	6.41	8	10	2.6	9	100.0%	0.50 [-4.26 , 5.26]
Subtotal (95% CI)			**8**			**9**	**100.0%**	**0.50 [-4.26 , 5.26]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.21 (P = 0.84)								
Test for subgroup differences: Not applicable								

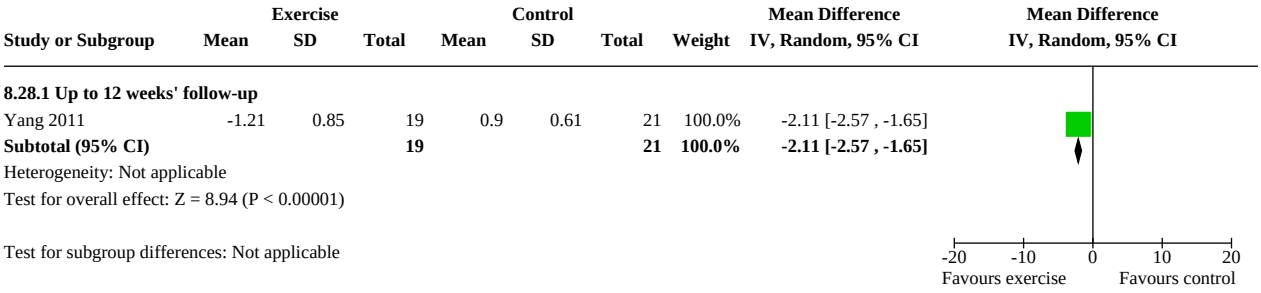


Analysis 8.27. Comparison 8: Fatigue, Outcome 27: LASA change

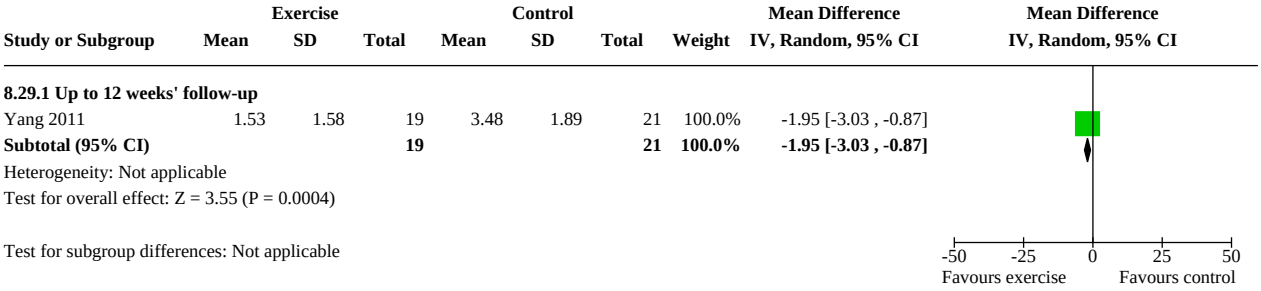
Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
8.27.1 Up to 12 weeks' follow-up								
Cheville 2010	-6.6	27.1	49	-5.1	28.8	54	100.0%	-1.50 [-12.30 , 9.30]
Subtotal (95% CI)			**49**			**54**	**100.0%**	**-1.50 [-12.30 , 9.30]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.27 (P = 0.79)								
8.27.2 More than 12 weeks' to less than 6 months' follow-up								
Cheville 2010	-9.5	27.1	49	-6.5	26.27	54	100.0%	-3.00 [-13.33 , 7.33]
Subtotal (95% CI)			**49**			**54**	**100.0%**	**-3.00 [-13.33 , 7.33]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.57 (P = 0.57)								
Test for subgroup differences: Chi² = 0.04, df = 1 (P = 0.84), I² = 0%								



Analysis 8.28. Comparison 8: Fatigue, Outcome 28: MDASI-T fatigue subscale change



Analysis 8.29. Comparison 8: Fatigue, Outcome 29: MDASI-T fatigue subscale follow-up values



Comparison 9. General health perspective

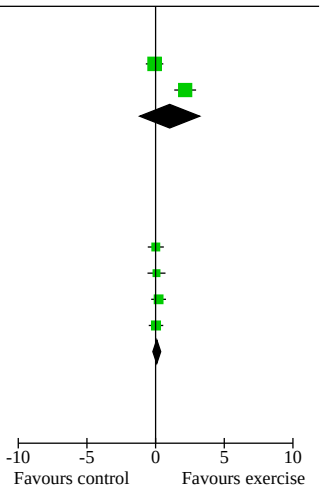
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
9.1 Overall general health change	4		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
9.1.1 Up to 12 weeks' follow-up	2	78	Std. Mean Difference (IV, Random, 95% CI)	1.03 [-1.16, 3.21]
9.1.2 6 months' follow-up	3	202	Std. Mean Difference (IV, Random, 95% CI)	0.09 [-0.20, 0.37]
9.2 Overall general health perspective follow-up values	7		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
9.2.1 Up to 12 weeks' follow-up	6	242	Std. Mean Difference (IV, Random, 95% CI)	0.33 [0.01, 0.64]
9.2.2 More than 12 weeks' to less than 6 months' follow-up	1	56	Std. Mean Difference (IV, Random, 95% CI)	0.20 [-0.32, 0.73]
9.2.3 6 months' follow-up	2	81	Std. Mean Difference (IV, Random, 95% CI)	0.05 [-0.43, 0.54]
9.3 MOS SF-36 general health change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
9.3.1 6 months' follow-up	2	166	Mean Difference (IV, Random, 95% CI)	0.83 [-1.85, 3.52]
9.4 MOS SF-36 general health subscale follow-up values	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
9.4.1 Up to 12 weeks' follow-up	1	57	Mean Difference (IV, Random, 95% CI)	11.20 [-0.66, 23.06]
9.4.2 More than 12 weeks' to less than 6 months' follow-up	1	56	Mean Difference (IV, Random, 95% CI)	4.60 [-7.06, 16.26]
9.4.3 6 months' follow-up	1	45	Mean Difference (IV, Random, 95% CI)	2.40 [-2.48, 7.28]
9.5 WHO BREF follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
9.5.1 Up to 12 weeks' follow-up	1	37	Mean Difference (IV, Random, 95% CI)	0.28 [-0.23, 0.79]
9.6 Ferrans and Powers health and functioning subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
9.6.1 Up to 12 weeks' follow-up	1	17	Mean Difference (IV, Random, 95% CI)	2.30 [-4.03, 8.63]
9.7 Single question change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
9.7.1 Up to 12 weeks' follow-up	1	38	Mean Difference (IV, Random, 95% CI)	-0.05 [-0.47, 0.37]
9.7.2 6 months' follow-up	1	36	Mean Difference (IV, Random, 95% CI)	0.04 [-0.35, 0.43]
9.8 Single question follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
9.8.1 Up to 12 weeks' follow-up	1	38	Mean Difference (IV, Random, 95% CI)	-0.30 [-0.76, 0.16]
9.8.2 6 months' follow-up	1	36	Mean Difference (IV, Random, 95% CI)	-0.20 [-0.79, 0.39]
9.9 MDASI-T general activity subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
9.9.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.72 [-2.23, -1.21]
9.10 MDASI-T general activity subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
9.10.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.57 [-2.74, -0.40]

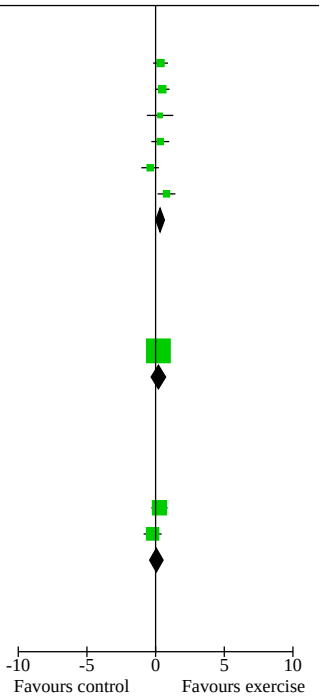
Analysis 9.1. Comparison 9: General health perspective, Outcome 1: Overall general health change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
9.1.1 Up to 12 weeks' follow-up								
Rogers 2009	0.15	0.6	20	0.2	0.7	18	50.6%	-0.08 [-0.71 , 0.56]
Yang 2011	1.58	1.12	19	-0.14	0.19	21	49.4%	2.15 [1.36 , 2.95]
Subtotal (95% CI)			**39**			**39**	**100.0%**	**1.03 [-1.16 , 3.21]**
Heterogeneity: Tau² = 2.35; Chi² = 18.38, df = 1 (P < 0.0001); I² = 95%								
Test for overall effect: Z = 0.92 (P = 0.36)								
9.1.2 6 months' follow-up								
Cadmus 2009	1.5	6.4	22	1.4	7	23	23.8%	0.01 [-0.57 , 0.60]
Rogers 2009	0.16	0.6	19	0.12	0.6	17	19.0%	0.07 [-0.59 , 0.72]
Segal 2001	-0.6	10.8	40	-2.8	7.7	20	28.1%	0.22 [-0.32 , 0.76]
Segal 2001	-2.4	15.6	40	-2.8	7.9	21	29.1%	0.03 [-0.50 , 0.56]
Subtotal (95% CI)			**121**			**81**	**100.0%**	**0.09 [-0.20 , 0.37]**
Heterogeneity: Tau² = 0.00; Chi² = 0.34, df = 3 (P = 0.95); I² = 0%								
Test for overall effect: Z = 0.59 (P = 0.55)								
Test for subgroup differences: Chi² = 0.70, df = 1 (P = 0.40), I² = 0%								



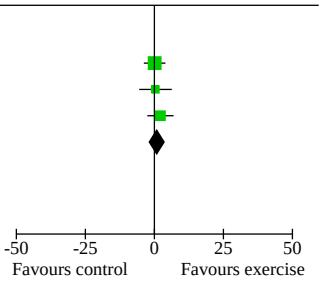
Analysis 9.2. Comparison 9: General health perspective, Outcome 2: Overall general health perspective follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
9.2.1 Up to 12 weeks' follow-up								
Chandwani 2010	71.6	18.4	26	64.3	21.3	27	20.6%	0.36 [-0.18 , 0.90]
Galvao 2010	71.4	18	29	60.2	26.7	28	21.4%	0.49 [-0.04 , 1.01]
Hacker 2011	22.6	6	8	20.3	7.3	9	8.9%	0.32 [-0.64 , 1.29]
Hwang 2008	2.88	0.7	17	2.6	0.88	20	16.2%	0.34 [-0.31 , 0.99]
Rogers 2009	3.5	0.9	20	3.8	0.5	18	16.5%	-0.40 [-1.04 , 0.25]
Yang 2011	-1.05	1.27	19	-2.62	2.38	21	16.4%	0.80 [0.15 , 1.44]
Subtotal (95% CI)			**119**			**123**	**100.0%**	**0.33 [0.01 , 0.64]**
Heterogeneity: Tau² = 0.05; Chi² = 7.25, df = 5 (P = 0.20); I² = 31%								
Test for overall effect: Z = 2.05 (P = 0.04)								
9.2.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	69.1	20.8	27	64.5	23.7	29	100.0%	0.20 [-0.32 , 0.73]
Subtotal (95% CI)			**27**			**29**	**100.0%**	**0.20 [-0.32 , 0.73]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.76 (P = 0.45)								
9.2.3 6 months' follow-up								
Cadmus 2009	51.4	8.5	22	49	8.2	23	54.5%	0.28 [-0.31 , 0.87]
Rogers 2009	3.5	0.9	19	3.7	0.9	17	45.5%	-0.22 [-0.87 , 0.44]
Subtotal (95% CI)			**41**			**40**	**100.0%**	**0.05 [-0.43 , 0.54]**
Heterogeneity: Tau² = 0.02; Chi² = 1.24, df = 1 (P = 0.27); I² = 19%								
Test for overall effect: Z = 0.22 (P = 0.83)								
Test for subgroup differences: Chi² = 0.87, df = 2 (P = 0.65), I² = 0%								



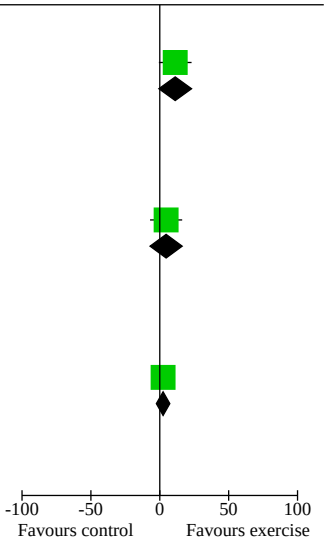
Analysis 9.3. Comparison 9: General health perspective, Outcome 3: MOS SF-36 general health change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
9.3.1 6 months' follow-up								
Cadmus 2009	1.5	6.4	22	1.4	7	23	47.2%	0.10 [-3.82 , 4.02]
Segal 2001	-2.4	15.6	40	-2.8	7.9	21	20.8%	0.40 [-5.50 , 6.30]
Segal 2001	-0.6	10.8	40	-2.8	7.7	20	32.0%	2.20 [-2.55 , 6.95]
Subtotal (95% CI)			**102**			**64**	**100.0%**	**0.83 [-1.85 , 3.52]**
Heterogeneity: Tau² = 0.00; Chi² = 0.47, df = 2 (P = 0.79); I² = 0%								
Test for overall effect: Z = 0.61 (P = 0.54)								
Test for subgroup differences: Not applicable								



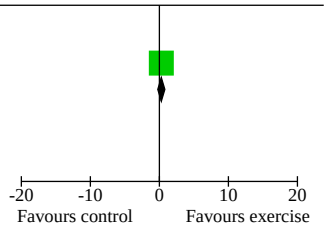
Analysis 9.4. Comparison 9: General health perspective, Outcome 4: MOS SF-36 general health subscale follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
9.4.1 Up to 12 weeks' follow-up								
Galvao 2010	71.4	18	29	60.2	26.7	28	100.0%	11.20 [-0.66 , 23.06]
Subtotal (95% CI)			**29**			**28**	**100.0%**	**11.20 [-0.66 , 23.06]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.85 (P = 0.06)								
9.4.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	69.1	20.8	27	64.5	23.7	29	100.0%	4.60 [-7.06 , 16.26]
Subtotal (95% CI)			**27**			**29**	**100.0%**	**4.60 [-7.06 , 16.26]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.77 (P = 0.44)								
9.4.3 6 months' follow-up								
Cadmus 2009	51.4	8.5	22	49	8.2	23	100.0%	2.40 [-2.48 , 7.28]
Subtotal (95% CI)			**22**			**23**	**100.0%**	**2.40 [-2.48 , 7.28]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.96 (P = 0.34)								
Test for subgroup differences: $Chi^2 = 1.83$, df = 2 (P = 0.40), $I^2 = 0\%$								



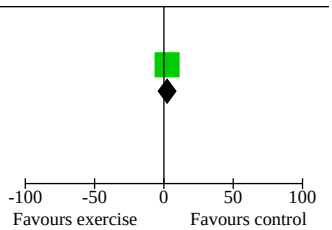
Analysis 9.5. Comparison 9: General health perspective, Outcome 5: WHO BREF follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
9.5.1 Up to 12 weeks' follow-up								
Hwang 2008	2.88	0.7	17	2.6	0.88	20	100.0%	0.28 [-0.23 , 0.79]
Subtotal (95% CI)			**17**			**20**	**100.0%**	**0.28 [-0.23 , 0.79]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.08 (P = 0.28)								
Test for subgroup differences: Not applicable								



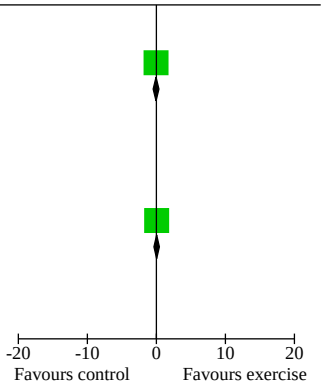
Analysis 9.6. Comparison 9: General health perspective, Outcome 6: Ferrans and Powers health and functioning subscale follow-up values

Study or Subgroup	Exercise Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
9.6.1 Up to 12 weeks' follow-up								
Hacker 2011	22.6	6	8	20.3	7.3	9	100.0%	2.30 [-4.03 , 8.63]
Subtotal (95% CI)			**8**			**9**	**100.0%**	**2.30 [-4.03 , 8.63]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.71 (P = 0.48)								
Test for subgroup differences: Not applicable								



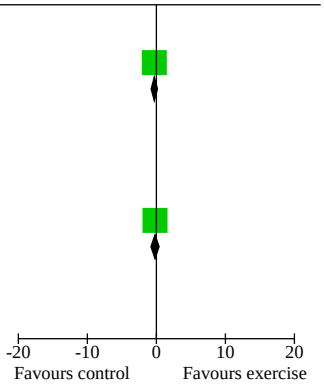
Analysis 9.7. Comparison 9: General health perspective, Outcome 7: Single question change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
9.7.1 Up to 12 weeks' follow-up								
Rogers 2009	0.15	0.6	20	0.2	0.7	18	100.0%	-0.05 [-0.47 , 0.37]
Subtotal (95% CI)			**20**			**18**	**100.0%**	**-0.05 [-0.47 , 0.37]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.24 (P = 0.81)								
9.7.2 6 months' follow-up								
Rogers 2009	0.16	0.6	19	0.12	0.6	17	100.0%	0.04 [-0.35 , 0.43]
Subtotal (95% CI)			**19**			**17**	**100.0%**	**0.04 [-0.35 , 0.43]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.20 (P = 0.84)								
Test for subgroup differences: Chi² = 0.09, df = 1 (P = 0.76), I² = 0%								



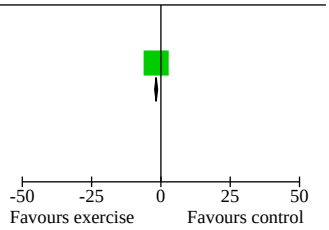
Analysis 9.8. Comparison 9: General health perspective, Outcome 8: Single question follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
9.8.1 Up to 12 weeks' follow-up								
Rogers 2009	3.5	0.9	20	3.8	0.5	18	100.0%	-0.30 [-0.76 , 0.16]
Subtotal (95% CI)			**20**			**18**	**100.0%**	**-0.30 [-0.76 , 0.16]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.29 (P = 0.20)								
9.8.2 6 months' follow-up								
Rogers 2009	3.5	0.9	19	3.7	0.9	17	100.0%	-0.20 [-0.79 , 0.39]
Subtotal (95% CI)			**19**			**17**	**100.0%**	**-0.20 [-0.79 , 0.39]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.67 (P = 0.51)								
Test for subgroup differences: Chi² = 0.07, df = 1 (P = 0.79), I² = 0%								

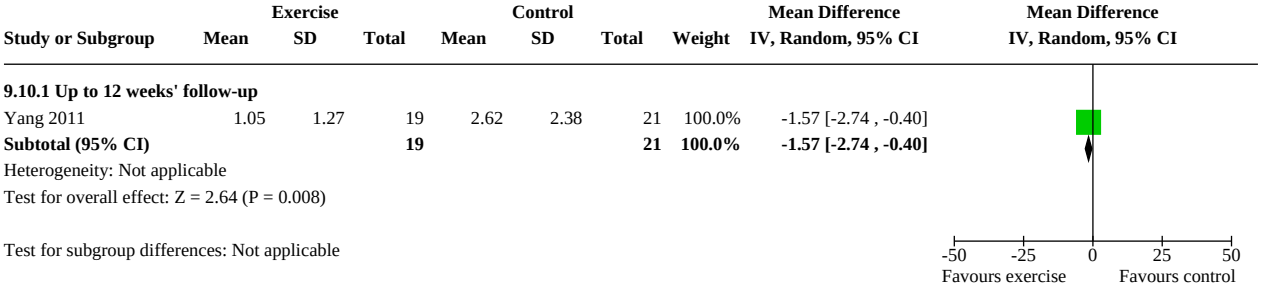


Analysis 9.9. Comparison 9: General health perspective, Outcome 9: MDASI-T general activity subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
9.9.1 Up to 12 weeks' follow-up								
Yang 2011	-1.58	1.12	19	0.14	0.19	21	100.0%	-1.72 [-2.23 , -1.21]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-1.72 [-2.23 , -1.21]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 6.61 (P < 0.00001)								
Test for subgroup differences: Not applicable								



Analysis 9.10. Comparison 9: General health perspective, Outcome 10: MDASI-T general activity subscale follow-up values



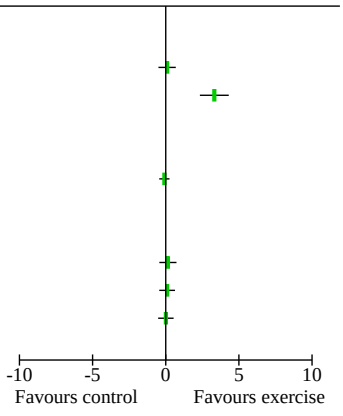
Comparison 10. Pain

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
10.1 Overall pain change	5		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
10.1.1 Up to 12 weeks' follow-up	2		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
10.1.2 More than 12 weeks' to less than 6 months' follow-up	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
10.1.3 6 months' follow-up	2		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
10.2 Overall pain follow-up values	11		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
10.2.1 Up to 12 weeks' follow-up	9	598	Std. Mean Difference (IV, Random, 95% CI)	-0.20 [-0.41, 0.00]
10.2.2 More than 12 weeks' to less than 6 months' follow-up	5	309	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.39, 0.06]
10.2.3 6 months' follow-up	1	29	Std. Mean Difference (IV, Random, 95% CI)	-1.05 [-1.83, -0.26]
10.3 QLQ-C30 change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
10.3.1 Up to 12 weeks' follow-up	1	44	Mean Difference (IV, Random, 95% CI)	3.11 [-15.93, 22.15]
10.4 QLQ-C30 pain follow-up values	6		Mean Difference (IV, Random, 95% CI)	Subtotals only
10.4.1 Up to 12 weeks' follow-up	5	411	Mean Difference (IV, Random, 95% CI)	-3.31 [-7.54, 0.92]
10.4.2 More than 12 weeks' to less than 6 months' follow-up	3	127	Mean Difference (IV, Random, 95% CI)	-7.26 [-15.82, 1.29]
10.4.3 6 months' follow-up	1	29	Mean Difference (IV, Random, 95% CI)	-21.20 [-36.86, -5.54]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
10.5 MOS SF-36 bodily pain subscale change	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
10.5.1 More than 12 weeks' to less than 6 months' follow-up	1	126	Mean Difference (IV, Random, 95% CI)	-2.41 [-11.29, 6.47]
10.5.2 6 months' follow-up	2	166	Mean Difference (IV, Random, 95% CI)	1.43 [-3.53, 6.40]
10.6 MOS SF-36 bodily pain follow-up values	4		Mean Difference (IV, Random, 95% CI)	Subtotals only
10.6.1 Up to 12 weeks' follow-up	3	345	Mean Difference (IV, Random, 95% CI)	2.46 [-2.24, 7.16]
10.6.2 More than 12 weeks' to less than 6 months' follow-up	2	182	Mean Difference (IV, Random, 95% CI)	-3.13 [-10.11, 3.86]
10.6.3 6 months' follow-up	0	0	Mean Difference (IV, Random, 95% CI)	Not estimable
10.7 Visual Analog Scale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
10.7.1 Up to 12 weeks' follow-up	1	37	Mean Difference (IV, Random, 95% CI)	-4.60 [-18.52, 9.32]
10.8 MDASI-T pain subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
10.8.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-2.66 [-3.17, -2.15]
10.9 MDASI-T pain subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
10.9.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-2.22 [-3.51, -0.93]

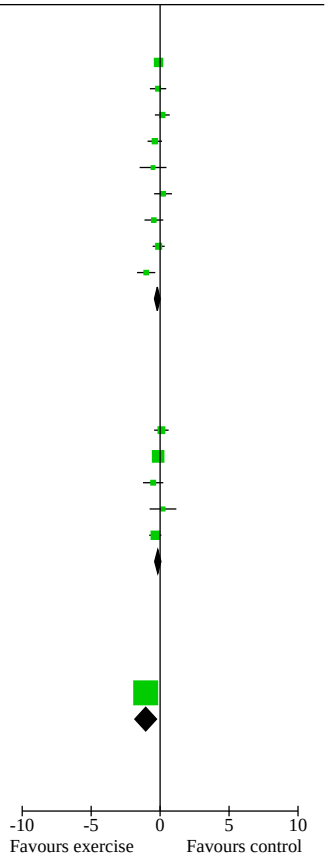
Analysis 10.1. Comparison 10: Pain, Outcome 1: Overall pain change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Std. Mean Difference IV, Random, 95% CI
10.1.1 Up to 12 weeks' follow-up							
Arbane 2009	2.38	29	21	-0.73	35.35	23	0.09 [-0.50 , 0.69]
Yang 2011	1.42	1.14	19	-1.24	0.04	21	3.32 [2.33 , 4.31]
10.1.2 More than 12 weeks' to less than 6 months' follow-up							
Griffith 2009	-2.79	27.31	68	-0.38	23.56	58	-0.09 [-0.44 , 0.26]
10.1.3 6 months' follow-up							
Cadmus 2009	4.9	12.1	22	2.9	14.2	23	0.15 [-0.44 , 0.73]
Segal 2001	2.3	20.6	40	0.5	14.5	20	0.09 [-0.44 , 0.63]
Segal 2001	0.7	22.2	40	0.5	14.9	21	0.01 [-0.52 , 0.54]



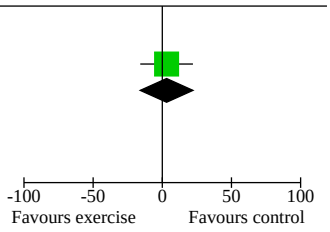
Analysis 10.2. Comparison 10: Pain, Outcome 2: Overall pain follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
10.2.1 Up to 12 weeks' follow-up								
Adamsen 2009	14.6	17.1	118	16.8	20.6	117	25.9%	-0.12 [-0.37 , 0.14]
Arbane 2009	18.25	25.22	21	22.46	30.41	23	9.4%	-0.15 [-0.74 , 0.45]
Chandwani 2010	-75.3	28	26	-80.2	31.7	27	10.9%	0.16 [-0.38 , 0.70]
Galvao 2010	-79.8	21.6	29	-71.4	21.6	28	11.4%	-0.38 [-0.91 , 0.14]
Hacker 2011	18.8	20.8	8	35.2	36.8	9	4.1%	-0.51 [-1.48 , 0.46]
Hwang 2008	-25.4	22.3	17	-30	20.6	20	8.2%	0.21 [-0.44 , 0.86]
Jarden 2009	23.5	27	17	36.3	28.4	17	7.5%	-0.45 [-1.13 , 0.23]
Wiskemann 2011	32.1	32.8	40	35.4	29.3	41	14.7%	-0.11 [-0.54 , 0.33]
Yang 2011	1.21	1.32	19	3.43	2.69	21	7.9%	-1.01 [-1.67 , -0.35]
Subtotal (95% CI)			**295**			**303**	**100.0%**	**-0.20 [-0.41 , 0.00]**
Heterogeneity: Tau² = 0.03; Chi² = 10.96, df = 8 (P = 0.20); I² = 27%								
Test for overall effect: Z = 1.93 (P = 0.05)								
10.2.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	-69.9	32.7	27	-73.2	36.6	29	18.4%	0.09 [-0.43 , 0.62]
Griffith 2009	75	21.86	68	78.1	21.38	58	41.0%	-0.14 [-0.49 , 0.21]
Jarden 2009	11.5	13.2	17	20.5	21.7	13	9.3%	-0.50 [-1.24 , 0.23]
Moros 2010	21.6	26.1	10	16.6	16.6	7	5.4%	0.21 [-0.76 , 1.18]
Wiskemann 2011	25	31.8	40	35.8	28.9	40	25.9%	-0.35 [-0.79 , 0.09]
Subtotal (95% CI)			**162**			**147**	**100.0%**	**-0.17 [-0.39 , 0.06]**
Heterogeneity: Tau² = 0.00; Chi² = 3.03, df = 4 (P = 0.55); I² = 0%								
Test for overall effect: Z = 1.47 (P = 0.14)								
10.2.3 6 months' follow-up								
Jarden 2009	4.4	9.9	16	25.6	27.4	13	100.0%	-1.05 [-1.83 , -0.26]
Subtotal (95% CI)			**16**			**13**	**100.0%**	**-1.05 [-1.83 , -0.26]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.60 (P = 0.009)								
Test for subgroup differences: Chi² = 4.46, df = 2 (P = 0.11), I² = 55.2%								



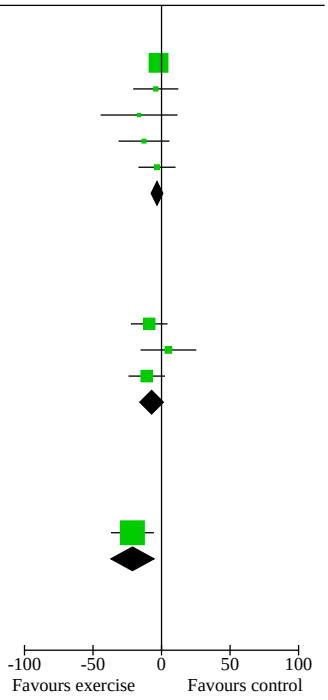
Analysis 10.3. Comparison 10: Pain, Outcome 3: QLQ-C30 change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
10.3.1 Up to 12 weeks' follow-up								
Arbane 2009	2.38	29	21	-0.73	35.35	23	100.0%	3.11 [-15.93 , 22.15]
Subtotal (95% CI)			**21**			**23**	**100.0%**	**3.11 [-15.93 , 22.15]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.32 (P = 0.75)								
Test for subgroup differences: Not applicable								



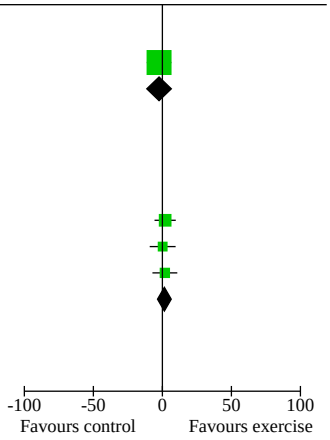
Analysis 10.4. Comparison 10: Pain, Outcome 4: QLQ-C30 pain follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
10.4.1 Up to 12 weeks' follow-up								
Adamsen 2009	14.6	17.1	118	16.8	20.6	117	76.2%	-2.20 [-7.04 , 2.64]
Arbane 2009	18.25	25.22	21	22.46	30.41	23	6.6%	-4.21 [-20.67 , 12.25]
Hacker 2011	18.8	20.8	8	35.2	36.8	9	2.3%	-16.40 [-44.43 , 11.63]
Jarden 2009	23.5	27	17	36.3	28.4	17	5.2%	-12.80 [-31.43 , 5.83]
Wiskemann 2011	32.1	32.8	40	35.4	29.3	41	9.7%	-3.30 [-16.86 , 10.26]
Subtotal (95% CI)			**204**			**207**	**100.0%**	**-3.31 [-7.54 , 0.92]**
Heterogeneity: Tau² = 0.00; Chi² = 2.05, df = 4 (P = 0.73); I² = 0%								
Test for overall effect: Z = 1.53 (P = 0.13)								
10.4.2 More than 12 weeks' to less than 6 months' follow-up								
Jarden 2009	11.5	13.2	17	20.5	21.7	13	41.0%	-9.00 [-22.36 , 4.36]
Moros 2010	21.6	26.1	10	16.6	16.6	7	17.7%	5.00 [-15.32 , 25.32]
Wiskemann 2011	25	31.8	40	35.8	28.9	40	41.3%	-10.80 [-24.12 , 2.52]
Subtotal (95% CI)			**67**			**60**	**100.0%**	**-7.26 [-15.82 , 1.29]**
Heterogeneity: Tau² = 0.00; Chi² = 1.74, df = 2 (P = 0.42); I² = 0%								
Test for overall effect: Z = 1.66 (P = 0.10)								
10.4.3 6 months' follow-up								
Jarden 2009	4.4	9.9	16	25.6	27.4	13	100.0%	-21.20 [-36.86 , -5.54]
Subtotal (95% CI)			**16**			**13**	**100.0%**	**-21.20 [-36.86 , -5.54]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.65 (P = 0.008)								
Test for subgroup differences: Chi² = 4.99, df = 2 (P = 0.08), I² = 59.9%								



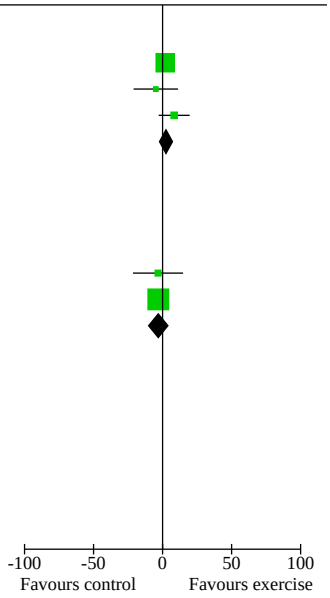
Analysis 10.5. Comparison 10: Pain, Outcome 5: MOS SF-36 bodily pain subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
10.5.1 More than 12 weeks' to less than 6 months' follow-up								
Griffith 2009	-2.79	27.31	68	-0.38	23.56	58	100.0%	-2.41 [-11.29 , 6.47]
Subtotal (95% CI)			**68**			**58**	**100.0%**	**-2.41 [-11.29 , 6.47]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.53 (P = 0.59)								
10.5.2 6 months' follow-up								
Cadmus 2009	4.9	12.1	22	2.9	14.2	23	41.6%	2.00 [-5.70 , 9.70]
Segal 2001	0.7	22.2	40	0.5	14.9	21	28.0%	0.20 [-9.18 , 9.58]
Segal 2001	2.3	20.6	40	0.5	14.5	20	30.4%	1.80 [-7.21 , 10.81]
Subtotal (95% CI)			**102**			**64**	**100.0%**	**1.43 [-3.53 , 6.40]**
Heterogeneity: Tau² = 0.00; Chi² = 0.09, df = 2 (P = 0.95); I² = 0%								
Test for overall effect: Z = 0.57 (P = 0.57)								
Test for subgroup differences: Chi² = 0.55, df = 1 (P = 0.46), I² = 0%								



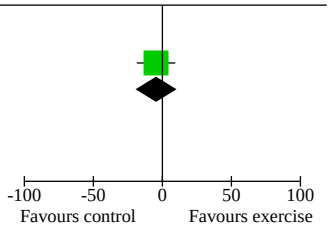
Analysis 10.6. Comparison 10: Pain, Outcome 6: MOS SF-36 bodily pain follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
10.6.1 Up to 12 weeks' follow-up								
Adamsen 2009	77.6	20	118	75.7	22.7	117	73.9%	1.90 [-3.57 , 7.37]
Chandwani 2010	75.3	28	26	80.2	31.7	27	8.5%	-4.90 [-20.99 , 11.19]
Galvao 2010	79.8	21.6	29	71.4	21.6	28	17.6%	8.40 [-2.82 , 19.62]
Subtotal (95% CI)			**173**			**172**	**100.0%**	**2.46 [-2.24 , 7.16]**
Heterogeneity: Tau² = 0.00; Chi² = 1.92, df = 2 (P = 0.38); I² = 0%								
Test for overall effect: Z = 1.03 (P = 0.30)								
10.6.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	69.9	32.7	27	73.2	36.6	29	14.8%	-3.30 [-21.45 , 14.85]
Griffith 2009	75	21.86	68	78.1	21.38	58	85.2%	-3.10 [-10.67 , 4.47]
Subtotal (95% CI)			**95**			**87**	**100.0%**	**-3.13 [-10.11 , 3.86]**
Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 0.98); I² = 0%								
Test for overall effect: Z = 0.88 (P = 0.38)								
10.6.3 6 months' follow-up								
Subtotal (95% CI)			**0**			**0**		**Not estimable**
Heterogeneity: Not applicable								
Test for overall effect: Not applicable								
Test for subgroup differences: Chi² = 1.69, df = 1 (P = 0.19), I² = 41.0%								



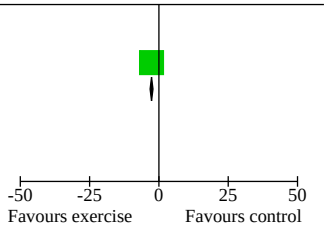
Analysis 10.7. Comparison 10: Pain, Outcome 7: Visual Analog Scale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
10.7.1 Up to 12 weeks' follow-up								
Hwang 2008	25.4	22.3	17	30	20.6	20	100.0%	-4.60 [-18.52 , 9.32]
Subtotal (95% CI)			**17**			**20**	**100.0%**	**-4.60 [-18.52 , 9.32]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.65 (P = 0.52)								
Test for subgroup differences: Not applicable								

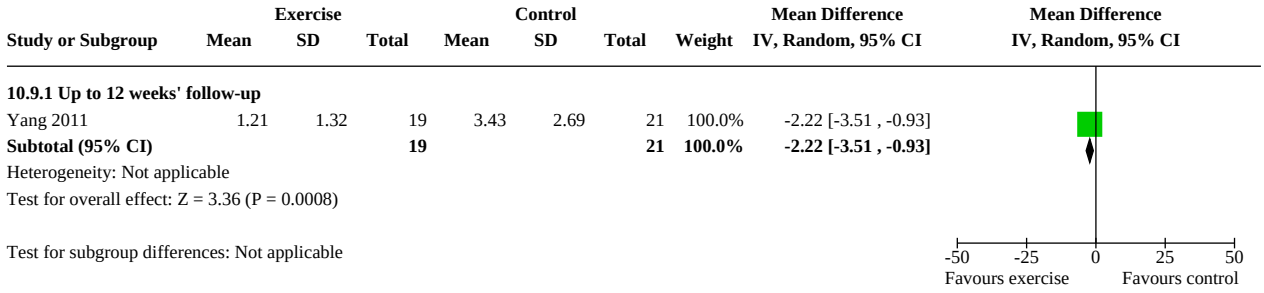


Analysis 10.8. Comparison 10: Pain, Outcome 8: MDASI-T pain subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
10.8.1 Up to 12 weeks' follow-up								
Yang 2011	-1.42	1.14	19	1.24	0.04	21	100.0%	-2.66 [-3.17 , -2.15]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-2.66 [-3.17 , -2.15]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 10.17 (P < 0.00001)								
Test for subgroup differences: Not applicable								



Analysis 10.9. Comparison 10: Pain, Outcome 9: MDASI-T pain subscale follow-up values



Comparison 11. Physical functioning

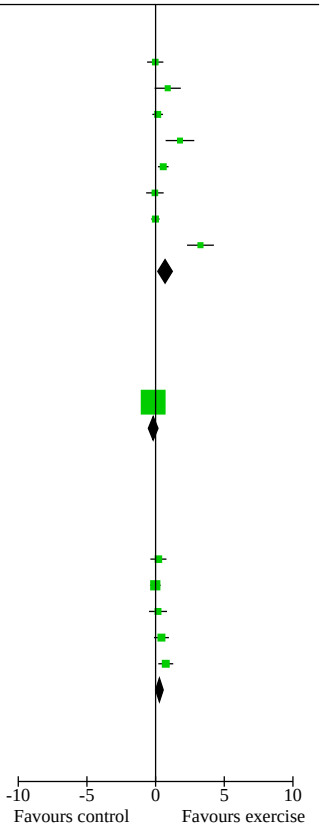
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
11.1 Overall physical function change	11		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
11.1.1 Up to 12 weeks' follow-up	8	540	Std. Mean Difference (IV, Random, 95% CI)	0.69 [0.16, 1.22]
11.1.2 More than 12 weeks' to less than 6 months' follow-up	1	126	Std. Mean Difference (IV, Random, 95% CI)	-0.18 [-0.53, 0.17]
11.1.3 6 months' follow-up	4	305	Std. Mean Difference (IV, Random, 95% CI)	0.28 [-0.00, 0.55]
11.2 Overall physical function follow-up values	21		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
11.2.1 Up to 12 weeks' follow-up	18	1272	Std. Mean Difference (IV, Random, 95% CI)	0.28 [0.11, 0.45]
11.2.2 More than 12 weeks' to less than 6 months' follow-up	6	368	Std. Mean Difference (IV, Random, 95% CI)	0.33 [-0.17, 0.82]
11.2.3 6 months' follow-up	5	336	Std. Mean Difference (IV, Random, 95% CI)	0.29 [0.07, 0.50]
11.3 FACT-P subscale change	4		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.3.1 Up to 12 weeks' follow-up	3	167	Mean Difference (IV, Random, 95% CI)	2.31 [0.65, 3.98]
11.3.2 6 months' follow-up	2	81	Mean Difference (IV, Random, 95% CI)	1.01 [-1.24, 3.25]
11.4 FACT-P subscale follow-up values	8		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.4.1 Up to 12 weeks' follow-up	7	539	Mean Difference (IV, Random, 95% CI)	0.34 [-0.67, 1.35]
11.4.2 6 months' follow-up	4	307	Mean Difference (IV, Random, 95% CI)	1.17 [0.14, 2.19]
11.5 FACIT-F change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
11.5.1 Up to 12 weeks' follow-up	1	167	Mean Difference (IV, Random, 95% CI)	-0.40 [-9.67, 8.87]
11.6 QLQ-C30 Physical subscale change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.6.1 Up to 12 weeks' follow-up	2	63	Mean Difference (IV, Random, 95% CI)	5.32 [-0.16, 10.80]
11.7 QLQ-C30 Physical subscale follow-up values	6		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.7.1 Up to 12 weeks' follow-up	5	411	Mean Difference (IV, Random, 95% CI)	3.72 [0.61, 6.84]
11.7.2 More than 12 weeks' to less than 6 months' follow-up	3	127	Mean Difference (IV, Random, 95% CI)	8.01 [0.89, 15.12]
11.7.3 6 months' follow-up	1	29	Mean Difference (IV, Random, 95% CI)	12.70 [-1.38, 26.78]
11.8 MOS SF-36 Physical component score follow-up values	5		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.8.1 Up to 12 weeks' follow-up	5	443	Mean Difference (IV, Random, 95% CI)	3.96 [0.99, 6.94]
11.8.2 More than 12 weeks' to less than 6 months' follow-up	2	115	Mean Difference (IV, Random, 95% CI)	8.60 [-3.38, 20.58]
11.8.3 6 months' follow-up	0	0	Mean Difference (IV, Random, 95% CI)	Not estimable
11.9 MOS SF-36 Physical Functioning subscale change	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.9.1 More than 12 weeks' to less than 6 months' follow-up	1	126	Mean Difference (IV, Random, 95% CI)	-0.40 [-6.43, 5.63]
11.9.2 6 months' follow-up	2	166	Mean Difference (IV, Random, 95% CI)	3.60 [-5.64, 12.83]
11.10 MOS SF-36 Physical Functioning subscale follow-up values	5		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.10.1 Up to 12 weeks' follow-up	3	345	Mean Difference (IV, Random, 95% CI)	4.04 [0.63, 7.46]
11.10.2 More than 12 weeks' to less than 6 months' follow-up	2	182	Mean Difference (IV, Random, 95% CI)	-0.69 [-8.84, 7.46]
11.10.3 6 months' follow-up	1	45	Mean Difference (IV, Random, 95% CI)	-0.90 [-5.19, 3.39]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
11.11 MOS SF-36 role physical change	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.11.1 More than 12 weeks' to less than 6 months' follow-up	1	126	Mean Difference (IV, Random, 95% CI)	-8.71 [-25.74, 8.32]
11.11.2 6 months' follow-up	2	166	Mean Difference (IV, Random, 95% CI)	-0.37 [-7.26, 6.52]
11.12 MOS SF-36 role physical follow-up values	5		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.12.1 Up to 12 weeks' follow-up	3	345	Mean Difference (IV, Random, 95% CI)	11.24 [3.10, 19.39]
11.12.2 More than 12 weeks' to less than 6 months' follow-up	2	182	Mean Difference (IV, Random, 95% CI)	-6.92 [-28.18, 14.34]
11.12.3 6 months' follow-up	1	45	Mean Difference (IV, Random, 95% CI)	2.20 [-5.02, 9.42]
11.13 LASA change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.13.1 Up to 12 weeks' follow-up	1	103	Mean Difference (IV, Random, 95% CI)	3.80 [-5.75, 13.35]
11.13.2 6 months' follow-up	1	103	Mean Difference (IV, Random, 95% CI)	-0.60 [-10.19, 8.99]
11.14 WHO BREF physical subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.14.1 Up to 12 weeks' follow-up	1	37	Mean Difference (IV, Random, 95% CI)	2.90 [1.44, 4.36]
11.15 MDASI-T Symptom Severity change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.15.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.47 [-1.76, -1.18]
11.16 MDASI-T Symptom Severity follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.16.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.61 [-2.50, -0.72]
11.17 QLSI physical health subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.17.1 Up to 12 months' follow-up	1	64	Mean Difference (IV, Random, 95% CI)	-0.31 [-4.42, 3.80]

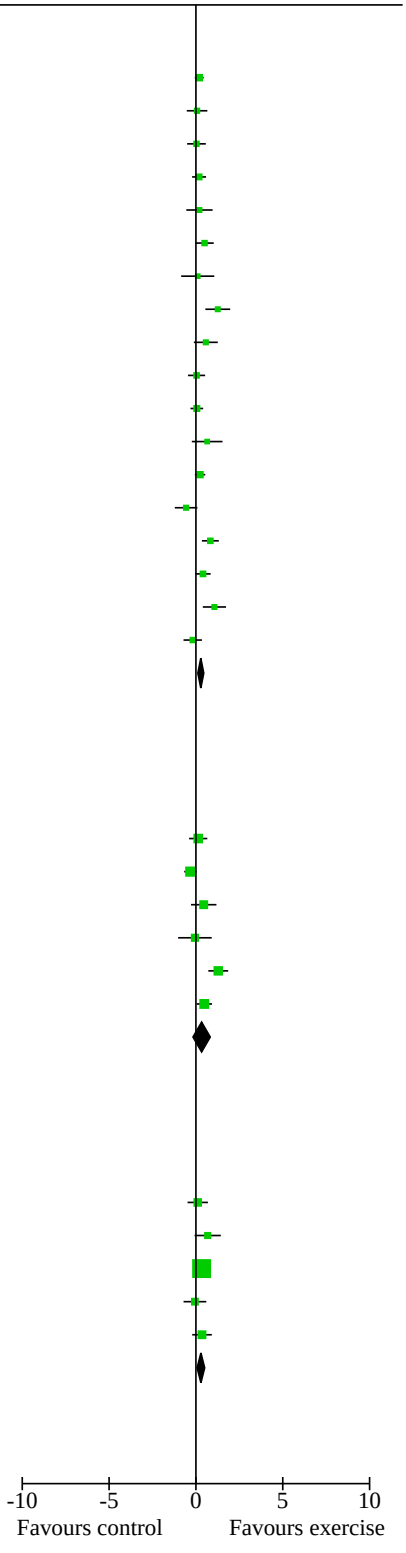
Analysis 11.1. Comparison 11: Physical functioning, Outcome 1: Overall physical function change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
11.1.1 Up to 12 weeks' follow-up								
Arbane 2009	-16.19	53.52	21	-14.78	53.33	23	13.1%	-0.03 [-0.62 , 0.57]
Campbell 2005	4.33	4.03	10	-1.2	7.61	9	10.4%	0.88 [-0.07 , 1.84]
Cheville 2010	2.8	25.7	49	-1	23.56	54	14.4%	0.15 [-0.23 , 0.54]
Monga 2007	2.3	1.8	11	-1.3	2.1	10	9.7%	1.77 [0.73 , 2.82]
Oh 2010	3.06	4	54	0.98	3.4	54	14.5%	0.56 [0.17 , 0.94]
Rogers 2009	2.3	5.1	20	2.6	6.4	18	12.8%	-0.05 [-0.69 , 0.59]
Targ 2002	0.88	41.5	79	1.28	7.1	88	14.9%	-0.01 [-0.32 , 0.29]
Yang 2011	0.68	0.64	19	-0.79	0.03	21	10.2%	3.27 [2.29 , 4.24]
Subtotal (95% CI)			**263**			**277**	**100.0%**	**0.69 [0.16 , 1.22]**
Heterogeneity: Tau² = 0.47; Chi² = 53.20, df = 7 (P < 0.00001); I² = 87%								
Test for overall effect: Z = 2.55 (P = 0.01)								
11.1.2 More than 12 weeks' to less than 6 months' follow-up								
Griffith 2009	-19.49	51.6	68	-10.78	45.9	58	100.0%	-0.18 [-0.53 , 0.17]
Subtotal (95% CI)			**68**			**58**	**100.0%**	**-0.18 [-0.53 , 0.17]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.99 (P = 0.32)								
11.1.3 6 months' follow-up								
Cadmus 2009	2.3	5.6	22	1.2	4.9	23	17.1%	0.21 [-0.38 , 0.79]
Cheville 2010	0.3	23.4	49	0.9	26.26	54	30.2%	-0.02 [-0.41 , 0.36]
Rogers 2009	1.8	5.4	19	0.9	4.6	17	14.4%	0.17 [-0.48 , 0.83]
Segal 2001	2.2	14.1	40	-4.1	15.6	20	19.2%	0.43 [-0.12 , 0.97]
Segal 2001	5.7	11.3	40	-4.1	16	21	19.1%	0.74 [0.19 , 1.28]
Subtotal (95% CI)			**170**			**135**	**100.0%**	**0.28 [-0.00 , 0.55]**
Heterogeneity: Tau² = 0.03; Chi² = 5.49, df = 4 (P = 0.24); I² = 27%								
Test for overall effect: Z = 1.95 (P = 0.05)								
Test for subgroup differences: Chi² = 7.96, df = 2 (P = 0.02), I² = 74.9%								



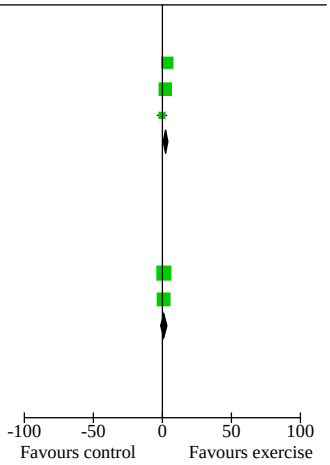
Analysis 11.2. Comparison 11: Physical functioning, Outcome 2: Overall physical function follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
11.2.1 Up to 12 weeks' follow-up								
Adamsen 2009	89	12.4	118	86.4	14.5	117	9.7%	0.19 [-0.06 , 0.45]
Arbane 2009	96.19	46.74	21	93.04	46.95	23	4.9%	0.07 [-0.53 , 0.66]
Chandwani 2010	44.9	14.8	26	44.4	16.1	27	5.5%	0.03 [-0.51 , 0.57]
Courneya 2003a	20.3	5.14	51	19.36	5.11	45	7.3%	0.18 [-0.22 , 0.58]
Danhauer 2009	22.5	7.6	13	21.1	5.7	14	3.6%	0.20 [-0.55 , 0.96]
Galvao 2010	49.2	7.9	29	44.8	9.5	28	5.6%	0.50 [-0.03 , 1.03]
Hacker 2011	85.8	13.1	8	83.7	23.1	9	2.5%	0.10 [-0.85 , 1.06]
Hwang 2008	15	2.24	17	12.1	2.27	20	3.9%	1.26 [0.54 , 1.97]
Jarden 2009	75.3	17.4	17	63.5	22.6	17	4.1%	0.57 [-0.12 , 1.26]
Lanctot 2010	-8.32	7.47	35	-8.63	9.02	29	6.1%	0.04 [-0.45 , 0.53]
Moadel 2007	19.6	6.65	84	19.26	6.36	44	7.9%	0.05 [-0.31 , 0.42]
Monga 2007	26.1	3	11	24.2	2.6	10	2.8%	0.65 [-0.24 , 1.53]
Mutrie 2007	23.1	4.9	82	21.9	5.1	92	9.0%	0.24 [-0.06 , 0.54]
Rogers 2009	23.3	4.5	20	25.4	2.3	18	4.4%	-0.57 [-1.22 , 0.08]
Tang 2010	47.26	9.78	36	37.43	13.39	35	6.1%	0.83 [0.35 , 1.32]
Wiskemann 2011	63.3	22.5	40	53.5	25.1	41	6.8%	0.41 [-0.03 , 0.85]
Yang 2011	-1.39	0.98	19	-3	1.82	21	4.2%	1.06 [0.40 , 1.73]
de Oliveira 2010	23.2	3.3	28	23.8	3.1	27	5.6%	-0.18 [-0.71 , 0.35]
Subtotal (95% CI)			**655**			**617**	**100.0%**	**0.28 [0.11 , 0.45]**
Heterogeneity: Tau² = 0.06; Chi² = 33.70, df = 17 (P = 0.009); I² = 50%								
Test for overall effect: Z = 3.26 (P = 0.001)								
11.2.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	46.9	15.1	27	44.8	16.2	29	17.6%	0.13 [-0.39 , 0.66]
Griffith 2009	39.7	42.8	68	53.45	41.2	58	19.8%	-0.32 [-0.68 , 0.03]
Jarden 2009	77.1	18.1	17	67.7	23.12	13	14.9%	0.45 [-0.28 , 1.18]
Moros 2010	86.6	14.7	10	87.6	19	7	12.0%	-0.06 [-1.02 , 0.91]
Tang 2010	50.28	10.6	24	35.93	11.3	35	17.0%	1.28 [0.71 , 1.86]
Wiskemann 2011	73.7	19.6	40	63.5	22.2	40	18.7%	0.48 [0.04 , 0.93]
Subtotal (95% CI)			**186**			**182**	**100.0%**	**0.33 [-0.17 , 0.82]**
Heterogeneity: Tau² = 0.29; Chi² = 24.60, df = 5 (P = 0.0002); I² = 80%								
Test for overall effect: Z = 1.29 (P = 0.20)								
11.2.3 6 months' follow-up								
Cadmus 2009	23.9	4.2	22	23.5	3.3	23	13.6%	0.10 [-0.48 , 0.69]
Jarden 2009	87.1	13.2	16	74.4	23	13	8.2%	0.68 [-0.08 , 1.43]
Mutrie 2007	23.9	4.3	82	22.3	5.3	95	52.7%	0.33 [0.03 , 0.63]
Rogers 2009	23.2	4.5	19	23.5	5.7	17	10.9%	-0.06 [-0.71 , 0.60]
de Oliveira 2010	23.6	3.9	24	22	5	25	14.6%	0.35 [-0.21 , 0.91]
Subtotal (95% CI)			**163**			**173**	**100.0%**	**0.29 [0.07 , 0.50]**
Heterogeneity: Tau² = 0.00; Chi² = 2.59, df = 4 (P = 0.63); I² = 0%								
Test for overall effect: Z = 2.61 (P = 0.009)								
Test for subgroup differences: Chi² = 0.03, df = 2 (P = 0.99), I² = 0%								



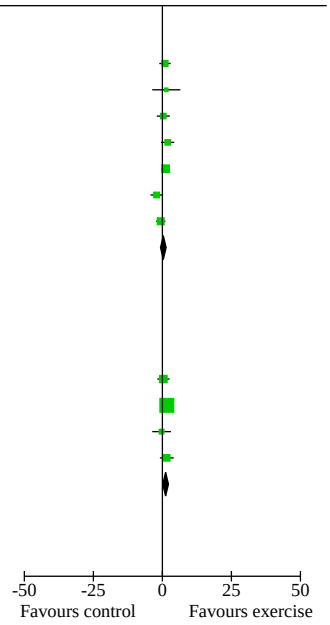
Analysis 11.3. Comparison 11: Physical functioning, Outcome 3: FACT-P subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.3.1 Up to 12 weeks' follow-up								
Monga 2007	2.3	1.8	11	-1.3	2.1	10	39.5%	3.60 [1.92 , 5.28]
Oh 2010	3.06	4	54	0.98	3.4	54	45.0%	2.08 [0.68 , 3.48]
Rogers 2009	2.3	5.1	20	2.6	6.4	18	15.5%	-0.30 [-4.01 , 3.41]
Subtotal (95% CI)			**85**			**82**	**100.0%**	**2.31 [0.65 , 3.98]**
Heterogeneity: Tau² = 1.09; Chi² = 4.18, df = 2 (P = 0.12); I² = 52%								
Test for overall effect: Z = 2.72 (P = 0.006)								
11.3.2 6 months' follow-up								
Cadmus 2009	2.3	5.6	22	1.2	4.9	23	53.0%	1.10 [-1.98 , 4.18]
Rogers 2009	1.8	5.4	19	0.9	4.6	17	47.0%	0.90 [-2.37 , 4.17]
Subtotal (95% CI)			**41**			**40**	**100.0%**	**1.01 [-1.24 , 3.25]**
Heterogeneity: Tau² = 0.00; Chi² = 0.01, df = 1 (P = 0.93); I² = 0%								
Test for overall effect: Z = 0.88 (P = 0.38)								
Test for subgroup differences: Chi² = 0.84, df = 1 (P = 0.36), I² = 0%								



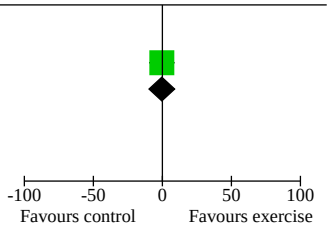
Analysis 11.4. Comparison 11: Physical functioning, Outcome 4: FACT-P subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.4.1 Up to 12 weeks' follow-up								
Courneya 2003a	20.3	5.14	51	19.36	5.11	45	15.5%	0.94 [-1.11 , 2.99]
Danhauer 2009	22.5	7.6	13	21.1	5.7	14	3.6%	1.40 [-3.70 , 6.50]
Moadel 2007	19.6	6.65	84	19.26	6.36	44	12.9%	0.34 [-2.02 , 2.70]
Monga 2007	26.1	3	11	24.2	2.6	10	12.6%	1.90 [-0.50 , 4.30]
Mutrie 2007	23.1	4.9	82	21.9	5.1	92	22.3%	1.20 [-0.29 , 2.69]
Rogers 2009	23.3	4.5	20	25.4	2.3	18	13.8%	-2.10 [-4.34 , 0.14]
de Oliveira 2010	23.2	3.3	28	23.8	3.1	27	19.5%	-0.60 [-2.29 , 1.09]
Subtotal (95% CI)			**289**			**250**	**100.0%**	**0.34 [-0.67 , 1.35]**
Heterogeneity: Tau² = 0.62; Chi² = 9.15, df = 6 (P = 0.17); I² = 34%								
Test for overall effect: Z = 0.66 (P = 0.51)								
11.4.2 6 months' follow-up								
Cadmus 2009	23.9	4.2	22	23.5	3.3	23	21.5%	0.40 [-1.81 , 2.61]
Mutrie 2007	23.9	4.3	82	22.3	5.3	95	52.6%	1.60 [0.19 , 3.01]
Rogers 2009	23.2	4.5	19	23.5	5.7	17	9.2%	-0.30 [-3.68 , 3.08]
de Oliveira 2010	23.6	3.9	24	22	5	25	16.8%	1.60 [-0.91 , 4.11]
Subtotal (95% CI)			**147**			**160**	**100.0%**	**1.17 [0.14 , 2.19]**
Heterogeneity: Tau² = 0.00; Chi² = 1.66, df = 3 (P = 0.65); I² = 0%								
Test for overall effect: Z = 2.23 (P = 0.03)								
Test for subgroup differences: Chi² = 1.27, df = 1 (P = 0.26), I² = 21.6%								



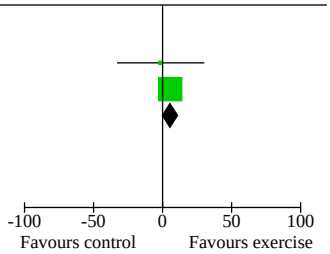
Analysis 11.5. Comparison 11: Physical functioning, Outcome 5: FACIT-F change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.5.1 Up to 12 weeks' follow-up								
Targ 2002	0.88	41.5	79	1.28	7.1	88	100.0%	-0.40 [-9.67 , 8.87]
Subtotal (95% CI)			**79**			**88**	**100.0%**	**-0.40 [-9.67 , 8.87]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.08 (P = 0.93)								
Test for subgroup differences: Not applicable								



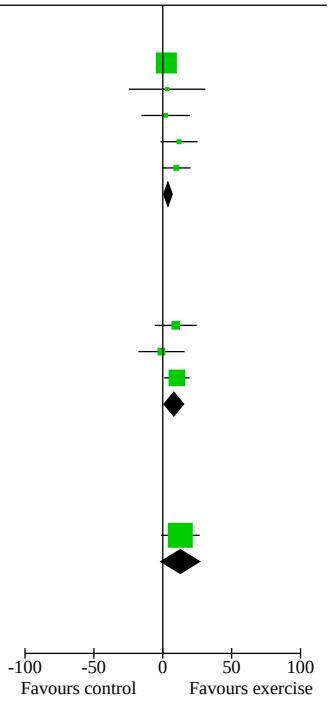
Analysis 11.6. Comparison 11: Physical functioning, Outcome 6: QLQ-C30 Physical subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.6.1 Up to 12 weeks' follow-up								
Arbane 2009	-16.19	53.52	21	-14.78	53.33	23	3.0%	-1.41 [-33.02 , 30.20]
Campbell 2005	4.33	4.03	10	-1.2	7.61	9	97.0%	5.53 [-0.03 , 11.09]
Subtotal (95% CI)			**31**			**32**	**100.0%**	**5.32 [-0.16 , 10.80]**
Heterogeneity: Tau² = 0.00; Chi² = 0.18, df = 1 (P = 0.67); I² = 0%								
Test for overall effect: Z = 1.90 (P = 0.06)								
Test for subgroup differences: Not applicable								



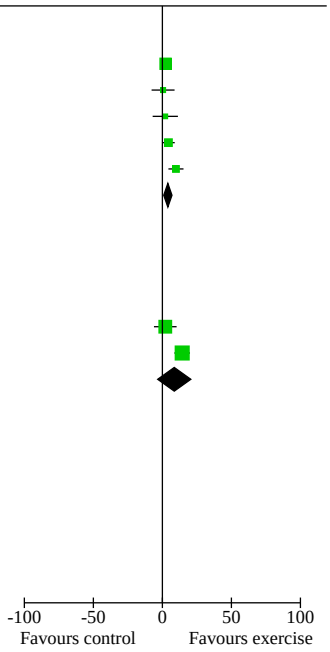
Analysis 11.7. Comparison 11: Physical functioning, Outcome 7: QLQ-C30 Physical subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.7.1 Up to 12 weeks' follow-up								
Adamsen 2009	89	12.4	118	86.4	14.5	117	81.3%	2.60 [-0.85 , 6.05]
Arbane 2009	96.19	46.74	21	93.04	46.95	23	1.3%	3.15 [-24.56 , 30.86]
Hacker 2011	85.8	13.1	8	83.7	23.1	9	3.1%	2.10 [-15.51 , 19.71]
Jarden 2009	75.3	17.4	17	63.5	22.6	17	5.3%	11.80 [-1.76 , 25.36]
Wiskemann 2011	63.3	22.5	40	53.5	25.1	41	9.0%	9.80 [-0.58 , 20.18]
Subtotal (95% CI)			**204**			**207**	**100.0%**	**3.72 [0.61 , 6.84]**
Heterogeneity: Tau² = 0.00; Chi² = 3.12, df = 4 (P = 0.54); I² = 0%								
Test for overall effect: Z = 2.35 (P = 0.02)								
11.7.2 More than 12 weeks' to less than 6 months' follow-up								
Jarden 2009	77.1	18.1	17	67.7	23.12	13	21.8%	9.40 [-5.83 , 24.63]
Moros 2010	86.6	14.7	10	87.6	19	7	18.0%	-1.00 [-17.77 , 15.77]
Wiskemann 2011	73.7	19.6	40	63.5	22.2	40	60.1%	10.20 [1.02 , 19.38]
Subtotal (95% CI)			**67**			**60**	**100.0%**	**8.01 [0.89 , 15.12]**
Heterogeneity: Tau² = 0.00; Chi² = 1.36, df = 2 (P = 0.51); I² = 0%								
Test for overall effect: Z = 2.21 (P = 0.03)								
11.7.3 6 months' follow-up								
Jarden 2009	87.1	13.2	16	74.4	23	13	100.0%	12.70 [-1.38 , 26.78]
Subtotal (95% CI)			**16**			**13**	**100.0%**	**12.70 [-1.38 , 26.78]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.77 (P = 0.08)								
Test for subgroup differences: Chi² = 2.45, df = 2 (P = 0.29), I² = 18.3%								



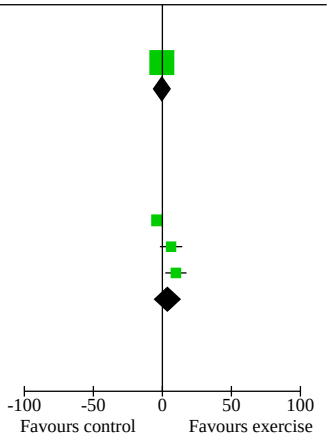
Analysis 11.8. Comparison 11: Physical functioning, Outcome 8: MOS SF-36 Physical component score follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.8.1 Up to 12 weeks' follow-up								
Adamsen 2009	47.4	6.7	118	45.1	8.5	117	40.1%	2.30 [0.34 , 4.26]
Chandwani 2010	44.9	14.8	26	44.4	16.1	27	10.1%	0.50 [-7.82 , 8.82]
Danhauer 2009	44.8	12.4	13	42.7	11.8	14	8.7%	2.10 [-7.05 , 11.25]
Galvao 2010	49.2	7.9	29	44.8	9.5	28	22.8%	4.40 [-0.14 , 8.94]
Tang 2010	47.26	9.78	36	37.43	13.39	35	18.4%	9.83 [4.36 , 15.30]
Subtotal (95% CI)			**222**			**221**	**100.0%**	**3.96 [0.99 , 6.94]**
Heterogeneity: Tau² = 4.76; Chi² = 7.19, df = 4 (P = 0.13); I² = 44%								
Test for overall effect: Z = 2.61 (P = 0.009)								
11.8.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	46.9	15.1	27	44.8	16.2	29	46.9%	2.10 [-6.10 , 10.30]
Tang 2010	50.28	10.6	24	35.93	11.3	35	53.1%	14.35 [8.69 , 20.01]
Subtotal (95% CI)			**51**			**64**	**100.0%**	**8.60 [-3.38 , 20.58]**
Heterogeneity: Tau² = 62.12; Chi² = 5.81, df = 1 (P = 0.02); I² = 83%								
Test for overall effect: Z = 1.41 (P = 0.16)								
11.8.3 6 months' follow-up								
Subtotal (95% CI)			**0**			**0**		**Not estimable**
Heterogeneity: Not applicable								
Test for overall effect: Not applicable								
Test for subgroup differences: Chi² = 0.54, df = 1 (P = 0.46), I² = 0%								



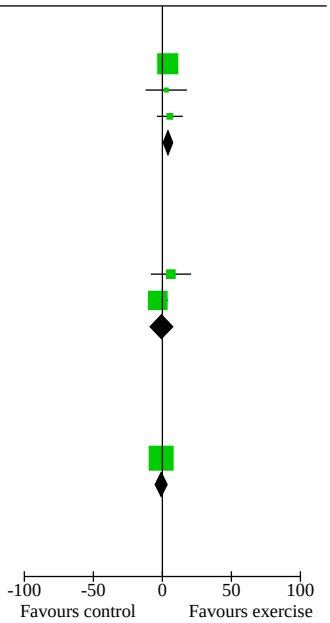
Analysis 11.9. Comparison 11: Physical functioning, Outcome 9: MOS SF-36 Physical Functioning subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.9.1 More than 12 weeks' to less than 6 months' follow-up								
Griffith 2009	-7.11	19.33	68	-6.71	15.19	58	100.0%	-0.40 [-6.43 , 5.63]
Subtotal (95% CI)			**68**			**58**	**100.0%**	**-0.40 [-6.43 , 5.63]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.13 (P = 0.90)								
11.9.2 6 months' follow-up								
Cadmus 2009	-1.5	7.4	22	2.3	5.7	23	37.7%	-3.80 [-7.67 , 0.07]
Segal 2001	2.2	14.1	40	-4.1	15.6	20	30.8%	6.30 [-1.81 , 14.41]
Segal 2001	5.7	11.3	40	-4.1	16	21	31.5%	9.80 [2.11 , 17.49]
Subtotal (95% CI)			**102**			**64**	**100.0%**	**3.60 [-5.64 , 12.83]**
Heterogeneity: Tau² = 54.99; Chi² = 12.26, df = 2 (P = 0.002); I² = 84%								
Test for overall effect: Z = 0.76 (P = 0.45)								
Test for subgroup differences: Chi² = 0.50, df = 1 (P = 0.48), I² = 0%								



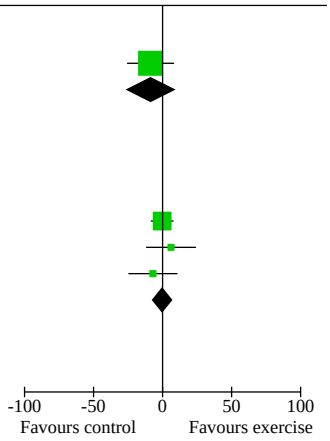
Analysis 11.10. Comparison 11: Physical functioning, Outcome 10: MOS SF-36 Physical Functioning subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.10.1 Up to 12 weeks' follow-up								
Adamsen 2009	88.2	13.2	118	84.3	16.2	117	81.5%	3.90 [0.12 , 7.68]
Chandwani 2010	81.7	26.5	26	78.9	29.1	27	5.2%	2.80 [-12.17 , 17.77]
Galvao 2010	82.9	17.3	29	77.5	18.7	28	13.3%	5.40 [-3.96 , 14.76]
Subtotal (95% CI)			**173**			**172**	**100.0%**	**4.04 [0.63 , 7.46]**
Heterogeneity: Tau² = 0.00; Chi² = 0.11, df = 2 (P = 0.95); I² = 0%								
Test for overall effect: Z = 2.32 (P = 0.02)								
11.10.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	86.2	26.5	27	80	29.1	29	26.7%	6.20 [-8.36 , 20.76]
Griffith 2009	77.2	21.87	68	80.4	20.1	58	73.3%	-3.20 [-10.53 , 4.13]
Subtotal (95% CI)			**95**			**87**	**100.0%**	**-0.69 [-8.84 , 7.46]**
Heterogeneity: Tau² = 9.58; Chi² = 1.28, df = 1 (P = 0.26); I² = 22%								
Test for overall effect: Z = 0.17 (P = 0.87)								
11.10.3 6 months' follow-up								
Cadmus 2009	49.5	8.8	22	50.4	5.4	23	100.0%	-0.90 [-5.19 , 3.39]
Subtotal (95% CI)			**22**			**23**	**100.0%**	**-0.90 [-5.19 , 3.39]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.41 (P = 0.68)								
Test for subgroup differences: Chi² = 3.54, df = 2 (P = 0.17), I² = 43.5%								



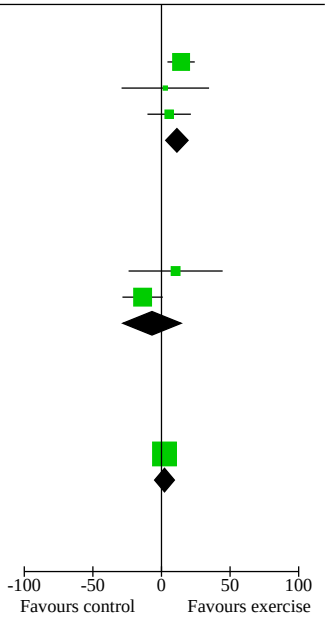
Analysis 11.11. Comparison 11: Physical functioning, Outcome 11: MOS SF-36 role physical change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.11.1 More than 12 weeks' to less than 6 months' follow-up								
Griffith 2009	-19.49	51.6	68	-10.78	45.9	58	100.0%	-8.71 [-25.74 , 8.32]
Subtotal (95% CI)			**68**			**58**	**100.0%**	**-8.71 [-25.74 , 8.32]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.00 (P = 0.32)								
11.11.2 6 months' follow-up								
Cadmus 2009	5.4	14	22	5.7	14.1	23	70.4%	-0.30 [-8.51 , 7.91]
Segal 2001	25	45.7	40	18.9	26.1	21	14.6%	6.10 [-11.93 , 24.13]
Segal 2001	11.9	44.7	40	18.9	25.4	20	15.0%	-7.00 [-24.77 , 10.77]
Subtotal (95% CI)			**102**			**64**	**100.0%**	**-0.37 [-7.26 , 6.52]**
Heterogeneity: Tau² = 0.00; Chi² = 1.03, df = 2 (P = 0.60); I² = 0%								
Test for overall effect: Z = 0.11 (P = 0.92)								
Test for subgroup differences: Chi² = 0.79, df = 1 (P = 0.37), I² = 0%								



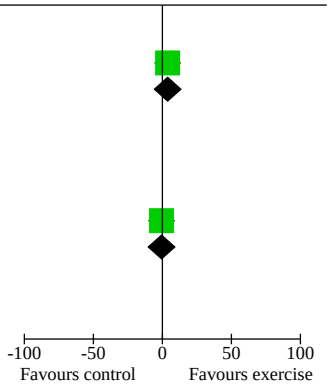
Analysis 11.12. Comparison 11: Physical functioning, Outcome 12: MOS SF-36 role physical follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.12.1 Up to 12 weeks' follow-up								
Adamsen 2009	46.1	40.2	118	31.8	37.6	117	67.0%	14.30 [4.35 , 24.25]
Chandwani 2010	50.8	56.6	26	48	61.8	27	6.5%	2.80 [-29.09 , 34.69]
Galvao 2010	82.9	24.6	29	77.3	35.2	28	26.5%	5.60 [-10.22 , 21.42]
Subtotal (95% CI)			**173**			**172**	**100.0%**	**11.24 [3.10 , 19.39]**
Heterogeneity: Tau² = 0.00; Chi² = 1.12, df = 2 (P = 0.57); I² = 0%								
Test for overall effect: Z = 2.71 (P = 0.007)								
11.12.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	76.8	60.8	27	66.5	70	29	28.4%	10.30 [-23.98 , 44.58]
Griffith 2009	39.7	42.8	68	53.45	41.2	58	71.6%	-13.75 [-28.44 , 0.94]
Subtotal (95% CI)			**95**			**87**	**100.0%**	**-6.92 [-28.18 , 14.34]**
Heterogeneity: Tau² = 108.16; Chi² = 1.60, df = 1 (P = 0.21); I² = 37%								
Test for overall effect: Z = 0.64 (P = 0.52)								
11.12.3 6 months' follow-up								
Cadmus 2009	44.9	11.7	22	42.7	13	23	100.0%	2.20 [-5.02 , 9.42]
Subtotal (95% CI)			**22**			**23**	**100.0%**	**2.20 [-5.02 , 9.42]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.60 (P = 0.55)								
Test for subgroup differences: Chi² = 4.02, df = 2 (P = 0.13), I² = 50.3%								



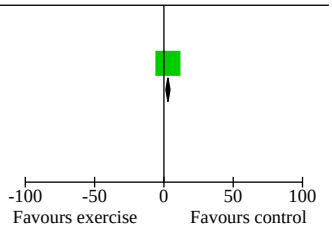
Analysis 11.13. Comparison 11: Physical functioning, Outcome 13: LASA change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.13.1 Up to 12 weeks' follow-up								
Cheville 2010	2.8	25.7	49	-1	23.56	54	100.0%	3.80 [-5.75 , 13.35]
Subtotal (95% CI)			**49**			**54**	**100.0%**	**3.80 [-5.75 , 13.35]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.78 (P = 0.44)								
11.13.2 6 months' follow-up								
Cheville 2010	0.3	23.4	49	0.9	26.26	54	100.0%	-0.60 [-10.19 , 8.99]
Subtotal (95% CI)			**49**			**54**	**100.0%**	**-0.60 [-10.19 , 8.99]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.12 (P = 0.90)								
Test for subgroup differences: Chi² = 0.41, df = 1 (P = 0.52), I² = 0%								



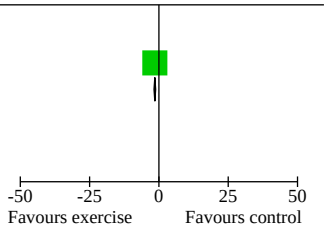
Analysis 11.14. Comparison 11: Physical functioning, Outcome 14: WHO BREF physical subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.14.1 Up to 12 weeks' follow-up								
Hwang 2008	15	2.24	17	12.1	2.27	20	100.0%	2.90 [1.44 , 4.36]
Subtotal (95% CI)			**17**			**20**	**100.0%**	**2.90 [1.44 , 4.36]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 3.90 (P < 0.0001)								
Test for subgroup differences: Not applicable								



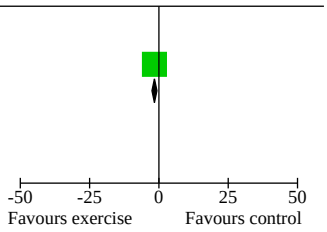
Analysis 11.15. Comparison 11: Physical functioning, Outcome 15: MDASI-T Symptom Severity change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.15.1 Up to 12 weeks' follow-up								
Yang 2011	-0.68	0.64	19	0.79	0.03	21	100.0%	-1.47 [-1.76 , -1.18]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-1.47 [-1.76 , -1.18]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 10.00 (P < 0.00001)								
Test for subgroup differences: Not applicable								



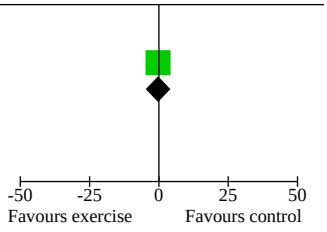
Analysis 11.16. Comparison 11: Physical functioning, Outcome 16: MDASI-T Symptom Severity follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.16.1 Up to 12 weeks' follow-up								
Yang 2011	1.39	0.98	19	3	1.82	21	100.0%	-1.61 [-2.50 , -0.72]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-1.61 [-2.50 , -0.72]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 3.53 (P = 0.0004)								
Test for subgroup differences: Not applicable								



Analysis 11.17. Comparison 11: Physical functioning, Outcome 17: QLSI physical health subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
11.17.1 Up to 12 months' follow-up								
Lanctot 2010	8.32	7.47	35	8.63	9.02	29	100.0%	-0.31 [-4.42 , 3.80]
Subtotal (95% CI)			**35**			**29**	**100.0%**	**-0.31 [-4.42 , 3.80]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.15 (P = 0.88)								
Test for subgroup differences: Not applicable								



Comparison 12. Role function

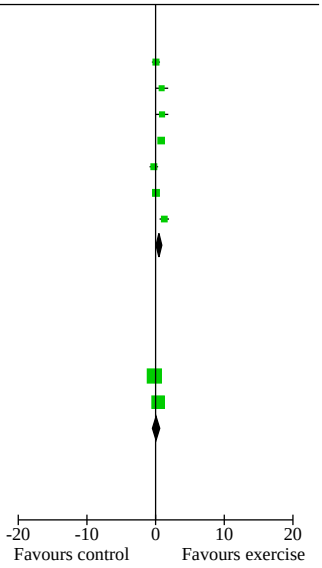
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
12.1 Overall role function change	8		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
12.1.1 Up to 12 weeks' follow-up	7	439	Std. Mean Difference (IV, Random, 95% CI)	0.48 [0.07, 0.90]
12.1.2 6 months' follow-up	2	81	Std. Mean Difference (IV, Random, 95% CI)	0.07 [-0.46, 0.60]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
12.2 Overall role function follow-up values	17		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
12.2.1 Up to 12 weeks' follow-up	15	1100	Std. Mean Difference (IV, Random, 95% CI)	0.17 [0.00, 0.34]
12.2.2 More than 12 weeks' to less than 6 months' follow-up	3	127	Std. Mean Difference (IV, Random, 95% CI)	0.32 [-0.37, 1.00]
12.2.3 6 months' follow-up	5	336	Std. Mean Difference (IV, Random, 95% CI)	0.32 [0.03, 0.61]
12.3 FACT role function subscale change	5		Mean Difference (IV, Random, 95% CI)	Subtotals only
12.3.1 Up to 12 weeks' follow-up	4	188	Mean Difference (IV, Random, 95% CI)	2.25 [-0.16, 4.66]
12.3.2 6 months' follow-up	2	81	Mean Difference (IV, Random, 95% CI)	0.43 [-1.76, 2.62]
12.4 FACT role function subscale follow-up values	9		Mean Difference (IV, Random, 95% CI)	Subtotals only
12.4.1 Up to 12 weeks' follow-up	8	573	Mean Difference (IV, Random, 95% CI)	1.41 [-0.03, 2.86]
12.4.2 More than 12 weeks' to less than 6 months' follow-up	1	30	Mean Difference (IV, Random, 95% CI)	6.00 [1.96, 10.04]
12.4.3 6 months' follow-up	5	336	Mean Difference (IV, Random, 95% CI)	1.53 [0.15, 2.91]
12.5 QLQ-C30 change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
12.5.1 Up to 12 weeks' follow-up	1	44	Mean Difference (IV, Random, 95% CI)	2.03 [-20.58, 24.64]
12.6 QLQ-C30 function subscale follow-up values	5		Mean Difference (IV, Random, 95% CI)	Subtotals only
12.6.1 Up to 12 weeks' follow-up	4	367	Mean Difference (IV, Random, 95% CI)	4.90 [-0.88, 10.67]
12.6.2 More than 12 weeks' to less than 6 months' follow-up	3	127	Mean Difference (IV, Random, 95% CI)	12.82 [-12.71, 38.36]
12.6.3 6 months' follow-up	1	29	Mean Difference (IV, Random, 95% CI)	26.70 [4.32, 49.08]
12.7 FACIT function subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
12.7.1 Up to 12 weeks' follow-up	1	167	Mean Difference (IV, Random, 95% CI)	0.34 [-1.44, 2.12]
12.8 WHO BREF environmental subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
12.8.1 Up to 12 weeks' follow-up	1	37	Mean Difference (IV, Random, 95% CI)	-0.18 [-2.07, 1.71]
12.9 Ferrans and Power family subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
12.9.1 Up to 12 weeks' follow-up	1	17	Mean Difference (IV, Random, 95% CI)	-0.40 [-2.45, 1.65]
12.10 Symptom Checklist 90 R interpersonal sensitivity subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
12.10.1 Up to 12 weeks' follow-up	1	59	Mean Difference (IV, Random, 95% CI)	-0.20 [-1.07, 0.67]
12.11 MDASI-T relations with other people subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
12.11.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-2.01 [-3.02, -1.00]
12.12 MDASI-T relations with other people subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
12.12.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.52 [-2.63, -0.41]
12.13 MDASI-T work subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
12.13.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-2.28 [-2.87, -1.69]
12.14 MDASI-T work subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
12.14.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-1.54 [-2.58, -0.50]
12.15 QLSI marital life subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
12.15.1 Up to 12 weeks' follow-up	1	58	Mean Difference (IV, Random, 95% CI)	3.64 [-1.41, 8.69]

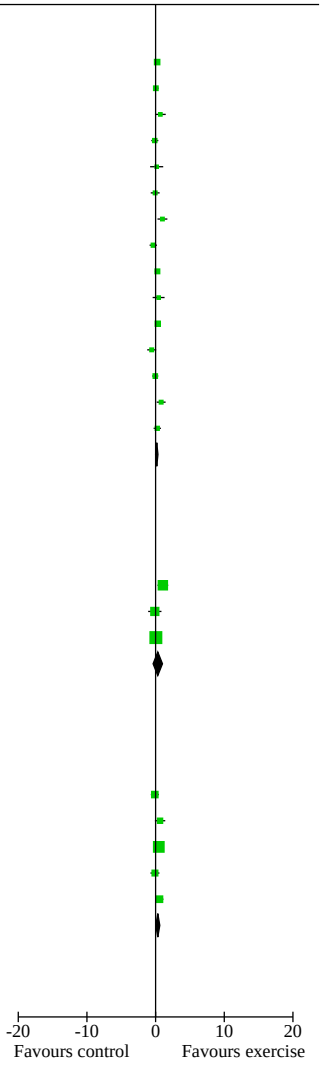
Analysis 12.1. Comparison 12: Role function, Outcome 1: Overall role function change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
12.1.1 Up to 12 weeks' follow-up								
Arbane 2009	-1.59	35.71	21	-3.62	40.81	23	14.8%	0.05 [-0.54 , 0.64]
Campbell 2005	3.67	5.24	10	-1.5	6	9	10.1%	0.88 [-0.07 , 1.83]
Monga 2007	1.8	4.2	11	-2.3	4.2	10	10.5%	0.94 [0.02 , 1.85]
Oh 2010	2.46	3.5	54	-0.13	2.8	54	17.8%	0.81 [0.42 , 1.20]
Rogers 2009	0.4	3.3	20	1.4	4.3	20	14.4%	-0.26 [-0.88 , 0.37]
Targ 2002	2.17	5.1	79	1.83	6.6	88	19.0%	0.06 [-0.25 , 0.36]
Yang 2011	1.63	2.25	19	-0.38	0.18	21	13.5%	1.27 [0.58 , 1.95]
Subtotal (95% CI)			**214**			**225**	**100.0%**	**0.48 [0.07 , 0.90]**
Heterogeneity: Tau² = 0.22; Chi² = 23.07, df = 6 (P = 0.0008); I² = 74%								
Test for overall effect: Z = 2.26 (P = 0.02)								
12.1.2 6 months' follow-up								
Cadmus 2009	0.6	6.9	22	1.6	3.5	23	54.1%	-0.18 [-0.77 , 0.40]
Rogers 2009	1.1	2.99	19	-0.2	4	17	45.9%	0.36 [-0.30 , 1.02]
Subtotal (95% CI)			**41**			**40**	**100.0%**	**0.07 [-0.46 , 0.60]**
Heterogeneity: Tau² = 0.05; Chi² = 1.46, df = 1 (P = 0.23); I² = 31%								
Test for overall effect: Z = 0.25 (P = 0.80)								
Test for subgroup differences: Chi² = 1.45, df = 1 (P = 0.23), I² = 30.9%								



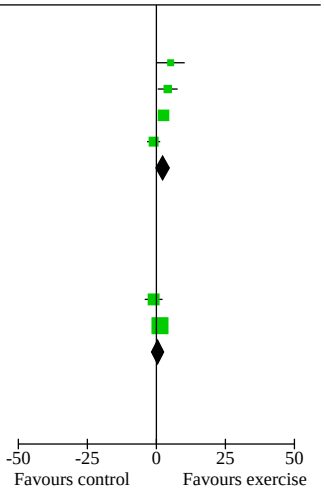
Analysis 12.2. Comparison 12: Role function, Outcome 2: Overall role function follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
12.2.1 Up to 12 weeks' follow-up								
Adamsen 2009	74.8	26.3	118	68.9	26.5	117	12.8%	0.22 [-0.03 , 0.48]
Courneya 2003a	16.58	5.3	51	16.39	5.45	45	9.0%	0.04 [-0.37 , 0.44]
Danhauer 2009	21.9	4.7	13	17.4	7.5	14	3.7%	0.69 [-0.09 , 1.47]
Dimeo 1999	1.3	1.5	27	1.5	1.9	32	6.8%	-0.11 [-0.63 , 0.40]
Hacker 2011	75	17.8	8	70.4	35.1	9	2.7%	0.15 [-0.80 , 1.11]
Hwang 2008	11.82	3.38	17	12	2.29	20	5.0%	-0.06 [-0.71 , 0.58]
Jarden 2009	16.8	6.5	17	11.3	4	17	4.3%	1.00 [0.28 , 1.71]
Lanctot 2010	-8.62	11.95	36	-4.98	7.67	22	6.5%	-0.34 [-0.87 , 0.19]
Moadel 2007	17.45	6.86	84	15.68	6.56	44	9.8%	0.26 [-0.11 , 0.63]
Monga 2007	24.8	6	11	22.4	4.3	10	3.1%	0.44 [-0.43 , 1.31]
Mutrie 2007	14.6	4.6	82	13.1	5	92	11.6%	0.31 [0.01 , 0.61]
Rogers 2009	21.4	4.8	20	23.8	3.2	18	4.9%	-0.57 [-1.22 , 0.08]
Wiskemann 2011	31.7	29.4	40	33.3	34.8	41	8.2%	-0.05 [-0.48 , 0.39]
Yang 2011	-0.53	1.12	19	-2.05	2.31	21	5.0%	0.81 [0.16 , 1.46]
de Oliveira 2010	19.2	4.5	28	18	5.2	27	6.5%	0.24 [-0.29 , 0.77]
Subtotal (95% CI)			**571**			**529**	**100.0%**	**0.17 [0.00 , 0.34]**
Heterogeneity: Tau² = 0.04; Chi² = 23.72, df = 14 (P = 0.05); I² = 41%								
Test for overall effect: Z = 1.97 (P = 0.05)								
12.2.2 More than 12 weeks' to less than 6 months' follow-up								
Jarden 2009	18.8	5.3	17	12.8	5.8	13	31.3%	1.06 [0.28 , 1.83]
Moros 2010	78.3	19.3	10	80.9	24	7	25.6%	-0.12 [-1.08 , 0.85]
Wiskemann 2011	45	28.5	40	43.8	33	40	43.2%	0.04 [-0.40 , 0.48]
Subtotal (95% CI)			**67**			**60**	**100.0%**	**0.32 [-0.37 , 1.00]**
Heterogeneity: Tau² = 0.23; Chi² = 5.58, df = 2 (P = 0.06); I² = 64%								
Test for overall effect: Z = 0.91 (P = 0.36)								
12.2.3 6 months' follow-up								
Cadmus 2009	21.4	5.4	22	21.9	3.4	23	17.6%	-0.11 [-0.69 , 0.48]
Jarden 2009	19.8	5.4	16	16	6	13	11.9%	0.65 [-0.10 , 1.40]
Mutrie 2007	15.8	4.2	82	13.6	5.1	95	37.6%	0.47 [0.17 , 0.77]
Rogers 2009	21.9	4.7	19	22.4	5.4	17	14.8%	-0.10 [-0.75 , 0.56]
de Oliveira 2010	19.6	3.5	24	17.2	4.8	25	18.1%	0.56 [-0.01 , 1.13]
Subtotal (95% CI)			**163**			**173**	**100.0%**	**0.32 [0.03 , 0.61]**
Heterogeneity: Tau² = 0.03; Chi² = 5.86, df = 4 (P = 0.21); I² = 32%								
Test for overall effect: Z = 2.18 (P = 0.03)								
Test for subgroup differences: Chi² = 0.87, df = 2 (P = 0.65), I² = 0%								



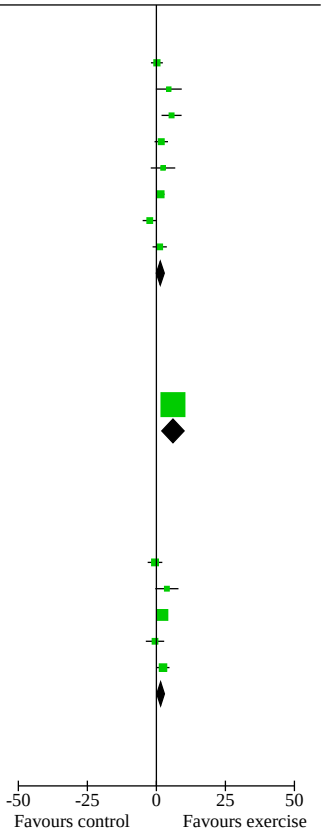
Analysis 12.3. Comparison 12: Role function, Outcome 3: FACT role function subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
12.3.1 Up to 12 weeks' follow-up								
Campbell 2005	3.67	5.24	10	-1.5	6	9	14.3%	5.17 [0.08 , 10.26]
Monga 2007	1.8	4.2	11	-2.3	4.2	10	21.0%	4.10 [0.50 , 7.70]
Oh 2010	2.46	3.5	54	-0.13	2.8	54	36.1%	2.59 [1.39 , 3.79]
Rogers 2009	0.4	3.3	20	1.4	4.3	20	28.6%	-1.00 [-3.38 , 1.38]
Subtotal (95% CI)			**95**			**93**	**100.0%**	**2.25 [-0.16 , 4.66]**
Heterogeneity: Tau² = 3.82; Chi² = 9.76, df = 3 (P = 0.02); I² = 69%								
Test for overall effect: Z = 1.83 (P = 0.07)								
12.3.2 6 months' follow-up								
Cadmus 2009	0.6	6.9	22	1.6	3.5	23	37.9%	-1.00 [-4.22 , 2.22]
Rogers 2009	1.1	2.99	19	-0.2	4	17	62.1%	1.30 [-1.03 , 3.63]
Subtotal (95% CI)			**41**			**40**	**100.0%**	**0.43 [-1.76 , 2.62]**
Heterogeneity: Tau² = 0.59; Chi² = 1.29, df = 1 (P = 0.26); I² = 22%								
Test for overall effect: Z = 0.38 (P = 0.70)								
Test for subgroup differences: Chi² = 1.20, df = 1 (P = 0.27), I² = 16.9%								



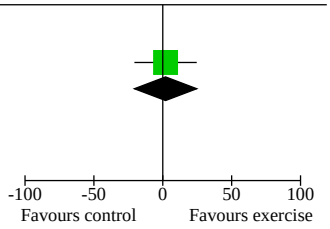
Analysis 12.4. Comparison 12: Role function, Outcome 4: FACT role function subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
12.4.1 Up to 12 weeks' follow-up								
Courneya 2003a	16.58	5.3	51	16.39	5.45	45	15.6%	0.19 [-1.97 , 2.35]
Danhauer 2009	21.9	4.7	13	17.4	7.5	14	6.8%	4.50 [-0.19 , 9.19]
Jarden 2009	16.8	6.5	17	11.3	4	17	9.5%	5.50 [1.87 , 9.13]
Moadel 2007	17.45	6.86	84	15.68	6.56	44	14.2%	1.77 [-0.66 , 4.20]
Monga 2007	24.8	6	11	22.4	4.3	10	7.3%	2.40 [-2.04 , 6.84]
Mutrie 2007	14.6	4.6	82	13.1	5	92	19.4%	1.50 [0.07 , 2.93]
Rogers 2009	21.4	4.8	20	23.8	3.2	18	13.6%	-2.40 [-4.97 , 0.17]
de Oliveira 2010	19.2	4.5	28	18	5.2	27	13.6%	1.20 [-1.37 , 3.77]
Subtotal (95% CI)			**306**			**267**	**100.0%**	**1.41 [-0.03 , 2.86]**
Heterogeneity: Tau² = 2.26; Chi² = 16.34, df = 7 (P = 0.02); I² = 57%								
Test for overall effect: Z = 1.92 (P = 0.05)								
12.4.2 More than 12 weeks' to less than 6 months' follow-up								
Jarden 2009	18.8	5.3	17	12.8	5.8	13	100.0%	6.00 [1.96 , 10.04]
Subtotal (95% CI)			**17**			**13**	**100.0%**	**6.00 [1.96 , 10.04]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.91 (P = 0.004)								
12.4.3 6 months' follow-up								
Cadmus 2009	21.4	5.4	22	21.9	3.4	23	18.6%	-0.50 [-3.15 , 2.15]
Jarden 2009	19.8	5.4	16	16	6	13	9.1%	3.80 [-0.40 , 8.00]
Mutrie 2007	15.8	4.2	82	13.6	5.1	95	37.2%	2.20 [0.83 , 3.57]
Rogers 2009	21.9	4.7	19	22.4	5.4	17	13.3%	-0.50 [-3.82 , 2.82]
de Oliveira 2010	19.6	3.5	24	17.2	4.8	25	21.8%	2.40 [0.05 , 4.75]
Subtotal (95% CI)			**163**			**173**	**100.0%**	**1.53 [0.15 , 2.91]**
Heterogeneity: Tau² = 0.85; Chi² = 6.14, df = 4 (P = 0.19); I² = 35%								
Test for overall effect: Z = 2.17 (P = 0.03)								
Test for subgroup differences: Chi² = 4.57, df = 2 (P = 0.10), I² = 56.2%								



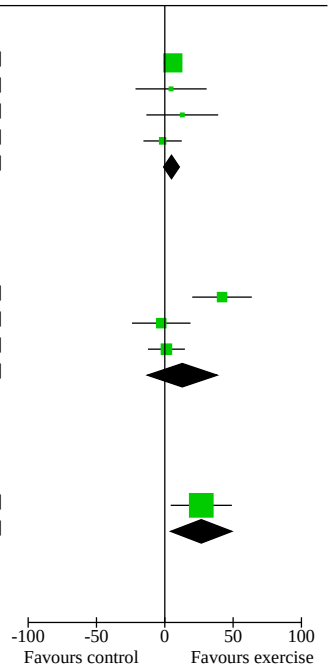
Analysis 12.5. Comparison 12: Role function, Outcome 5: QLQ-C30 change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
12.5.1 Up to 12 weeks' follow-up								
Arbane 2009	-1.59	35.71	21	-3.62	40.81	23	100.0%	2.03 [-20.58 , 24.64]
Subtotal (95% CI)			**21**			**23**	**100.0%**	**2.03 [-20.58 , 24.64]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.18 (P = 0.86)								
Test for subgroup differences: Not applicable								



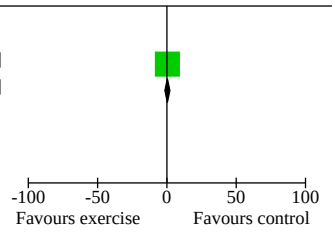
Analysis 12.6. Comparison 12: Role function, Outcome 6: QLQ-C30 function subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
12.6.1 Up to 12 weeks' follow-up								
Adamsen 2009	74.8	26.3	118	68.9	26.5	117	73.2%	5.90 [-0.85 , 12.65]
Hacker 2011	75	17.8	8	70.4	35.1	9	4.9%	4.60 [-21.44 , 30.64]
Jarden 2009	52	35.3	17	39.2	42.5	17	4.8%	12.80 [-13.46 , 39.06]
Wiskemann 2011	31.7	29.4	40	33.3	34.8	41	17.0%	-1.60 [-15.62 , 12.42]
Subtotal (95% CI)			**183**			**184**	**100.0%**	**4.90 [-0.88 , 10.67]**
Heterogeneity: Tau² = 0.00; Chi² = 1.26, df = 3 (P = 0.74); I² = 0%								
Test for overall effect: Z = 1.66 (P = 0.10)								
12.6.2 More than 12 weeks' to less than 6 months' follow-up								
Jarden 2009	74	24.3	17	32.1	34	13	31.5%	41.90 [20.10 , 63.70]
Moros 2010	78.3	19.3	10	80.9	24	7	31.8%	-2.60 [-24.03 , 18.83]
Wiskemann 2011	45	28.5	40	43.8	33	40	36.7%	1.20 [-12.31 , 14.71]
Subtotal (95% CI)			**67**			**60**	**100.0%**	**12.82 [-12.71 , 38.36]**
Heterogeneity: Tau² = 414.89; Chi² = 11.16, df = 2 (P = 0.004); I² = 82%								
Test for overall effect: Z = 0.98 (P = 0.33)								
12.6.3 6 months' follow-up								
Jarden 2009	76.7	27.3	16	50	33	13	100.0%	26.70 [4.32 , 49.08]
Subtotal (95% CI)			**16**			**13**	**100.0%**	**26.70 [4.32 , 49.08]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.34 (P = 0.02)								
Test for subgroup differences: Chi² = 3.66, df = 2 (P = 0.16), I² = 45.4%								



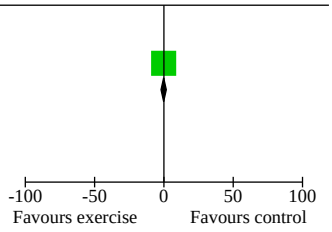
Analysis 12.7. Comparison 12: Role function, Outcome 7: FACIT function subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
12.7.1 Up to 12 weeks' follow-up								
Targ 2002	2.17	5.1	79	1.83	6.6	88	100.0%	0.34 [-1.44 , 2.12]
Subtotal (95% CI)			**79**			**88**	**100.0%**	**0.34 [-1.44 , 2.12]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.37 (P = 0.71)								
Test for subgroup differences: Not applicable								



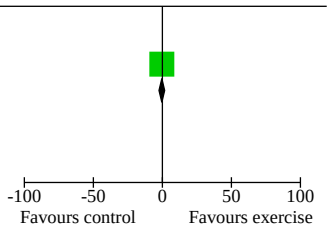
Analysis 12.8. Comparison 12: Role function, Outcome 8: WHO BREF environmental subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
12.8.1 Up to 12 weeks' follow-up								
Hwang 2008	11.82	3.38	17	12	2.29	20	100.0%	-0.18 [-2.07 , 1.71]
Subtotal (95% CI)			**17**			**20**	**100.0%**	**-0.18 [-2.07 , 1.71]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.19 (P = 0.85)								
Test for subgroup differences: Not applicable								



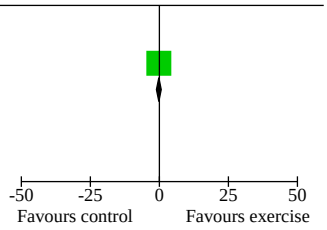
Analysis 12.9. Comparison 12: Role function, Outcome 9: Ferrans and Power family subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
12.9.1 Up to 12 weeks' follow-up								
Hacker 2011	26.4	2.1	8	26.8	2.2	9	100.0%	-0.40 [-2.45 , 1.65]
Subtotal (95% CI)			**8**			**9**	**100.0%**	**-0.40 [-2.45 , 1.65]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.38 (P = 0.70)								
Test for subgroup differences: Not applicable								



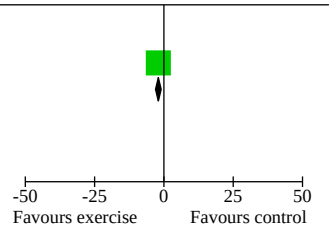
Analysis 12.10. Comparison 12: Role function, Outcome 10: Symptom Checklist 90 R interpersonal sensitivity subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
12.10.1 Up to 12 weeks' follow-up								
Dimeo 1999	1.3	1.5	27	1.5	1.9	32	100.0%	-0.20 [-1.07 , 0.67]
Subtotal (95% CI)			**27**			**32**	**100.0%**	**-0.20 [-1.07 , 0.67]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.45 (P = 0.65)								
Test for subgroup differences: Not applicable								



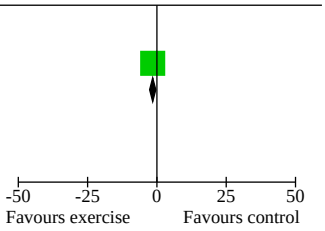
Analysis 12.11. Comparison 12: Role function, Outcome 11: MDASI-T relations with other people subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
12.11.1 Up to 12 weeks' follow-up								
Yang 2011	-1.63	2.25	19	0.38	0.18	21	100.0%	-2.01 [-3.02 , -1.00]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-2.01 [-3.02 , -1.00]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 3.88 (P = 0.0001)								
Test for subgroup differences: Not applicable								



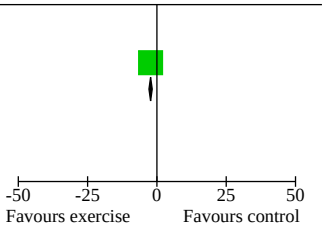
Analysis 12.12. Comparison 12: Role function, Outcome 12: MDASI-T relations with other people subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
12.12.1 Up to 12 weeks' follow-up								
Yang 2011	0.53	1.12	19	2.05	2.31	21	100.0%	-1.52 [-2.63 , -0.41]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-1.52 [-2.63 , -0.41]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.69 (P = 0.007)								
Test for subgroup differences: Not applicable								



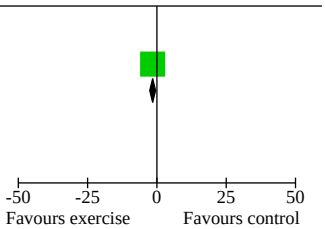
Analysis 12.13. Comparison 12: Role function, Outcome 13: MDASI-T work subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
12.13.1 Up to 12 weeks' follow-up								
Yang 2011	-1.95	1.24	19	0.33	0.42	21	100.0%	-2.28 [-2.87 , -1.69]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-2.28 [-2.87 , -1.69]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 7.63 (P < 0.00001)								
Test for subgroup differences: Not applicable								



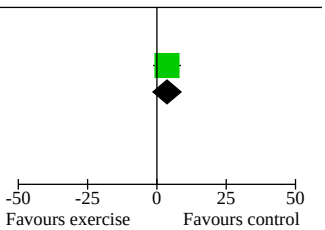
Analysis 12.14. Comparison 12: Role function, Outcome 14: MDASI-T work subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
12.14.1 Up to 12 weeks' follow-up								
Yang 2011	0.89	1.24	19	2.43	2.06	21	100.0%	-1.54 [-2.58 , -0.50]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-1.54 [-2.58 , -0.50]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.89 (P = 0.004)								
Test for subgroup differences: Not applicable								



Analysis 12.15. Comparison 12: Role function, Outcome 15: QLSI marital life subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
12.15.1 Up to 12 weeks' follow-up								
Lanctot 2010	8.62	11.95	36	4.98	7.67	22	100.0%	3.64 [-1.41 , 8.69]
Subtotal (95% CI)			**36**			**22**	**100.0%**	**3.64 [-1.41 , 8.69]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.41 (P = 0.16)								
Test for subgroup differences: Not applicable								



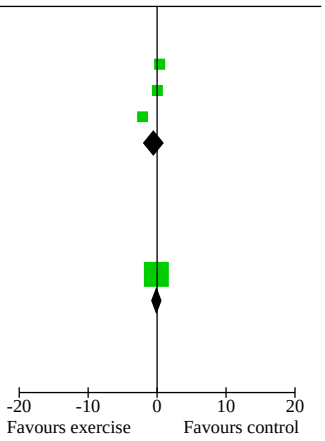
Comparison 13. Sleep

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
13.1 Overall sleep change	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
13.1.1 Up to 12 weeks' follow-up	3	122	Std. Mean Difference (IV, Random, 95% CI)	-0.55 [-1.95, 0.85]
13.1.2 6 months' follow-up	1	36	Std. Mean Difference (IV, Random, 95% CI)	-0.11 [-0.76, 0.55]
13.2 Overall sleep follow-up values	12		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
13.2.1 Up to 12 weeks' follow-up	12	650	Std. Mean Difference (IV, Random, 95% CI)	-0.40 [-0.67, -0.14]
13.2.2 More than 12 weeks' to less than 6 months' follow-up	4	225	Std. Mean Difference (IV, Random, 95% CI)	-0.36 [-0.86, 0.14]
13.2.3 6 months' follow-up	1	29	Std. Mean Difference (IV, Random, 95% CI)	-0.69 [-1.45, 0.07]
13.3 Pittsburgh Sleep Quality Index change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
13.3.1 Up to 12 weeks' follow-up	1	38	Mean Difference (IV, Random, 95% CI)	0.15 [-2.21, 2.51]
13.3.2 6 months' follow-up	1	36	Mean Difference (IV, Random, 95% CI)	-0.26 [-1.75, 1.23]
13.4 Pittsburgh Sleep Quality Index follow-up values	7		Mean Difference (IV, Random, 95% CI)	Subtotals only
13.4.1 Up to 12 weeks' follow-up	7	434	Mean Difference (IV, Random, 95% CI)	-1.67 [-2.88, -0.46]
13.4.2 More than 12 weeks' to less than 6 months' follow-up	2	115	Mean Difference (IV, Random, 95% CI)	-1.73 [-5.18, 1.71]
13.5 QLQ-C30 insomnia subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
13.5.1 Up to 12 weeks' follow-up	1	44	Mean Difference (IV, Random, 95% CI)	11.52 [-6.51, 29.55]
13.6 QLQ-C30 insomnia subscale follow-up values	4		Mean Difference (IV, Random, 95% CI)	Subtotals only
13.6.1 Up to 12 weeks' follow-up	4	176	Mean Difference (IV, Random, 95% CI)	-5.68 [-15.99, 4.63]
13.6.2 More than 12 weeks' to less than 6 months' follow-up	2	110	Mean Difference (IV, Random, 95% CI)	-5.48 [-16.82, 5.86]
13.6.3 6 months' follow-up	1	29	Mean Difference (IV, Random, 95% CI)	-17.50 [-36.67, 1.67]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
13.7 MDASI-T disturbed sleep subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
13.7.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-0.83 [-1.06, -0.60]
13.8 MDASI-T disturbed sleep subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
13.8.1 Up to 12 weeks' follow-up	1	40	Mean Difference (IV, Random, 95% CI)	-2.14 [-3.85, -0.43]

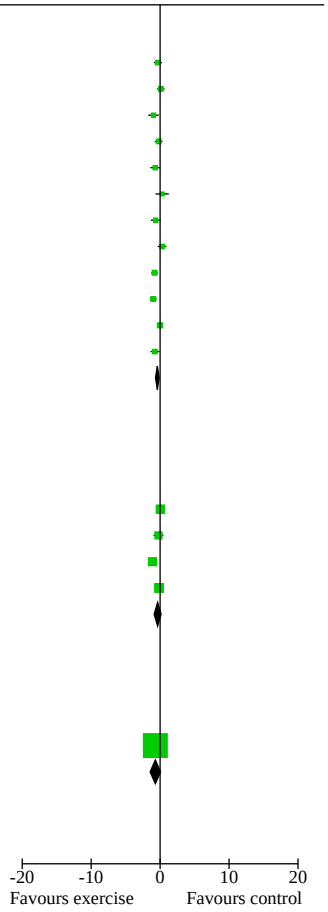
Analysis 13.1. Comparison 13: Sleep, Outcome 1: Overall sleep change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
13.1.1 Up to 12 weeks' follow-up								
Arbane 2009	15.87	27.12	21	4.35	33.79	23	33.9%	0.37 [-0.23 , 0.96]
Rogers 2009	0.45	2.1	20	0.3	4.7	18	33.6%	0.04 [-0.60 , 0.68]
Yang 2011	-0.26	0.02	19	0.57	0.53	21	32.4%	-2.11 [-2.90 , -1.32]
Subtotal (95% CI)			**60**			**62**	**100.0%**	**-0.55 [-1.95 , 0.85]**
Heterogeneity: Tau² = 1.41; Chi² = 26.17, df = 2 (P < 0.00001); I² = 92%								
Test for overall effect: Z = 0.77 (P = 0.44)								
13.1.2 6 months' follow-up								
Rogers 2009	-0.2	2.7	19	0.06	1.8	17	100.0%	-0.11 [-0.76 , 0.55]
Subtotal (95% CI)			**19**			**17**	**100.0%**	**-0.11 [-0.76 , 0.55]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.33 (P = 0.74)								
Test for subgroup differences: Chi² = 0.31, df = 1 (P = 0.58), I² = 0%								



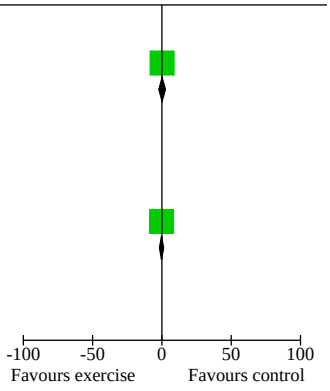
Analysis 13.2. Comparison 13: Sleep, Outcome 2: Overall sleep follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
13.2.1 Up to 12 weeks' follow-up								
Arbane 2009	19.05	27.02	21	29	32.26	23	8.5%	-0.33 [-0.92 , 0.27]
Chandwani 2010	8.1	4.1	26	7.6	4.7	27	9.3%	0.11 [-0.43 , 0.65]
Cohen 2004	5.8	2.3	16	8.1	2.4	14	6.7%	-0.95 [-1.72 , -0.19]
Danhauer 2009	6.1	4.3	123	7	4.2	14	9.1%	-0.21 [-0.76 , 0.34]
Donnelly 2011	6.88	3.96	16	10.06	4.75	17	7.3%	-0.71 [-1.41 , -0.00]
Hacker 2011	25	23.6	8	18.5	17.6	9	5.1%	0.30 [-0.66 , 1.26]
Jarden 2009	21.6	26.2	17	41.2	32.3	17	7.4%	-0.65 [-1.34 , 0.04]
Rogers 2009	6.7	4.2	20	5.5	4	18	8.0%	0.29 [-0.35 , 0.93]
Tang 2010	10.67	3.23	36	13.09	2.74	35	10.0%	-0.80 [-1.28 , -0.31]
Wang 2010	7.5	3.2	35	10.94	3.62	37	9.9%	-0.99 [-1.49 , -0.50]
Wiskemann 2011	51.7	36.9	40	52.5	33.7	41	10.7%	-0.02 [-0.46 , 0.41]
Yang 2011	2	2.03	19	4.14	3.37	21	8.0%	-0.74 [-1.39 , -0.10]
Subtotal (95% CI)			**377**			**273**	**100.0%**	**-0.40 [-0.67 , -0.14]**
Heterogeneity: Tau² = 0.12; Chi² = 25.89, df = 11 (P = 0.007); I² = 58%								
Test for overall effect: Z = 2.97 (P = 0.003)								
13.2.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	7.3	4.7	27	7.1	5.4	29	26.0%	0.04 [-0.49 , 0.56]
Jarden 2009	16.7	24.3	17	23.1	28.5	13	20.7%	-0.24 [-0.96 , 0.49]
Tang 2010	9.78	3.06	24	13.11	2.89	35	25.0%	-1.11 [-1.67 , -0.55]
Wiskemann 2011	30.8	32.4	40	35.8	31.5	40	28.4%	-0.15 [-0.59 , 0.28]
Subtotal (95% CI)			**108**			**117**	**100.0%**	**-0.36 [-0.86 , 0.14]**
Heterogeneity: Tau² = 0.18; Chi² = 10.05, df = 3 (P = 0.02); I² = 70%								
Test for overall effect: Z = 1.40 (P = 0.16)								
13.2.3 6 months' follow-up								
Jarden 2009	13.3	16.9	16	30.8	31.8	13	100.0%	-0.69 [-1.45 , 0.07]
Subtotal (95% CI)			**16**			**13**	**100.0%**	**-0.69 [-1.45 , 0.07]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.79 (P = 0.07)								
Test for subgroup differences: Chi² = 0.56, df = 2 (P = 0.76), I² = 0%								



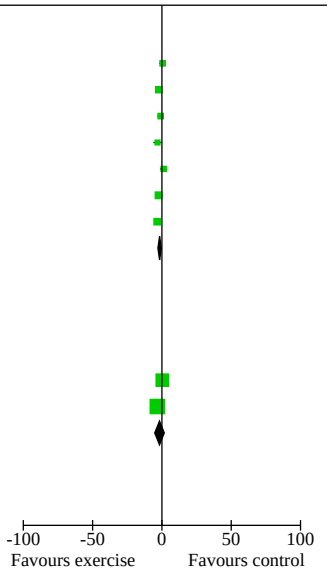
Analysis 13.3. Comparison 13: Sleep, Outcome 3: Pittsburgh Sleep Quality Index change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
13.3.1 Up to 12 weeks' follow-up								
Rogers 2009	0.45	2.1	20	0.3	4.7	18	100.0%	0.15 [-2.21 , 2.51]
Subtotal (95% CI)			**20**			**18**	**100.0%**	**0.15 [-2.21 , 2.51]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.12 (P = 0.90)								
13.3.2 6 months' follow-up								
Rogers 2009	-0.2	2.7	19	0.06	1.8	17	100.0%	-0.26 [-1.75 , 1.23]
Subtotal (95% CI)			**19**			**17**	**100.0%**	**-0.26 [-1.75 , 1.23]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.34 (P = 0.73)								
Test for subgroup differences: Chi² = 0.08, df = 1 (P = 0.77), I² = 0%								



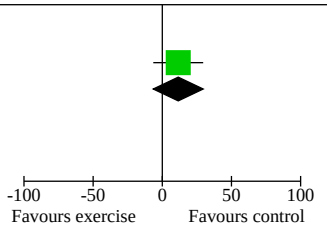
Analysis 13.4. Comparison 13: Sleep, Outcome 4: Pittsburgh Sleep Quality Index follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
13.4.1 Up to 12 weeks' follow-up								
Chandwani 2010	8.1	4.1	26	7.6	4.7	27	12.7%	0.50 [-1.87 , 2.87]
Cohen 2004	5.8	2.3	16	8.1	2.4	14	16.7%	-2.30 [-3.99 , -0.61]
Danhauer 2009	6.1	4.3	123	7	4.2	14	12.9%	-0.90 [-3.23 , 1.43]
Donnelly 2011	6.88	3.96	16	10.06	4.75	17	9.9%	-3.18 [-6.16 , -0.20]
Rogers 2009	6.7	4.2	20	5.5	4	18	11.5%	1.20 [-1.41 , 3.81]
Tang 2010	10.67	3.23	36	13.09	2.74	35	18.7%	-2.42 [-3.81 , -1.03]
Wang 2010	7.5	3.2	35	10.94	3.62	37	17.5%	-3.44 [-5.02 , -1.86]
Subtotal (95% CI)			**272**			**162**	**100.0%**	**-1.67 [-2.88 , -0.46]**
Heterogeneity: Tau² = 1.54; Chi² = 15.17, df = 6 (P = 0.02); I² = 60%								
Test for overall effect: Z = 2.70 (P = 0.007)								
13.4.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	7.3	4.7	27	7.1	5.4	29	45.2%	0.20 [-2.45 , 2.85]
Tang 2010	9.78	3.06	24	13.11	2.89	35	54.8%	-3.33 [-4.88 , -1.78]
Subtotal (95% CI)			**51**			**64**	**100.0%**	**-1.73 [-5.18 , 1.71]**
Heterogeneity: Tau² = 5.00; Chi² = 5.08, df = 1 (P = 0.02); I² = 80%								
Test for overall effect: Z = 0.99 (P = 0.32)								
Test for subgroup differences: Chi² = 0.00, df = 1 (P = 0.97), I² = 0%								



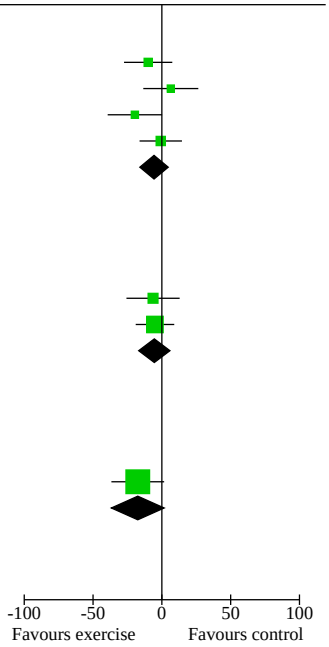
Analysis 13.5. Comparison 13: Sleep, Outcome 5: QLQ-C30 insomnia subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
13.5.1 Up to 12 weeks' follow-up								
Arbane 2009	15.87	27.12	21	4.35	33.79	23	100.0%	11.52 [-6.51 , 29.55]
Subtotal (95% CI)			**21**			**23**	**100.0%**	**11.52 [-6.51 , 29.55]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.25 (P = 0.21)								
Test for subgroup differences: Not applicable								



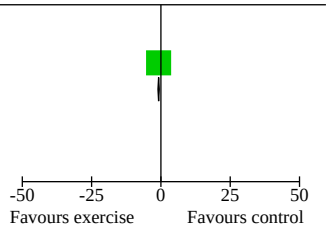
Analysis 13.6. Comparison 13: Sleep, Outcome 6: QLQ-C30 insomnia subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
13.6.1 Up to 12 weeks' follow-up								
Arbane 2009	19.05	27.02	21	29	32.26	23	25.9%	-9.95 [-27.48 , 7.58]
Hacker 2011	25	23.6	8	18.5	17.6	9	21.2%	6.50 [-13.49 , 26.49]
Jarden 2009	21.6	26.2	17	41.2	32.3	17	21.6%	-19.60 [-39.37 , 0.17]
Wiskemann 2011	51.7	36.9	40	52.5	33.7	41	31.3%	-0.80 [-16.20 , 14.60]
Subtotal (95% CI)			**86**			**90**	**100.0%**	**-5.68 [-15.99 , 4.63]**
Heterogeneity: Tau² = 26.56; Chi² = 3.94, df = 3 (P = 0.27); I² = 24%								
Test for overall effect: Z = 1.08 (P = 0.28)								
13.6.2 More than 12 weeks' to less than 6 months' follow-up								
Jarden 2009	16.7	24.3	17	23.1	28.5	13	34.4%	-6.40 [-25.72 , 12.92]
Wiskemann 2011	30.8	32.4	40	35.8	31.5	40	65.6%	-5.00 [-19.00 , 9.00]
Subtotal (95% CI)			**57**			**53**	**100.0%**	**-5.48 [-16.82 , 5.86]**
Heterogeneity: Tau² = 0.00; Chi² = 0.01, df = 1 (P = 0.91); I² = 0%								
Test for overall effect: Z = 0.95 (P = 0.34)								
13.6.3 6 months' follow-up								
Jarden 2009	13.3	16.9	16	30.8	31.8	13	100.0%	-17.50 [-36.67 , 1.67]
Subtotal (95% CI)			**16**			**13**	**100.0%**	**-17.50 [-36.67 , 1.67]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.79 (P = 0.07)								
Test for subgroup differences: Chi² = 1.28, df = 2 (P = 0.53), I² = 0%								



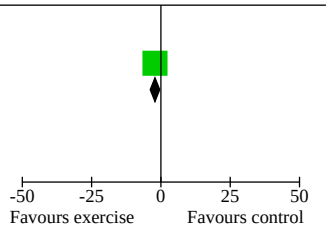
Analysis 13.7. Comparison 13: Sleep, Outcome 7: MDASI-T disturbed sleep subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
13.7.1 Up to 12 weeks' follow-up								
Yang 2011	-0.26	0.02	19	0.57	0.53	21	100.0%	-0.83 [-1.06 , -0.60]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-0.83 [-1.06 , -0.60]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 7.17 (P < 0.00001)								
Test for subgroup differences: Not applicable								



Analysis 13.8. Comparison 13: Sleep, Outcome 8: MDASI-T disturbed sleep subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
13.8.1 Up to 12 weeks' follow-up								
Yang 2011	2	2.03	19	4.14	3.37	21	100.0%	-2.14 [-3.85 , -0.43]
Subtotal (95% CI)			**19**			**21**	**100.0%**	**-2.14 [-3.85 , -0.43]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 2.46 (P = 0.01)								
Test for subgroup differences: Not applicable								



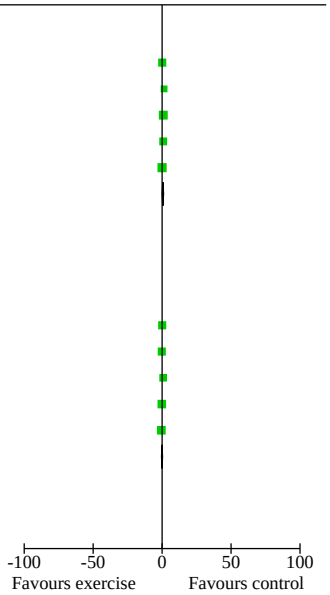
Comparison 14. Social functioning

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
14.1 Overall social functioning change	7		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
14.1.1 Up to 12 weeks' follow-up	5	378	Std. Mean Difference (IV, Random, 95% CI)	0.54 [0.03, 1.05]
14.1.2 6 months' follow-up	3	247	Std. Mean Difference (IV, Random, 95% CI)	-0.07 [-0.42, 0.29]
14.2 Overall social functioning follow-up values	18		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
14.2.1 Up to 12 weeks' follow-up	16	1164	Std. Mean Difference (IV, Random, 95% CI)	0.16 [0.04, 0.27]
14.2.2 More than 12 weeks' to less than 6 months' follow-up	4	183	Std. Mean Difference (IV, Random, 95% CI)	0.09 [-0.26, 0.44]
14.2.3 6 months' follow-up	5	381	Std. Mean Difference (IV, Random, 95% CI)	0.24 [0.03, 0.44]
14.3 FACT social subscale change	4		Mean Difference (IV, Random, 95% CI)	Subtotals only
14.3.1 Up to 12 weeks' follow-up	3	167	Mean Difference (IV, Random, 95% CI)	2.88 [1.94, 3.83]
14.3.2 6 months' follow-up	2	81	Mean Difference (IV, Random, 95% CI)	1.25 [-3.28, 5.79]
14.4 FACT social subscale follow-up values	8		Mean Difference (IV, Random, 95% CI)	Subtotals only
14.4.1 Up to 12 weeks' follow-up	7	539	Mean Difference (IV, Random, 95% CI)	0.79 [-0.06, 1.63]
14.4.2 6 months' follow-up	4	307	Mean Difference (IV, Random, 95% CI)	1.15 [0.04, 2.25]
14.5 QLQ-C30 change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
14.5.1 Up to 12 weeks' follow-up	1	44	Mean Difference (IV, Random, 95% CI)	3.34 [-22.39, 29.07]
14.6 QLQ-C30 social subscale follow-up values	6		Mean Difference (IV, Random, 95% CI)	Subtotals only
14.6.1 Up to 12 weeks' follow-up	5	411	Mean Difference (IV, Random, 95% CI)	3.67 [-0.87, 8.20]
14.6.2 More than 12 weeks' to less than 6 months' follow-up	3	127	Mean Difference (IV, Random, 95% CI)	3.58 [-11.78, 18.94]
14.6.3 6 months' follow-up	1	29	Mean Difference (IV, Random, 95% CI)	18.30 [-7.41, 44.01]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
14.7 FACIT social subscale change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
14.7.1 Up to 12 weeks' follow-up	1	167	Mean Difference (IV, Random, 95% CI)	-0.15 [-1.60, 1.30]
14.8 MOS SF-36 social function subscale change	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
14.8.1 6 months' follow-up	2	166	Mean Difference (IV, Random, 95% CI)	-2.49 [-7.40, 2.42]
14.9 MOS SF-36 social function subscale follow-up values	4		Mean Difference (IV, Random, 95% CI)	Subtotals only
14.9.1 Up to 12 weeks' follow-up	3	345	Mean Difference (IV, Random, 95% CI)	2.98 [-1.76, 7.72]
14.9.2 More than 12 weeks' to less than 6 months' follow-up	1	56	Mean Difference (IV, Random, 95% CI)	-1.00 [-18.60, 16.60]
14.9.3 6 months' follow-up	1	45	Mean Difference (IV, Random, 95% CI)	1.30 [-4.66, 7.26]
14.10 WHO BREF social function subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
14.10.1 Up to 12 weeks' follow-up	1	37	Mean Difference (IV, Random, 95% CI)	0.96 [-0.28, 2.20]
14.11 Ferrans and Power social economic subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
14.11.1 Up to 12 weeks' follow-up	1	17	Mean Difference (IV, Random, 95% CI)	-3.00 [-7.48, 1.48]
14.12 General Health Questionnaire social dysfunction subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
14.12.1 More than 12 weeks' to less than 6 months' follow-up	1	17	Mean Difference (IV, Random, 95% CI)	0.60 [-1.41, 2.61]
14.13 QLSI social and familial functioning subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
14.13.1 Up to 12 weeks' follow-up	1	67	Mean Difference (IV, Random, 95% CI)	-0.18 [-2.37, 2.01]

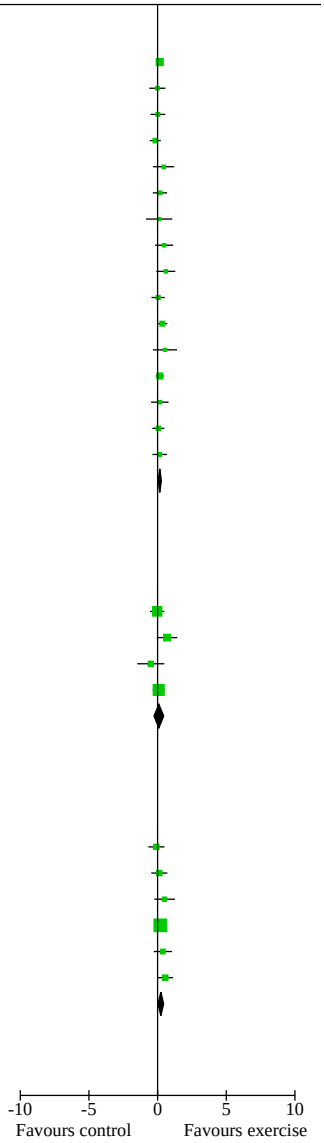
Analysis 14.1. Comparison 14: Social functioning, Outcome 1: Overall social functioning change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
14.1.1 Up to 12 weeks' follow-up								
Arbane 2009	-3.18	46.13	21	-6.52	40.43	23	19.8%	0.08 [-0.52 , 0.67]
Monga 2007	1.5	1.9	11	-1.7	2.4	10	13.5%	1.43 [0.45 , 2.41]
Oh 2010	2.29	3.8	54	-0.97	3.8	54	23.3%	0.85 [0.46 , 1.25]
Rogers 2009	0.9	2.6	20	-1.2	2.7	18	18.6%	0.78 [0.11 , 1.44]
Targ 2002	0.43	4	79	0.58	5.5	88	24.7%	-0.03 [-0.33 , 0.27]
Subtotal (95% CI)			**185**			**193**	**100.0%**	**0.54 [0.03 , 1.05]**
Heterogeneity: Tau² = 0.25; Chi² = 19.27, df = 4 (P = 0.0007); I² = 79%								
Test for overall effect: Z = 2.09 (P = 0.04)								
14.1.2 6 months' follow-up								
Cadmus 2009	6.3	13.5	22	5.4	12.3	23	19.9%	0.07 [-0.52 , 0.65]
Cadmus 2009	-1.3	3.3	22	-0.5	3.3	23	19.8%	-0.24 [-0.82 , 0.35]
Rogers 2009	-0.04	4.3	19	-3.9	6.6	17	16.9%	0.69 [0.01 , 1.36]
Segal 2001	2.1	20.6	40	6.7	19.1	21	22.0%	-0.23 [-0.76 , 0.30]
Segal 2001	1.5	4.1	40	6.7	18.6	20	21.4%	-0.46 [-1.00 , 0.08]
Subtotal (95% CI)			**143**			**104**	**100.0%**	**-0.07 [-0.42 , 0.29]**
Heterogeneity: Tau² = 0.08; Chi² = 7.62, df = 4 (P = 0.11); I² = 48%								
Test for overall effect: Z = 0.36 (P = 0.72)								
Test for subgroup differences: Chi² = 3.68, df = 1 (P = 0.06), I² = 72.8%								



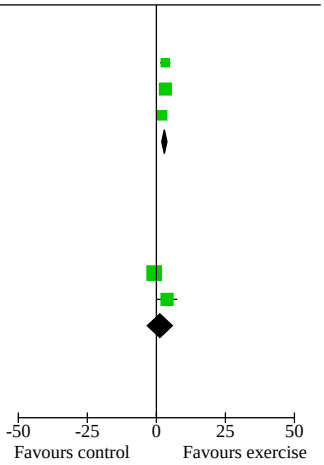
Analysis 14.2. Comparison 14: Social functioning, Outcome 2: Overall social functioning follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
14.2.1 Up to 12 weeks' follow-up								
Adamsen 2009	82.6	20.5	118	79.4	20.8	117	20.5%	0.15 [-0.10 , 0.41]
Arbane 2009	86.51	34.41	21	86.96	31.37	23	3.8%	-0.01 [-0.61 , 0.58]
Chandwani 2010	85.2	24.5	26	84.8	28.1	27	4.6%	0.01 [-0.52 , 0.55]
Courneya 2003a	17.85	4.13	51	18.59	4.62	45	8.4%	-0.17 [-0.57 , 0.23]
Danhauer 2009	23.1	5	13	20.4	6.8	14	2.3%	0.44 [-0.33 , 1.20]
Galvao 2010	87	18.4	29	83.3	23.5	28	5.0%	0.17 [-0.35 , 0.69]
Hacker 2011	81.3	22.6	8	77.8	34.4	9	1.5%	0.11 [-0.84 , 1.07]
Hwang 2008	13.71	1.65	17	12.75	2.2	20	3.1%	0.48 [-0.18 , 1.13]
Jarden 2009	71.6	30.5	17	54.9	23.4	17	2.8%	0.60 [-0.09 , 1.29]
Lanctot 2010	-2.14	2.78	37	-2.32	5.6	30	5.8%	0.04 [-0.44 , 0.52]
Moadel 2007	20.38	5.57	84	18.37	6.28	44	10.0%	0.34 [-0.02 , 0.71]
Monga 2007	25.2	4.1	11	23.2	2.9	10	1.8%	0.54 [-0.34 , 1.41]
Mutrie 2007	24.2	4.6	82	23.4	5	92	15.1%	0.17 [-0.13 , 0.46]
Rogers 2009	22.6	4.1	20	21.8	5.7	18	3.3%	0.16 [-0.48 , 0.80]
Wiskemann 2011	43.8	31.3	40	42.1	29.2	41	7.1%	0.06 [-0.38 , 0.49]
de Oliveira 2010	19.6	4.9	28	18.8	5.6	27	4.8%	0.15 [-0.38 , 0.68]
Subtotal (95% CI)			**602**			**562**	**100.0%**	**0.16 [0.04 , 0.27]**
Heterogeneity: Tau² = 0.00; Chi² = 8.27, df = 15 (P = 0.91); I² = 0%								
Test for overall effect: Z = 2.66 (P = 0.008)								
14.2.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	85.2	31.7	27	86.2	35.5	29	31.1%	-0.03 [-0.55 , 0.49]
Jarden 2009	71.9	27.7	17	52.6	27.1	13	18.3%	0.68 [-0.06 , 1.43]
Moros 2010	76.6	22.4	10	88	20.8	7	11.4%	-0.50 [-1.48 , 0.49]
Wiskemann 2011	49.2	32.5	40	46.7	29.3	40	39.1%	0.08 [-0.36 , 0.52]
Subtotal (95% CI)			**94**			**89**	**100.0%**	**0.09 [-0.26 , 0.44]**
Heterogeneity: Tau² = 0.03; Chi² = 4.01, df = 3 (P = 0.26); I² = 25%								
Test for overall effect: Z = 0.50 (P = 0.62)								
14.2.3 6 months' follow-up								
Cadmus 2009	22.7	3.8	22	23.1	5	23	12.0%	-0.09 [-0.67 , 0.50]
Cadmus 2009	48.7	10.2	22	47.4	10.2	23	12.0%	0.13 [-0.46 , 0.71]
Jarden 2009	81.1	33.9	16	62.8	36.1	13	7.4%	0.51 [-0.24 , 1.26]
Mutrie 2007	23.9	4.8	82	22.9	5.5	95	46.7%	0.19 [-0.10 , 0.49]
Rogers 2009	21.4	4.7	19	18.8	8.4	17	9.4%	0.38 [-0.28 , 1.04]
de Oliveira 2010	20.9	3.6	24	18.6	4.5	25	12.5%	0.55 [-0.02 , 1.13]
Subtotal (95% CI)			**185**			**196**	**100.0%**	**0.24 [0.03 , 0.44]**
Heterogeneity: Tau² = 0.00; Chi² = 3.29, df = 5 (P = 0.66); I² = 0%								
Test for overall effect: Z = 2.29 (P = 0.02)								
Test for subgroup differences: Chi² = 0.65, df = 2 (P = 0.72), I² = 0%								



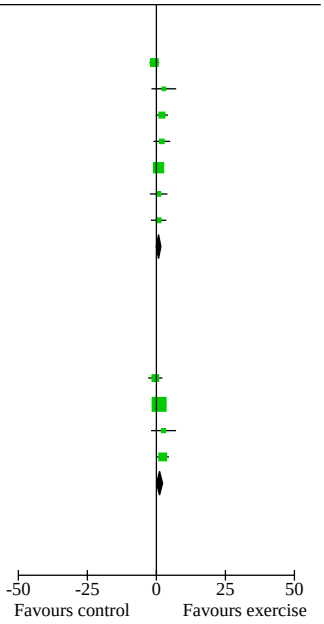
Analysis 14.3. Comparison 14: Social functioning, Outcome 3: FACT social subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
14.3.1 Up to 12 weeks' follow-up								
Monga 2007	1.5	1.9	11	-1.7	2.4	10	25.6%	3.20 [1.34 , 5.06]
Oh 2010	2.29	3.8	54	-0.97	3.8	54	43.3%	3.26 [1.83 , 4.69]
Rogers 2009	0.9	2.6	20	-1.2	2.7	18	31.1%	2.10 [0.41 , 3.79]
Subtotal (95% CI)			**85**			**82**	**100.0%**	**2.88 [1.94 , 3.83]**
Heterogeneity: Tau² = 0.00; Chi² = 1.20, df = 2 (P = 0.55); I² = 0%								
Test for overall effect: Z = 5.99 (P < 0.00001)								
14.3.2 6 months' follow-up								
Cadmus 2009	-1.3	3.3	22	-0.5	3.3	23	55.9%	-0.80 [-2.73 , 1.13]
Rogers 2009	-0.04	4.3	19	-3.9	6.6	17	44.1%	3.86 [0.17 , 7.55]
Subtotal (95% CI)			**41**			**40**	**100.0%**	**1.25 [-3.28 , 5.79]**
Heterogeneity: Tau² = 8.61; Chi² = 4.82, df = 1 (P = 0.03); I² = 79%								
Test for overall effect: Z = 0.54 (P = 0.59)								
Test for subgroup differences: Chi² = 0.48, df = 1 (P = 0.49), I² = 0%								



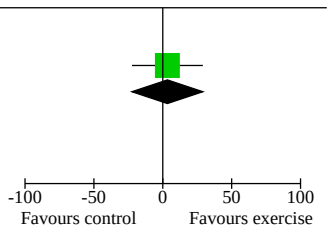
Analysis 14.4. Comparison 14: Social functioning, Outcome 4: FACT social subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
14.4.1 Up to 12 weeks' follow-up								
Courneya 2003a	17.85	4.13	51	18.59	4.62	45	22.9%	-0.74 [-2.50 , 1.02]
Danhauer 2009	23.1	5	13	20.4	6.8	14	3.5%	2.70 [-1.78 , 7.18]
Moadel 2007	20.38	5.57	84	18.37	6.28	44	14.6%	2.01 [-0.19 , 4.21]
Monga 2007	25.2	4.1	11	23.2	2.9	10	7.8%	2.00 [-1.02 , 5.02]
Mutrie 2007	24.2	4.6	82	23.4	5	92	34.9%	0.80 [-0.63 , 2.23]
Rogers 2009	22.6	4.1	20	21.8	5.7	18	7.0%	0.80 [-2.39 , 3.99]
de Oliveira 2010	19.6	4.9	28	18.8	5.6	27	9.2%	0.80 [-1.98 , 3.58]
Subtotal (95% CI)			**289**			**250**	**100.0%**	**0.79 [-0.06 , 1.63]**
Heterogeneity: Tau² = 0.00; Chi² = 5.39, df = 6 (P = 0.50); I² = 0%								
Test for overall effect: Z = 1.83 (P = 0.07)								
14.4.2 6 months' follow-up								
Cadmus 2009	22.7	3.8	22	23.1	5	23	18.1%	-0.40 [-2.99 , 2.19]
Mutrie 2007	23.9	4.8	82	22.9	5.5	95	52.6%	1.00 [-0.52 , 2.52]
Rogers 2009	21.4	4.7	19	18.8	8.4	17	5.9%	2.60 [-1.92 , 7.12]
de Oliveira 2010	20.9	3.6	24	18.6	4.5	25	23.4%	2.30 [0.02 , 4.58]
Subtotal (95% CI)			**147**			**160**	**100.0%**	**1.15 [0.04 , 2.25]**
Heterogeneity: Tau² = 0.00; Chi² = 2.79, df = 3 (P = 0.42); I² = 0%								
Test for overall effect: Z = 2.04 (P = 0.04)								
Test for subgroup differences: Chi² = 0.26, df = 1 (P = 0.61), I² = 0%								



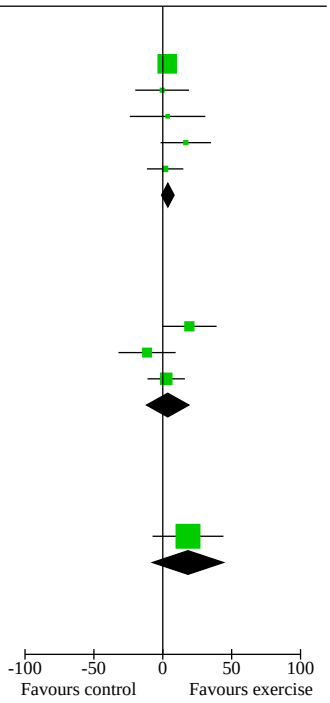
Analysis 14.5. Comparison 14: Social functioning, Outcome 5: QLQ-C30 change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
14.5.1 Up to 12 weeks' follow-up								
Arbane 2009	-3.18	46.13	21	-6.52	40.43	23	100.0%	3.34 [-22.39 , 29.07]
Subtotal (95% CI)			**21**			**23**	**100.0%**	**3.34 [-22.39 , 29.07]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.25 (P = 0.80)								
Test for subgroup differences: Not applicable								



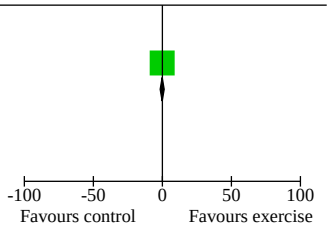
Analysis 14.6. Comparison 14: Social functioning, Outcome 6: QLQ-C30 social subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
14.6.1 Up to 12 weeks' follow-up								
Adamsen 2009	82.6	20.5	118	79.4	20.8	117	73.8%	3.20 [-2.08 , 8.48]
Arbane 2009	86.51	34.41	21	86.96	31.37	23	5.4%	-0.45 [-19.97 , 19.07]
Hacker 2011	81.3	22.6	8	77.8	34.4	9	2.7%	3.50 [-23.89 , 30.89]
Jarden 2009	71.6	30.5	17	54.9	23.4	17	6.2%	16.70 [-1.57 , 34.97]
Wiskemann 2011	43.8	31.3	40	42.1	29.2	41	11.8%	1.70 [-11.49 , 14.89]
Subtotal (95% CI)			**204**			**207**	**100.0%**	**3.67 [-0.87 , 8.20]**
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 2.24$, df = 4 (P = 0.69); $I^2 = 0\%$								
Test for overall effect: Z = 1.58 (P = 0.11)								
14.6.2 More than 12 weeks' to less than 6 months' follow-up								
Jarden 2009	71.9	27.7	17	52.6	27.1	13	30.2%	19.30 [-0.46 , 39.06]
Moros 2010	76.6	22.4	10	88	20.8	7	28.7%	-11.40 [-32.14 , 9.34]
Wiskemann 2011	49.2	32.5	40	46.7	29.3	40	41.1%	2.50 [-11.06 , 16.06]
Subtotal (95% CI)			**67**			**60**	**100.0%**	**3.58 [-11.78 , 18.94]**
Heterogeneity: $Tau^2 = 101.63$; $Chi^2 = 4.46$, df = 2 (P = 0.11); $I^2 = 55\%$								
Test for overall effect: Z = 0.46 (P = 0.65)								
14.6.3 6 months' follow-up								
Jarden 2009	81.1	33.9	16	62.8	36.1	13	100.0%	18.30 [-7.41 , 44.01]
Subtotal (95% CI)			**16**			**13**	**100.0%**	**18.30 [-7.41 , 44.01]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.40 (P = 0.16)								
Test for subgroup differences: $Chi^2 = 1.21$, df = 2 (P = 0.55), $I^2 = 0\%$								



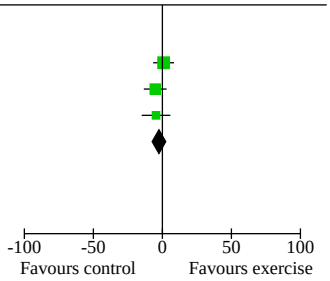
Analysis 14.7. Comparison 14: Social functioning, Outcome 7: FACIT social subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
14.7.1 Up to 12 weeks' follow-up								
Targ 2002	0.43	4	79	0.58	5.5	88	100.0%	-0.15 [-1.60 , 1.30]
Subtotal (95% CI)			**79**			**88**	**100.0%**	**-0.15 [-1.60 , 1.30]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.20 (P = 0.84)								
Test for subgroup differences: Not applicable								



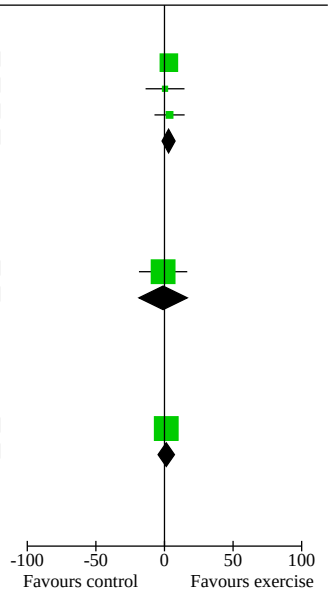
Analysis 14.8. Comparison 14: Social functioning, Outcome 8: MOS SF-36 social function subscale change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
14.8.1 6 months' follow-up								
Cadmus 2009	6.3	13.5	22	5.4	12.3	23	42.2%	0.90 [-6.66 , 8.46]
Segal 2001	1.5	4.1	40	6.7	18.6	20	35.4%	-5.20 [-13.45 , 3.05]
Segal 2001	2.1	20.6	40	6.7	19.1	21	22.4%	-4.60 [-14.97 , 5.77]
Subtotal (95% CI)			**102**			**64**	**100.0%**	**-2.49 [-7.40 , 2.42]**
Heterogeneity: Tau² = 0.00; Chi² = 1.35, df = 2 (P = 0.51); I² = 0%								
Test for overall effect: Z = 0.99 (P = 0.32)								
Test for subgroup differences: Not applicable								



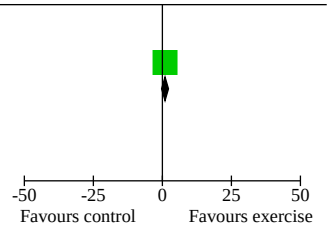
Analysis 14.9. Comparison 14: Social functioning, Outcome 9: MOS SF-36 social function subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
14.9.1 Up to 12 weeks' follow-up								
Adamsen 2009	79.7	22.2	118	76.5	22	117	70.2%	3.20 [-2.45 , 8.85]
Chandwani 2010	85.2	24.5	26	84.8	28.1	27	11.2%	0.40 [-13.78 , 14.58]
Galvao 2010	87	18.4	29	83.3	23.5	28	18.6%	3.70 [-7.28 , 14.68]
Subtotal (95% CI)			**173**			**172**	**100.0%**	**2.98 [-1.76 , 7.72]**
Heterogeneity: Tau² = 0.00; Chi² = 0.15, df = 2 (P = 0.93); I² = 0%								
Test for overall effect: Z = 1.23 (P = 0.22)								
14.9.2 More than 12 weeks' to less than 6 months' follow-up								
Chandwani 2010	85.2	31.7	27	86.2	35.5	29	100.0%	-1.00 [-18.60 , 16.60]
Subtotal (95% CI)			**27**			**29**	**100.0%**	**-1.00 [-18.60 , 16.60]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.11 (P = 0.91)								
14.9.3 6 months' follow-up								
Cadmus 2009	48.7	10.2	22	47.4	10.2	23	100.0%	1.30 [-4.66 , 7.26]
Subtotal (95% CI)			**22**			**23**	**100.0%**	**1.30 [-4.66 , 7.26]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.43 (P = 0.67)								
Test for subgroup differences: Chi² = 0.32, df = 2 (P = 0.85), I² = 0%								



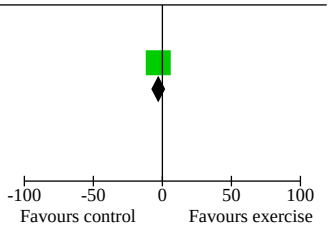
Analysis 14.10. Comparison 14: Social functioning, Outcome 10: WHO BREF social function subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
14.10.1 Up to 12 weeks' follow-up								
Hwang 2008	13.71	1.65	17	12.75	2.2	20	100.0%	0.96 [-0.28 , 2.20]
Subtotal (95% CI)			**17**			**20**	**100.0%**	**0.96 [-0.28 , 2.20]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.51 (P = 0.13)								
Test for subgroup differences: Not applicable								



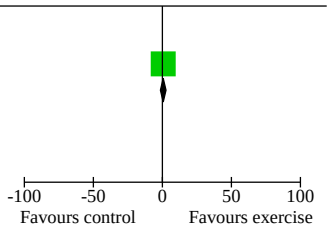
Analysis 14.11. Comparison 14: Social functioning, Outcome 11: Ferrans and Power social economic subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
14.11.1 Up to 12 weeks' follow-up								
Hacker 2011	19.6	4.7	8	22.6	4.7	9	100.0%	-3.00 [-7.48 , 1.48]
Subtotal (95% CI)			**8**			**9**	**100.0%**	**-3.00 [-7.48 , 1.48]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.31 (P = 0.19)								
Test for subgroup differences: Not applicable								



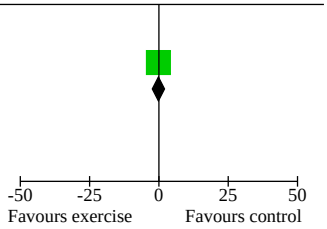
Analysis 14.12. Comparison 14: Social functioning, Outcome 12: General Health Questionnaire social dysfunction subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
14.12.1 More than 12 weeks' to less than 6 months' follow-up								
Moros 2010	2.6	2.31	10	2	1.91	7	100.0%	0.60 [-1.41 , 2.61]
Subtotal (95% CI)			**10**			**7**	**100.0%**	**0.60 [-1.41 , 2.61]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.58 (P = 0.56)								
Test for subgroup differences: Not applicable								



Analysis 14.13. Comparison 14: Social functioning, Outcome 13: QLSI social and familial functioning subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
14.13.1 Up to 12 weeks' follow-up								
Lanctot 2010	2.14	2.78	37	2.32	5.6	30	100.0%	-0.18 [-2.37 , 2.01]
Subtotal (95% CI)			**37**			**30**	**100.0%**	**-0.18 [-2.37 , 2.01]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.16 (P = 0.87)								
Test for subgroup differences: Not applicable								



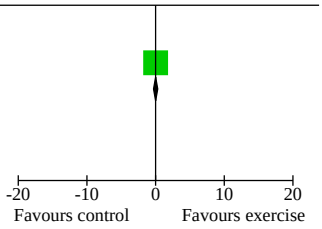
Comparison 15. Spiritual functioning

Outcome or subgroup title	No. of studies	No. of partici-pants	Statistical method	Effect size
15.1 Overall spiritual function change	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
15.1.1 Up to 12 weeks' follow-up	1	167	Std. Mean Difference (IV, Random, 95% CI)	0.01 [-0.30, 0.31]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
15.2 Overall spiritual function follow-up values	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
15.2.1 Up to 12 weeks' follow-up	3	172	Std. Mean Difference (IV, Random, 95% CI)	0.46 [0.14, 0.77]
15.3 FACT -Sp change	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
15.3.1 Up to 12 weeks' follow-up	1	167	Mean Difference (IV, Random, 95% CI)	0.05 [-2.89, 2.99]
15.4 FACIT-Sp follow-up values	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
15.4.1 Up to 12 weeks' follow-up	2	155	Mean Difference (IV, Random, 95% CI)	4.03 [0.81, 7.25]
15.5 Ferrans and Power psychological/spiritual subscale follow-up values	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
15.5.1 Up to 12 weeks' follow-up	1	17	Mean Difference (IV, Random, 95% CI)	3.80 [-0.26, 7.86]

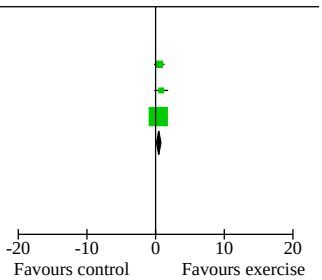
Analysis 15.1. Comparison 15: Spiritual functioning, Outcome 1: Overall spiritual function change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
15.1.1 Up to 12 weeks' follow-up								
Targ 2002	3.4	9.3	79	3.35	10.1	88	100.0%	0.01 [-0.30 , 0.31]
Subtotal (95% CI)			**79**			**88**	**100.0%**	**0.01 [-0.30 , 0.31]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.03 (P = 0.97)								
Test for subgroup differences: Not applicable								



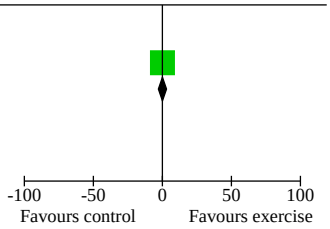
Analysis 15.2. Comparison 15: Spiritual functioning, Outcome 2: Overall spiritual function follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
15.2.1 Up to 12 weeks' follow-up								
Danhauer 2009	26	6.7	13	21.5	9.4	14	16.7%	0.53 [-0.24 , 1.30]
Hacker 2011	26.4	3.2	8	22.6	5.2	9	9.9%	0.82 [-0.18 , 1.83]
Moadel 2007	37.4	9.1	84	33.55	11	44	73.4%	0.39 [0.02 , 0.76]
Subtotal (95% CI)			**105**			**67**	**100.0%**	**0.46 [0.14 , 0.77]**
Heterogeneity: Tau² = 0.00; Chi² = 0.67, df = 2 (P = 0.71); I² = 0%								
Test for overall effect: Z = 2.84 (P = 0.004)								
Test for subgroup differences: Not applicable								



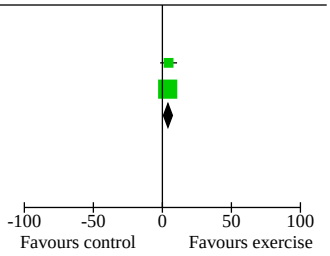
Analysis 15.3. Comparison 15: Spiritual functioning, Outcome 3: FACT -Sp change

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
15.3.1 Up to 12 weeks' follow-up								
Targ 2002	3.4	9.3	79	3.35	10.1	88	100.0%	0.05 [-2.89 , 2.99]
Subtotal (95% CI)			**79**			**88**	**100.0%**	**0.05 [-2.89 , 2.99]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 0.03 (P = 0.97)								
Test for subgroup differences: Not applicable								



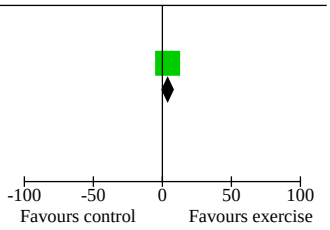
Analysis 15.4. Comparison 15: Spiritual functioning, Outcome 4: FACIT-Sp follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
15.4.1 Up to 12 weeks' follow-up								
Danhauer 2009	26	6.7	13	21.5	9.4	14	27.7%	4.50 [-1.62 , 10.62]
Moadel 2007	37.4	9.1	84	33.55	11	44	72.3%	3.85 [0.06 , 7.64]
Subtotal (95% CI)			**97**			**58**	**100.0%**	**4.03 [0.81 , 7.25]**
Heterogeneity: Tau² = 0.00; Chi² = 0.03, df = 1 (P = 0.86); I² = 0%								
Test for overall effect: Z = 2.45 (P = 0.01)								
Test for subgroup differences: Not applicable								



Analysis 15.5. Comparison 15: Spiritual functioning, Outcome 5: Ferrans and Power psychological/spiritual subscale follow-up values

Study or Subgroup	Exercise Mean	Exercise SD	Exercise Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
15.5.1 Up to 12 weeks' follow-up								
Hacker 2011	26.4	3.2	8	22.6	5.2	9	100.0%	3.80 [-0.26 , 7.86]
Subtotal (95% CI)			**8**			**9**	**100.0%**	**3.80 [-0.26 , 7.86]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 1.84 (P = 0.07)								
Test for subgroup differences: Not applicable								



ADDITIONAL TABLES

Table 1. HRQoL instruments used by investigators

Instrument name	Abbreviation	Overall domain or subscale	Direction of response	Trials using this scale
Health-related quality of life				
European Organization for Research and Treatment of Can-	QLQ-C30	HRQoL	Higher score indicates better status	Adamsen 2009; Arbane 2009; Culos-Reed 2010; Gomes 2011;

Table 1. HRQoL instruments used by investigators *(Continued)*

cer Quality of Life Questionnaire-C30				Hacker 2011; Jarden 2009; Moros 2010; Wiskemann 2011
European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-RB23	QLQ-B23	HRQoL	Higher score indicates better status	Gomes 2011
Functional Assessment of Cancer Therapy - Anemia	FACT-An	HRQoL	Higher score indicates better status	Courneya 2007a; Courneya 2008; Courneya 2009; Jarden 2009
Functional Assessment of Cancer Therapy - Breast	FACT-B	HRQoL	Higher score indicates better status	Campbell 2005; Courneya 2003a; Danhauer 2009; de Oliveira 2010; DiSipio 2009; Rogers 2009; Segal 2001
Functional Assessment of Cancer Therapy - General	FACT-G	HRQoL	Higher score indicates better status	Bourke 2011; Cadmus 2009; Campbell 2005; Courneya 2003a; de Oliveira 2010; Donnelly 2011; Jarden 2009; Moadel 2007; Mutrie 2007; Oh 2010; Rogers 2009; Segal 2001; Segal 2009; Wang 2010
Functional Assessment of Cancer Therapy - Prostate	FACT-P	HRQoL	Higher score indicates better status	Bourke 2011; Monga 2007; Segal 2003
Medical Outcomes Study Short Form-36	MOS SF-36	HRQoL	Higher score indicates better status	Griffith 2009; Haddad 2011
Functional Assessment of Chronic Illness Therapy-Fatigue	FACIT-F	HRQoL	Higher score indicates better status	Headley 2004; Mustian 2009; Targ 2002
World Health Organization Quality of Life (mean score)	WHO QOL-BREF	HRQoL	Higher score indicates better status	Hwang 2008
World Health Organization Quality of Life (single item)	WHO QOL-BREF	HRQoL	Higher score indicates better status	Hwang 2008
Medical Outcomes Study Short Form-36	MOS SF-36	HRQoL	Higher score indicates better status	Griffith 2009; Mock 2001
Ferrans and Powers Quality of Life Instrument	FPQLI	HRQoL	Higher score indicates better status	Hacker 2011
Functional Living Index for Cancer	FLIC	HRQoL	Higher score indicates better status	Raghavendra 2007
Spitzer QOL Uniscale		HRQoL	Higher score indicates better status	Cheville 2010
Linear Analog Scales of Assessment	LASA	HRQoL	Higher score indicates better status	Cheville 2010
Quality of Life Systematic Inventory		HRQoL	Unclear	Lanctot 2010

Table 1. HRQoL instruments used by investigators *(Continued)*

Condition-specific HRQoL				
Functional Assessment of Cancer Therapy - Breast	FACT-B	Additional breast cancer concerns	Higher score indicates better status	Cadmus 2009; Campbell 2005; Courneya 2003a; Courneya 2007a; Danhauer 2009; de Oliveira 2010; Mutrie 2007; Rogers 2009
Functional Assessment of Cancer Therapy	FACT	Lymphoma cancer concerns	Higher score indicates better status	Courneya 2009
Functional Assessment of Cancer Therapy - Prostate	FACT-P	Prostate cancer concerns	Higher score indicates better status	Monga 2007; Segal 2009
Functional Assessment of Chronic Illness Therapy-Fatigue	FACIT-F	General cancer concerns	Higher score indicates better status	Targ 2002
Expanded Prostate Cancer Index Composite	EPIC	Prostate cancer concerns	Higher score indicates worse status	Culos-Reed 2010
Anxiety				
Hospital Anxiety and Depression Scale	HADS	Anxiety	Higher score indicates worse status	Adamsen 2009; Banerjee 2007; Jarden 2009; Wiskemann 2011
State-Trait Anxiety Scale	STAI	State anxiety	Higher score indicates worse status	Cadmus 2009; Chandwani 2010; Cohen 2004; Courneya 2003a; Courneya 2007a; Courneya 2009; Raghavendra 2007
Profile of Mood Scale	POMS	Tension-anxiety	Higher score indicates worse status	Chang 2008; Moadel 2007; Oh 2010; Targ 2002
Symptom Checklist 90 Revised	SCL-90-R	Anxiety	Higher score indicates better status	Dimeo 1999
Symptom Checklist 90 Revised	SCL-90-R	Phobic anxiety	Higher score indicates better status	Dimeo 1999
General Health Questionnaire	GHQ	Anxiety	Higher score indicates worse status	Moros 2010
Symptom Assessment Scale	SAS	Anxiety	Higher score indicates worse status	Mock 1997

Table 1. HRQoL instruments used by investigators *(Continued)*

Body Image/self-esteem				
Tennessee Self-Concept Scale	TSCS	Self-concept	Higher score indicates better status	Mock 1994
Body Image Visual Analogue Scale	BIVAS	Body image	Higher score indicates better status	Mock 1994
Rosenberg Self-Esteem		Self-esteem	Higher score indicates better status	Cadmus 2009; Courneya 2007a
Symptom Assessment Scale	SAS	Body dissatisfaction	Higher score indicates worse status	Mock 1997
Cognitive function				
European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30	QLQ-C30	Cognitive functioning	Higher score indicates better status	Adamsen 2009; Hacker 2011; Jarden 2009; Moros 2010; Wiskemann 2011
Functional Assessment of Cancer Therapy-Cognitive	FACT-Cog	Cognitive functioning	Higher score indicates worse status	Oh 2010; Rogers 2009
Profile of Mood Scale	POMS	Confusion-bewilderment	Higher score indicates worse status	Moadel 2007; Oh 2010; Targ 2002
Linear Analog Scales of Assessment	LASA	Cognitive	Higher score indicates better status	Cheville 2010
Attentional Functional Index	AFI	Cognitive functioning	Higher score indicates better status	Crowley 2003
Depression				
Centers for Epidemiological Studies - Depression Scale	CES-D	Depression	Higher score indicates worse status	Cadmus 2009; Chandwani 2010; Cohen 2004; Courneya 2003a; Courneya 2007a; Courneya 2009; Culos-Reed 2010; Danhauer 2009; Haddad 2011
Hospital Anxiety and Depression Scale	HADS	Depression	Higher score indicates worse status	Adamsen 2009; Banerjee 2007; Jarden 2009; Wiskemann 2011
Beck Depression Inventory-II	BDI	Depression	Higher score indicates worse status	Donnelly 2011; Lanctot 2010; Monga 2007; Mutrie 2007; Raghavendra 2007

Table 1. HRQoL instruments used by investigators *(Continued)*

Profile of Mood Scale	POMS	Depression-dejection	Higher score indicates worse status	Chang 2008; Dimeo 1999; Oh 2010; Targ 2002; Wiskemann 2011
Symptom Checklist 90 Revised	SCL-90-R	Depression	Higher score indicates better status	Dimeo 1999
General Health Questionnaire	GHQ	Depression	Higher score indicates worse status	Moros 2010
Symptom Assessment Scale	SAS	Depression	Higher score indicates worse status	Mock 1997
Emotional function/mental health				
Functional Assessment of Cancer Therapy - Breast	FACT-B	Emotional well-being	Higher score indicates better status	Danhauer 2009; de Oliveira 2010; Rogers 2009
Functional Assessment of Cancer Therapy - General	FACT-G	Emotional well-being	Higher score indicates better status	Cadmus 2009; Moadel 2007; Monga 2007; Mutrie 2007; Oh 2010
Functional Assessment of Chronic Illness - Fatigue	FACIT-F	Emotional well-being	Higher score indicates better status	Targ 2002
European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30	QLQ-C30	Emotional functioning	Higher score indicates better status	Adamsen 2009; Hacker 2011; Jarden 2009; Moros 2010; Wiskemann 2011
Profile of Mood Scale	POMS	Mood	Higher score indicates worse status	Griffith 2009; Moadel 2007; Mock 2001; Oh 2010; Targ 2002; Yang 2011
Profile of Mood Scale	POMS	Anger-hostility	Higher score indicates worse status	Dimeo 1999; Oh 2010; Targ 2002; Wiskemann 2011
Profile of Mood Scale	POMS	Irritability	Higher score indicates worse status	Moadel 2007; Oh 2010
Fordyce Happiness Measure	FORDYCE	Happiness	Higher score indicates better status	Cadmus 2009
Happiness Measure	HM	Happiness	Higher score indicates better status	Courneya 2009
Medical Outcomes Study Short Form-12	MOS SF-12	Mental health component	Higher score indicates better status	Danhauer 2009

Table 1. HRQoL instruments used by investigators *(Continued)*

Medical Outcomes Study Short Form-36	MOS SF-36	Mental health component	Higher score indicates better status	Adamsen 2009; Cadmus 2009; Chandwani 2010; Galvao 2010; Tang 2010
Medical Outcomes Study Short Form-36	MOS SF-36	Mental health	Higher score indicates better status	Adamsen 2009; Chandwani 2010; Crowley 2003; Galvao 2010; Mock 2001; Segal 2001
Medical Outcomes Study Short Form-36	MOS SF-36	Role emotional	Higher score indicates better status	Cadmus 2009; Chandwani 2010; Crowley 2003; Galvao 2010; Mock 2001; Segal 2001
Positive and Negative Affect Scale	PANAS	Positivity	Higher score indicates better status	Danhauer 2009; Donnelly 2011; Mutrie 2007
Functional Assessment of Cancer Therapy - Breast	FACT-B	Psychological functioning	Higher score indicates better status	Danhauer 2009; Rogers 2009
Satisfaction with Life Scale	SWLS	Satisfaction	Higher score indicates better status	Campbell 2005; Courneya 2003a
Psychosocial Adjustment to Illness Scale	PAIS	Psychosocial response to illness	Higher score indicates worse status	Mock 1994
WHO QOL-BREF subscale	WHO QOL-BREF	Psychological functioning	Higher score indicates better status	Hwang 2008
Perceived Stress Scale	PSS	Stress	Higher score indicates worse status	Banerjee 2007
Brief Symptom Inventory (subset of SCL-90-R)	BSI	Psychological distress	Higher score indicates better status	Mock 1994
National Comprehensive Cancer Network Distress Thermometer	NCCN	Distress	Higher score indicates worse status	Wiskemann 2011
Cohen's Perceived Stress Scale		Stress	Higher score indicates worse status	Cadmus 2009
Linear Analog Scales of Assessment	LASA	Emotional	Higher score indicates better status	Cheville 2010
Symptom Distress Scale (modification of Symptom Checklist 90)	SDS	Stress	Higher score indicates worse status	Cheville 2010; Griffith 2009
Symptom Checklist 90 Revised	SCL-90-R	Psychological distress	Higher score indicates better status	Dimeo 1999

Table 1. HRQoL instruments used by investigators *(Continued)*

Symptom Checklist 90 Revised	SCL-90-R	Obsessive compulsive	Higher score indicates better status	Dimeo 1999
Symptom Checklist 90 Revised	SCL-90-R	Hostility	Higher score indicates better status	Dimeo 1999
Symptom Checklist 90 Revised	SCL-90-R	Somatization	Higher score indicates better status	Dimeo 1999
General Health Questionnaire	GHQ	Psychological status	Higher score indicates worse status	Moros 2010
General Health Questionnaire	GHQ	Somatization	Higher score indicates worse status	Moros 2010
Fatigue				
European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30	QLQ-C30	Fatigue	Higher score indicates worse status	Adamsen 2009; Hacker 2011; Jarden 2009; Wiskemann 2011
Functional Assessment of Cancer Therapy - Anemia	FACT-An	Fatigue	Higher score indicates better status	Courneya 2007a; Courneya 2008; Courneya 2009; Jarden 2009
Functional Assessment of Cancer Therapy	FACT	Fatigue	Higher score indicates worse status	Courneya 2003a
Functional Assessment of Cancer Therapy - Fatigue	FACT-F	Fatigue	Higher score indicates worse status	Bourke 2011; Danhauer 2009; Mutrie 2007; Segal 2003; Segal 2009
Profile of Mood Scale	POMS	Fatigue-inertia	Higher score indicates worse status	Brown 2006; Cheville 2010; Dimeo 1999; Oh 2010; Targ 2002; Wiskemann 2011
Profile of Mood Scale	POMS	Vigor-activity	Higher score indicates better status	Brown 2006; Cheville 2010; Dimeo 1999; Oh 2010; Targ 2002; Wiskemann 2011
Linear Analog Self-Assessment	LASA	Fatigue	Higher score indicates worse status	Brown 2006
Schwartz Cancer Fatigue Scale	SCFS	Fatigue	Higher score indicates worse status	Caldwell 2009
Multidimensional Fatigue Inventory	MFI	Fatigue	Higher score indicates worse status	Donnelly 2011; Wiskemann 2011
Piper Fatigue Scale	PFS	Fatigue	Higher score indicates worse status	Battaglini 2008; Campbell 2005; Crowley 2003; Griffith 2009; Mock 1997; Mock 2001; Mock 2005; Monga 2007

Table 1. HRQoL instruments used by investigators *(Continued)*

Functional Assessment of Chronic Illness Therapy - Fatigue	FACIT-F	Fatigue	Higher score indicates better status	Donnelly 2011; Headley 2004; Moadel 2007; Mustian 2009; Oh 2010; Wang 2010
Linear Analog Scales of Assessment	LASA	Fatigue	Higher score indicates better status	Cheville 2010
Medical Outcomes Study Short Form-36	MOS SF-36	Vitality	Higher score indicates better status	Adamsen 2009; Cadmus 2009; Chandwani 2010; Crowley 2003; Galvao 2010; Mock 2001; Segal 2001
Brief Fatigue Inventory	BFI	Fatigue	Higher score indicates worse status	Chandwani 2010; Chang 2008; Cohen 2004; Haddad 2011; Hwang 2008; Mustian 2009; Windsor 2004
Daily diary		Fatigue	Higher score indicates worse status	Mock 2001
State-Trait Anxiety Scale	STAI	Fatigue	Higher score indicates worse status	Brown 2006
Symptom Distress Scale (modification of Symptom Checklist 90)	SDS	Fatigue	Higher score indicates worse status	Brown 2006; Chang 2008
Attentional Functional Index	AFI	Attentional fatigue	Higher score indicates better status	Crowley 2003
Fatigue Severity Score	FSS	Fatigue	Higher score indicates worse status	Culos-Reed 2010
Symptom Assessment Scale	SAS	Fatigue	Higher score indicates worse status	Mock 1997
Chalder Fatigue Questionnaire		Fatigue	Unclear	Gomes 2011
General health perspective				
Medical Outcomes Study Short Form-12	MOS SF-12	Item on health	Higher score indicates better status	Cadmus 2009; Chandwani 2010; Courneya 2009; Crowley 2003; Galvao 2010; Mock 2001; Segal 2001
Single question on health		Perceived health	Higher score indicates better status	Rogers 2009
WHO QOL-BREF single item	WHO QOL-BREF	General health score	Higher score indicates better status	Hwang 2008
Ferrans and Powers Quality of Life Instrument	FPQLI	Health and func-	Higher score indicates better status	Hacker 2011

Table 1. HRQoL instruments used by investigators *(Continued)*

		tioning subscale		
Pain				
European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30	QLQ-C30	Pain	Higher score indicates worse status	Adamsen 2009; Hacker 2011; Jarden 2009; Wiskemann 2011
Medical Outcomes Study Short Form-36	MOS SF-36	Bodily pain	Higher score indicates better status	Adamsen 2009; Cadmus 2009; Chandwani 2010; Crowley 2003; Galvao 2010; Griffith 2009; Mock 2001; Segal 2001
Visual Analog Scale	VAS	Pain	Higher score indicates worse status	Hwang 2008
Linear Analog Scales of Assessment	LASA	Pain frequency	Higher score indicates better status	Cheville 2010
Linear Analog Scales of Assessment	LASA	Pain severity	Higher score indicates better status	Cheville 2010
Physical well-being				
European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30	QLQ-C30	Physical function	Higher score indicates better status	Adamsen 2009; Hacker 2011; Jarden 2009; Moros 2010; Wiskemann 2011
Functional Assessment of Cancer Therapy - Anemia	FACT-An TOI	Physical well-being	Higher score indicates better status	Courneya 2009
Functional Assessment of Cancer Therapy - Breast	FACT-B	Physical well-being	Higher score indicates better status	Campbell 2005; Courneya 2003a; Danhauer 2009; de Oliveira 2010; Rogers 2009
Functional Assessment of Cancer Therapy - General	FACT-G	Physical well-being	Higher score indicates better status	Cadmus 2009; Moadel 2007; Monga 2007; Mutrie 2007; Oh 2010
Functional Assessment of Chronic Illness Fatigue	FACIT-F	Physical well-being	Higher score indicates better status	Targ 2002
Medical Outcomes Study Short Form-12	MOS SF-12	Physical function	Higher score indicates better status	Cadmus 2009; Chandwani 2010; Danhauer 2009; Mock 2001; Segal 2001
Medical Outcomes Study Short Form-36	MOS SF-36	Physical component	Higher score indicates better status	Adamsen 2009; Chandwani 2010; Galvao 2010; Tang 2010
Medical Outcomes Study Short Form-36	MOS SF-36	Role physical	Higher score indicates better status	Adamsen 2009; Cadmus 2009; Chandwani 2010; Galvao 2010;

Table 1. HRQoL instruments used by investigators *(Continued)*

				Griffith 2009; Mock 2001; Segal 2001
Medical Outcomes Study Short Form-36	MOS SF-36	Physical functioning	Higher score indicates better status	Adamsen 2009; Crowley 2003; Galvao 2010; Griffith 2009; Mock 2001; Mock 2005; Segal 2001
WHO QOL-BREF subscale	WHO QOL-BREF	Physical functioning	Higher score indicates better status	Hwang 2008
Linear Analog Scales of Assessment	LASA	Physical	Higher score indicates better status	Cheville 2010
Role function				
Functional Assessment of Cancer Therapy - Anemia	FACT-An	Functional well-being	Higher score indicates better status	Jarden 2009
Functional Assessment of Cancer Therapy - Breast	FACT-B	Functional well-being	Higher score indicates better status	Campbell 2005; Courneya 2003a; Danhauer 2009; de Oliveira 2010; Rogers 2009
Functional Assessment of Cancer Therapy - General	FACT-G	Functional well-being	Higher score indicates better status	Cadmus 2009; Moadel 2007; Monga 2007; Mutrie 2007; Oh 2010
Functional Assessment of Chronic Illness Fatigue	FACIT-F	Functional well-being	Higher score indicates better status	Targ 2002
European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30	QLQ-C30	Functional well-being	Higher score indicates better status	Adamsen 2009; Hacker 2011; Jarden 2009; Moros 2010; Wiskemann 2011
WHO QOL-BREF subscale	WHO QOL-BREF	Environmental functioning	higher score indicates better status	Hwang 2008
Ferrans and Powers Quality of Life Instrument	FPQLI	Family	Higher score indicates better status	Hacker 2011
Symptom Checklist 90 Revised	SCL-90-R	Interpersonal sensitivity	Higher score indicates better status	Dimeo 1999
Sleep				
European Organization for Research and Treatment of Can-	QLQ-C30	Insomnia	Higher score indicates worse status	Hacker 2011; Jarden 2009; Wiskemann 2011

Table 1. HRQoL instruments used by investigators *(Continued)*

cer Quality of Life Questionnaire-C30				
Pittsburgh Sleep Quality Index	PSQI	Sleep disturbance	Higher score indicates worse status	Chandwani 2010; Cohen 2004; Danhauer 2009; Donnelly 2011; Rogers 2009; Wang 2010
Taiwanese Pittsburgh Sleep Quality Index	PSQI	Sleep disturbance	Higher score indicates worse status	Tang 2010
Social functioning				
European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30	QLQ-C30	Social functioning	Higher score indicates better status	Adamsen 2009; Hacker 2011; Jarden 2009; Moros 2010; Wiskemann 2011
Functional Assessment of Cancer Therapy - Breast	FACT-B	Social/family well-being	Higher score indicates better status	Courneya 2003a; Danhauer 2009; de Oliveira 2010; Rogers 2009
Functional Assessment of Cancer Therapy - General	FACT-G	Social/family well-being	Higher score indicates better status	Cadmus 2009; Moadel 2007; Monga 2007; Mutrie 2007; Oh 2010
Functional Assessment of Chronic Illness Therapy-Fatigue	FACIT-F	Social/family well-being	Higher score indicates better status	Targ 2002
Medical Outcomes Study Short Form-36	MOS SF-36	Social/family well-being	Higher score indicates better status	Adamsen 2009; Cadmus 2009; Chandwani 2010; Crowley 2003; Galvao 2010; Mock 2001; Segal 2001
WHO QoL-BREF subscale	WHO QoL-BREF	Social functioning	Higher score indicates better status	Hwang 2008
Ferrans and Powers Quality of Life Instrument	FPQLI	Social/economic	Higher score indicates better status	Hacker 2011
Linear Analog Scales of Assessment	LASA	Social well-being	Higher score indicates better status	Cheville 2010
Linear Analog Scales of Assessment	LASA	Social support	Higher score indicates better status	Cheville 2010
General Health Questionnaire	GHQ	Social dysfunction	Higher score indicates worse status	Moros 2010

Table 1. HRQoL instruments used by investigators *(Continued)*

Spiritual function				
Functional Assessment of Cancer Therapy - Breast	FACT-B	Spiritual	Higher score indicates better status	Courneya 2003a; Haddad 2011; Rogers 2009; Targ 2002
Functional Assessment of Chronic Illness Therapy-Spirituality	FACIT-SP	Peace	Higher score indicates better status	Cheville 2010; Danhauer 2009; Moadel 2007
Principles of Living Survey	PLS	Spiritual	Higher score indicates better status	Targ 2002
Ferrans and Powers Quality of Life Instrument	FPQLI	Psychological/spiritual	Higher score indicates better status	Hacker 2011
Linear Analog Scales of Assessment	LASA	Spiritual well-being	Higher score indicates better status	Cheville 2010

APPENDICES

Appendix 1. MEDLINE search strategy

[inception to May 2010; 430 hits] [January 2010 to November 2011; 190 hits]

1. exp exercise/
2. exercise tolerance/
3. exp exertion/
4. Pliability/
5. physical fitness/
6. "Physical Education and Training"/
7. exp physical endurance/
8. exercise therapy/
9. exercising.mp.
10. physical condition$.mp.
11. stamina.mp.
12. motor activity/
13. exercise test/
14. exp Sports/
15. tai chi.mp. or tai ji/
16. yoga/
17. muscle stretching exercises/
18. exp "range of motion, articular"/
19. pilates.mp.
20. qigong.mp.
21. chi kung.mp.
22. resistance training.mp.
23. mind body therap$.mp.
24. exp complementary therapies/
25. Bad Ragaz.mp.
26. Ai Chi.mp.

27. Halliwick.mp.
28. hippotherapy.mp.
29. Hydrotherapy/
30. balance exercise$.mp.
31. aquatic exercise$.mp.
32. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31
33. "quality of life"/
34. exp health status/
35. "activities of daily living"/
36. life qualit$.mp.
37. exp self concept/
38. health level.mp.
39. level of health.mp.
40. wellness.mp.
41. well being.mp.
42. (activities of daily life or daily living activities).mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
43. functional ability.mp.
44. good health.mp.
45. healthiness.mp.
46. patient reported outcomes.mp.
47. social adjustment/
48. physical limitations.mp.
49. psychiatric status.mp.
50. pain measurement/
51. functional assessment.mp.
52. fact questionnaire.mp.
53. fact survey.mp.
54. qlc-c30.mp.
55. facit.mp.
56. toi.mp.
57. (flic or sf-36 or ces-d or bdi or sta1 or bfi or hads or lasa or poms or qli or rsci or pais or bpi or msas or mos or ptgi or panas).mp.
58. sense of coherence.mp.
59. randomized.ab.
60. placebo.ab.
61. randomly.ab.
62. trial.ab.
63. randomized controlled trial.pt.
64. controlled clinical trial.pt.
65. random$.ab
66. exp neoplasms/
67. cancer.mp.
68. (neoplasm$ or tumor$ or tumour or malignan$).mp.
69. active treatment.mp.
70. 35 or 33 or 53 or 48 or 42 or 46 or 44 or 55 or 50 or 39 or 57 or 36 or 40 or 51 or 58 or 41 or 47 or 52 or 38 or 34 or 56 or 49 or 37 or 45 or 43 or 54
71. 59 or 60 or 63 or 64 or 61 or 62 or 65
72. 66 or 67 or 68 or 69
73. 32 and 70 and 71 and 72
74. Survivors/
75. survivor.mp.
76. 74 or 75

77.73 not 76

Appendix 2. CENTRAL search strategy

[inception to May 2010; 423 hits] [January 2010 to November 2011; 219 hits]

Searched via Ovid EBM Reviews

[mp=ti, ot, ab, tx, kw, ct, sh, hw]

1. exercise.mp.
2. physical fitness.mp.
3. physical endurance.mp.
4. exercising.mp.
5. physical conditioning.mp.
6. stamina.mp.
7. sports.mp.
8. tai chi.mp.
9. yoga.mp.
10. pilates.mp.
11. qigong.mp.
12. chi kung.mp.
13. resistance training.mp.
14. mind body therap$.mp.
15. complementary therap$.mp.
16. bad ragaz.mp.
17. ai chi.mp.
18. halliwick.mp.
19. hippotherapy.mp.
20. hydrotherapy.mp.
21. balance exercise$.mp.
22. aquatic exercise$.mp.
23. exercise tolerance.mp.
24. pliability.mp.
25. exertion.mp.
26. exercise therapy.mp.
27. motor activit$.mp.
28. exercise test$.mp.
29. muscle stretching exercise$.mp.
30. range of motion.mp.
31. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30
32. quality of life.mp.
33. health status.mp.
34. activities of daily living.mp.
35. life qualit$.mp.
36. self concept.mp.
37. health level.mp.
38. level of health.mp.
39. wellness.mp.
40. well being.mp.
41. (activities of daily life or daily living activities).mp.
42. functional ability.mp.
43. good health.mp.
44. healthiness.mp.

45.patient reported outcomes.mp.
46.social adjustment.mp.
47.physical limitation$.mp.
48.psychiatric status.mp.
49.pain measurement.mp.
50.functional assessment.mp.
51.fact questionnaire.mp.
52.fact survey.mp.
53.qlc-c30.mp.
54.facit.mp.
55.toi.mp.
56.(flic or sf-36 or ces-d or bdi or sta1 or bfi or hads or lasa or poms or qli or rsci or pais or bpi or msas or mos or ptgi).mp.
57.sense of coherence.mp.
58.32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57
59.randomized.ab.
60.placebo.ab.
61.randomly.ab.
62.trial.ab.
63.random$.ab.
64.59 or 60 or 61 or 62 or 63
65.cancer.mp.
66.(neoplasm$ or tumor$ or tumour$ or malignan$).mp.
67.active treatment.mp.
68.65 or 66 or 67
69.31 and 58 and 64 and 68
70.survivor$.mp.
71.69 not 70

Appendix 3. EMBASE search strategy

[inception to May 2010; 713 hits] [January 2010 to November 2011; 349 hits]

1. exp exercise/
2. exertion.mp.
3. pliability/
4. fitness/
5. (physical education and training).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
6. physical endurance.mp. or endurance/
7. kinesiotherapy/
8. exercising.mp.
9. "physical condition$".mp.
10. stamina.mp.
11. exp motor activity/
12. exp sports/
13. exercise test/
14. tai chi.mp.
15. tai ji.mp.
16. yoga/
17. stretching exercise/
18. "range of motion"/
19. pilates.mp.
20. qigong.mp.
21. chi kung.mp.

22.muscle strength/ or muscle training/ or resistance training.mp.
23.mind body therapy.mp.
24.alternative medicine/
25.bad ragaz.mp.
26.ai chi.mp.
27.halliwick.mp.
28.hippotherapy.mp.
29.hydrotherapy/
30.balance exercises.mp.
31.aquatic exercise/
32.1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31
33."quality of life"/
34.exp health status/
35.daily life activity/
36.life qualit$.mp.
37.exp self concept/
38.health level.mp.
39."level of health".mp.
40.wellbeing/
41.wellness.mp.
42.good health.mp.
43.functional ability.mp.
44.healthiness.mp.
45."patient reported outcomes".mp.
46.social adaptation/
47.physical limitation$.mp.
48.psychiatric status.mp.
49.pain assessment/
50.functional assessment/
51.questionnaire/ or fact questionnaire.mp.
52.fact survey.mp.
53.health survey/
54.qlc-c30.mp.
55.facit.mp.
56.toi.mp.
57.sense of coherence.mp.
58.(flic or sf-36 or ces-d or bdi or stal or bfi or hads or lasa or poms or qli or rsci or pais or bpi or msas or mos or ptgi or panas).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
59.randomized.ab.
60.placebo.ab.
61.randomly.ab.
62.trial.ab.
63.random$.ab.
64.randomized controlled trial.pt
65.59 or 60 or 61 or 62 or 63 or 64
66.35 or 33 or 53 or 48 or 42 or 46 or 44 or 55 or 50 or 39 or 57 or 36 or 40 or 51 or 58 or 41 or 47 or 52 or 38 or 34 or 56 or 49 or 37 or 45 or 43 or 54
67.exp neoplasm/
68.cancer.mp.
69.(neoplasm$ or tumor$ or tumour or malignan$).mp3
70.active treatment
71.(67 or 68 or 69 or 70)

72.Survivors/
73.survivor$.mp.
74.72 or 73
75.32 and 65 and 66 and 71
76.75 not 74

Appendix 4. CINAHL search strategy

[inception to May 2010; 92 hits] [January 2010 to November 2011; 36 hits]

Search ID#	Search Terms
S73	s72 NOT s70
S72	S32 and S59 and S65 and S71
S71	S66 or S67
S70	S68 or S69
S69	survivor*
S68	(MH "Cancer Survivors")
S67	cancer
S66	(MH "Neoplasms+")
S65	S60 or S61 or S62 or S63 or S64
S64	AB randomized controlled trial
S63	PT clinical trial
S62	AB randomly or trial
S61	AB placebo
S60	AB randomized
S59	S33 or S34 or S35 or S36 or S37 or S38 or S39 or S40 or S41 or S42 or S43 or S44 or S45 or S46 or S47 or S48 or S49 or S50 or S51 or S52 or S55 or S56 or S57 or S58
S58	sense of coherence
S57	(flic or sf-36 or ces-d or bdi or sta1 or bfi or hads or lasa or poms or qli or rsci or pais or bpi or msas or mos or ptgi or panas)
S56	toi
S55	facit
S54	qlc-c30
S53	fact survey

(Continued)

S52	"fact questionnaire"
S51	(MH "Functional Assessment")
S50	(MH "Pain Measurement")
S49	"psychiatric status"
S48	physical limitations
S47	(MH "Social Adjustment")
S46	"patient reported outcomes"
S45	healthiness
S44	good health
S43	(MH "Functional Status")
S42	activities of daily life or daily living activities
S41	(MH "Psychological Well-Being")
S40	(MH "Wellness")
S39	level of health
S38	health level
S37	(MH "Self Concept+")
S36	life qualit*
S35	(MH "Activities of Daily Living")
S34	(MH "Health Status+")
S33	(MH "Quality of Life+")
S32	S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15 or S16 or S17 or S18 or S19 or S20 or S21 or S22 or S23 or S24 or S25 or S26 or S27 or S28 or S29 or S30 or S31
S31	aquatic exercise*
S30	balance exercise*
S29	hydrotherapy
S28	hippotherapy
S27	halliwick
S26	bad ragaz
S25	(MH "Alternative Therapies")

(Continued)

S24	mind body therap*
S23	("resistance training") or (MH "Muscle Strengthening")
S22	chi kung
S21	qigong
S20	pilates
S19	(MH "Range of Motion")
S18	"muscle stretching exercises"
S17	(MH "Yoga")
S16	tai chi
S15	(MH "Sports+")
S14	(MH "Exercise Test")
S13	(MH "Motor Activity")
S12	stamina
S11	physical condition*
S10	exercising
S9	(MH "Therapeutic Exercise")
S8	(MH "Physical Endurance")
S7	(MH "Physical Therapy")
S6	(MH "Physical Education and Training")
S5	(MH "Physical Fitness")
S4	(MH "Pliability")
S3	(MH "Exertion")
S2	(MH "Exercise Tolerance")
S1	(MH "Exercise")

Appendix 5. PsycINFO search strategy

[inception to May 2010; 18 hits] [January 2010 to November 2011; 4 hits]

1. exp exercise/
2. physical fitness/
3. exp physical endurance/

4. exercising.mp.
5. physical condition$.mp.
6. stamina.mp.
7. exp Sports/
8. tai chi.mp. or tai ji/
9. yoga/
10. pilates.mp.
11. qigong.mp.
12. chi kung.mp.
13. resistance training.mp.
14. mind body therap$.mp.
15. exp complementary therapies/
16. Bad Ragaz.mp.
17. Ai Chi.mp.
18. Halliwick.mp.
19. hippotherapy.mp.
20. balance exercise$.mp.
21. aquatic exercise$.mp.
22. "quality of life"/
23. exp health status/
24. "activities of daily living"/
25. life qualit$.mp.
26. exp self concept/
27. health level.mp.
28. level of health.mp.
29. wellness.mp.
30. well being.mp.
31. (activities of daily life or daily living activities).mp.
32. functional ability.mp.
33. good health.mp.
34. healthiness.mp.
35. patient reported outcomes.mp.
36. social adjustment/
37. physical limitations.mp.
38. psychiatric status.mp.
39. pain measurement/
40. functional assessment.mp.
41. fact questionnaire.mp.
42. fact survey.mp.
43. qlc-c30.mp.
44. facit.mp.
45. toi.mp.
46. (flic or sf-36 or ces-d or bdi or sta1 or bfi or hads or lasa or poms or qli or rsci or pais or bpi or msas or mos or ptgi or panas).mp.
47. sense of coherence.mp.
48. randomized.ab.
49. placebo.ab.
50. randomly.ab.
51. trial.ab.
52. exp neoplasms/
53. cancer.mp.
54. 24 or 22 or 42 or 37 or 31 or 35 or 33 or 44 or 39 or 28 or 46 or 25 or 29 or 40 or 47 or 30 or 36 or 41 or 27 or 23 or 45 or 38 or 26 or 34 or 32 or 43
55. random$.ab.

56.(neoplasm$ or tumor$ or tumour or malignan$).mp.
57.active treatment.mp.
58.52 or 53 or 56 or 57
59.Survivors/
60.59 or survivor.mp.
61.exercise tolerance.mp.
62.Physical Education/
63.exertion.mp.
64.pliability.mp.
65.exercise therapy.mp.
66.Motor Processes/ or motor activity.mp.
67.exercise test.mp.
68.muscle stretching exercise*.mp.
69."Range of Motion"/
70.hydrotherapy.mp.
71.1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70
72.54 and 58 and 71
73.48 or 49 or 50 or 51 or 55
74.72 and 73
75.74 not 60

Appendix 6. Other search strategies

LILACS search strategy [inception to May 2010; 3 hits] [January 2010 to November 2011; 12 hits]

Neoplasms and exercise and treatment

OT Seeker search strategy [inception to May 2010; 26 hits] [January 2010 to November 2011; 20 hits]

Database Note returned with search: A precise search did not find any articles. A less precise search has been done and the results are shown below.

(exercise OR exertion OR pliability OR "physical fitness" OR "physical endurance" OR "exercise therapy" OR "motor activity" OR sports) AND cancer AND "quality of life" AND "active treatment"

Limits: Method: clinical trial and Diagnosis/Subdiscipline: Oncology/palliative care

PEDro search strategy [inception to May 2010; 71 hits] [January 2010 to November 2011; 33 hits]

exercise AND cancer AND "quality of life" AND treatment

SIGLE search strategy (now OpenGrey) [inception to July 2010; 0 hits] [January 2010 to November 2011; 0 hits]

exercise AND (cancer OR neoplasms) AND "quality of life AND treatment

Sociological Abstracts (SocINDEX) search strategy [inception to May 2010; 16 hits] [January 2010 to November 2011; 1 hit]

Search ID#	Search Terms
S74	s73 NOT survivor*
S73	S32 and S58 and S71 and S72
S72	S66 or S67 or S68 or S69 or S70
S71	S59 or S60 or S61 or S62 or S63 or S64 or S65

(Continued)

S70	active treatment
S69	malignan*
S68	tumor or tumour
S67	neoplasm*
S66	DE Cancer
S65	AB random*
S64	controlled clinical trial
S63	randomized controlled trial
S62	AB trial
S61	AB randomly
S60	AB placebo
S59	AB randomized
S58	S33 or S34 or S35 or S36 or S37 or S38 or S39 or S40 or S41 or S42 or S43 or S44 or S45 or S46 or S47 or S48 or S49 or S50 or S51 or S52 or S54 or S55 or S56 or S57
S57	sense of coherence
S56	flic or sf-36 or ces-d or bdi or sta1 or bfi or hads or lasa or pms or qli or rsci or pais or bpi or msas or mos or ptgi or panas
S55	facit
S54	toi
S53	qlc-c30
S52	fact survey
S51	fact questionnaire
S50	functional assessment
S49	pain measurement
S48	psychiatric status
S47	physical limitations
S46	DE "SOCIAL adjustment"
S45	patient reported outcomes
S44	healthiness

(Continued)

S43	good health
S42	functional ability
S41	activities of daily life OR daily living activities
S40	wellness
S39	level of health
S38	health level
S37	self concept
S36	life qualit*
S35	DE "ACTIVITIES of daily living"
S34	health status
S33	DE "QUALITY of life"
S32	S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15 or S16 or S17 or S18 or S19 or S20 or S21 or S22 or S23 or S24 or S25 or S28 or S29 or S30 or S31
S31	aquatic exercise*
S30	balance exercise*
S29	hydrotherapy
S28	hippotherapy
S27	halliwick
S26	ai chi
S25	bad ragaz
S24	complementary therap*
S23	mind body therap*
S22	resistance training
S21	chi kung
S20	qigong
S19	pilates
S18	range of motion
S17	muscle strengthening exercise*
S16	yoga

(Continued)

S15	tai chi
S14	sports
S13	exercise test
S12	motor activity
S11	stamina
S10	physical condition*
S9	exercising
S8	exercise therapy
S7	physical endurance
S6	physical education
S5	DE "PHYSICAL fitness"
S4	pliability
S3	exertion
S2	exercise tolerance
S1	DE "EXERCISE"

SportDiscus search strategy [inception to May 2010; 21 hits] [January 2010 to November 2011; 10 hits]

Search ID#	Search Terms
S76	S74 NOT S75
S75	survivor*
S74	S34 and S70 and S71 and S73
S73	S66 or S67 or S68 or S72
S72	active treatment
S71	S60 or S61 or S62 or S63 or S64 or S65 or S69
S70	S35 or S36 or S37 or S38 or S39 or S40 or S41 or S42 or S43 or S44 or S45 or S46 or S47 or S48 or S49 or S50 or S51 or S52 or S53 or S54 or S55 or S56 or S57 or S58 or S59
S69	random*

(Continued)

S68	cancer
S67	neoplasms
S66	DE "CANCER" OR DE "BREAST -- Cancer" OR DE "LEUKEMIA" OR DE "LUNGS -- Cancer" OR DE "MELANOMA"
S65	controlled clinical trial
S64	randomized controlled trial
S63	trial
S62	randomly
S61	placebo
S60	randomized
S59	sense of coherence
S58	(flic OR sf-36 OR ces-d OR bdi OR sta1 OR bfi OR hads OR lasa OR poms OR qli OR rsci OR pais OR bpi OR msas OR mos OR ptgi OR panas)
S57	toi
S56	facit
S55	qlc-c30
S54	fact survey
S53	fact questionnaire
S52	functional assessment
S51	pain measurement
S50	psychiatric status
S49	physical limitations
S48	social adjustment
S47	patient reported outcomes
S46	healthiness
S45	good health
S44	functional ability
S43	activities of daily living OR daily living activities
S42	well being

(Continued)

S41	wellness
S40	level of health
S39	health level
S38	self concept
S37	life qualit*
S36	DE "ACTIVITIES of daily living"
S35	DE "QUALITY of life" OR DE "HEALTH status indicators" OR DE "LIFESTYLES" OR DE "WELL-being"
S34	S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15 or S16 or S17 or S18 or S19 or S20 or S21 or S22 or S23 or S24 or S25 or S26 or S27 or S28 or S29 or S30 or S31 or S32 or S33
S33	DE "AQUATIC exercises"
S32	balance exercise*
S31	DE hydrotherapy
S30	hippotherapy
S29	halliwick
S28	ai chi
S27	bad ragaz
S26	complementary therap*
S25	mind body therap*
S24	resistance training
S23	DE "WEIGHT training" OR DE "BENCH press" OR DE "DEAD lift (Weight lifting)" OR DE "POWER-LIFTING" OR DE "SQUAT (Weight lifting)" OR DE "STONE lifting" OR DE "WEIGHT lifting"
S22	chi kung
S21	qigong
S20	DE pilates
S19	DE pilates
S18	DE "JOINTS -- Range of motion"
S17	muscle stretching exercise*
S16	DE yoga
S15	DE tai chi

(Continued)

S14	DE sports
S13	exercise test
S12	motor activity
S11	stamina
S10	physical condition*
S9	exercising
S8	DE "EXERCISE therapy"
S7	physical endurance
S6	DE "PHYSICAL education & training"
S5	DE "PHYSICAL fitness"
S4	pliability
S3	exertion
S2	exercise tolerance
S1	DE "EXERCISE"

WHAT'S NEW

Date	Event	Description
12 May 2020	Amended	The Editors are looking for contributors to update and maintain this Cochrane Review. **Contact ruh-tr.gnoc-cochrane@nhs.net for further information**. The searches have been updated to May 2019 and potentially relevant studies added to 'Other references; Classification pending'.

HISTORY

Protocol first published: Issue 4, 2010
Review first published: Issue 8, 2012

CONTRIBUTIONS OF AUTHORS

Shiraz I. Mishra: content expert; contributed by conceptualization of the project, identifying trials eligible for the review, extracting data for trials meeting the eligibility criteria, preparing data tables, analyzing the data, and writing the review.

Roberta W. Scherer: methodologic expert; contributed by identifying trials eligible for the review, extracting data for trials meeting the eligibility criteria, preparing data tables, analyzing the data, and writing the review.

Claire Snyder: content expert; contributed by identifying trials eligible for the review, extracting data for studies meeting the inclusion criteria, interpreting the HRQoL measures, and providing editorial input.

Paula M. Geigle: content expert; contributed by extracting data for trials meeting the inclusion criteria and providing editorial input.

Debra R. Berlanstein: information specialist, contributed to development of the search strategy, conducting all the electronic database searches, and retrieving potentially eligible trials.

Ozlem Topaloglu: contributed by extracting data for trials meeting the inclusion criteria.

DECLARATIONS OF INTEREST

The authors declare no conflict of interest.

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Internal sources

- None, Other

External sources

- National Institute for Health Research (NIHR) Health Technology Assessment programme, UK

  HTA Project: 10/81/01 - Exercise interventions for the management of health related quality of life and fatigue in cancer survivors during and after treatment

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

This review included trials that included both participants who were undergoing active cancer treatment for their primary or recurrent cancer and those who had completed active treatment for their cancer. This revised inclusion criteria was applied to studies that did not have the majority of participants who had completed active treatment for their primary or recurrent cancer.

We have included a Summary of findings 1 instead of calculating number needed to treat for an additional beneficial outcome (NNTB) for the review findings.

INDEX TERMS

Medical Subject Headings (MeSH)

Anxiety [therapy]; Bicycling [psychology]; Breathing Exercises; Depression [therapy]; Exercise Therapy [*methods] [psychology]; Fatigue [therapy]; *Health Status; Neoplasms [psychology] [*therapy]; *Quality of Life; Randomized Controlled Trials as Topic; Resistance Training [methods]; Survivors [psychology]; Walking [psychology]; Yoga [psychology]

MeSH check words

Adult; Female; Humans; Male