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Treadmill training and body weight support for walking after stroke (Review)

Mehrholz J, Pohl M, Elsner B

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[Intervention Review]

Treadmill training and body weight support for walking after stroke

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ABSTRACT

Background

Treadmill training, with or without body weight support using a harness, is used in rehabilitation and might help to improve walking after stroke. This is an update of a Cochrane review first published in 2005.

Objectives

To determine if treadmill training and body weight support, individually or in combination, improve walking ability, quality of life, activities of daily living, dependency or death, and institutionalisation or death, compared with other physiotherapy gait training interventions after stroke. The secondary objective was to determine the safety and acceptability of this method of gait training.

Search methods

We searched the Cochrane Stroke Group Trials Register (last searched June 2013), the Cochrane Central Register of Controlled Trials (CENTRAL) and the Database of Reviews of Effects (DARE) (*The Cochrane Library* 2013, Issue 7), MEDLINE (1966 to July 2013), EMBASE (1980 to July 2013), CINAHL (1982 to June 2013), AMED (1985 to July 2013) and SPORTDiscus (1949 to June 2013). We also handsearched relevant conference proceedings and ongoing trials and research registers, screened reference lists and contacted trialists to identify further trials.

Selection criteria

Randomised or quasi-randomised controlled and cross-over trials of treadmill training and body weight support, individually or in combination, for the treatment of walking after stroke.

Data collection and analysis

Two authors independently selected trials, extracted data and assessed methodological quality. The primary outcomes investigated were walking speed, endurance and dependency.

Main results

We included 44 trials with 2658 participants in this updated review. Overall, the use of treadmill training with body weight support did not increase the chances of walking independently compared with other physiotherapy interventions (risk difference (RD) -0.00, 95% confidence interval (CI) -0.02 to 0.02; P = 0.94; I^2 = 0%). Overall, the use of treadmill training with body weight support in walking rehabilitation for patients after stroke increased the walking velocity and walking endurance significantly. The pooled mean difference (MD) (random-effects model) for walking velocity was 0.07 m/s (95% CI 0.01 to 0.12; P = 0.02; I^2 = 57%) and the pooled MD for walking endurance was 26.35 metres (95% CI 2.51 to 50.19; P = 0.03; I^2 = 60%). Overall, the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did not increase the walking velocity and walking endurance at the end of scheduled follow-up significantly. The pooled MD (random-effects model) for walking velocity was 0.04 m/s (95% CI -0.06 to 0.14; P = 0.40; I^2 = 40%) and the pooled MD for walking endurance was 32.36 metres (95% CI -3.10 to 67.81; P = 0.07; I^2 = 63%). However, for ambulatory patients improvements in walking endurance lasted until the end of scheduled follow-up (MD 58.88 metres, 95% CI 29.10 to 88.66; P = 0.0001; I^2 = 0%). Adverse events and drop outs did not occur more frequently in people receiving treadmill training and these were not judged to be clinically serious events.

Authors' conclusions

Overall, people after stroke who receive treadmill training with or without body weight support are not more likely to improve their ability to walk independently compared with people after stroke not receiving treadmill training, but walking speed and walking endurance may improve. Specifically, stroke patients who are able to walk (but not people who are not able to walk) appear to benefit most from this type of intervention. This review found that improvements in walking endurance in people able to walk may have persisting beneficial effects. Further research should specifically investigate the effects of different frequencies, durations or intensities (in terms of speed increments and inclination) of treadmill training, as well as the use of handrails, in ambulatory patients, but not in dependent walkers.

PLAIN LANGUAGE SUMMARY

Treadmill training and body weight support for walking after stroke

Question: We wanted to assess whether treadmill training and body weight support, individually or in combination, could improve walking when compared with other gait training methods, placebo or no treatment.

Background: About 60% of people who have had a stroke have difficulties with walking, and improving walking is one of the main goals of rehabilitation. Treadmill training, with or without body weight support, uses specialist equipment to assist walking practice.

Study characteristics: We identified 44 relevant trials, involving 2658 participants, up to June 2013. Twenty-two studies (1588 participants) compared treadmill training with body weight support to another physiotherapy intervention; 16 studies (823 participants) compared treadmill training without body weight support to other physiotherapy intervention, no intervention or sham; two studies (100 participants) compared treadmill training with body weight support to treadmill training without body weight support; and four studies (147 participants) did not state whether they used body weight support or not. The average age of the participants ranged from 50 to 75 years, and the studies were carried out in both inpatient and outpatient settings.

Key results and quality of the evidence: The results of this review were partly conclusive. People after stroke who receive treadmill training with or without body weight support are not more likely to improve their ability to walk independently. The quality of this evidence was low. However, treadmill training with or without body weight support may improve walking speed and walking capacity compared with people not receiving treadmill training. The quality of this evidence was moderate. More specifically, people after stroke who are able to walk at the start of therapy appear to benefit most from this type of intervention, but people who are not able to walk independently at therapy onset do not benefit. This review found that improvements in walking speed and endurance in people who can walk may have persisting beneficial effects. However, our review suggests that stroke patients who are not able to walk independently at the start of treatment may not benefit from treadmill training with or without body weight support. Adverse events and drop outs did not occur more frequently in people receiving treadmill training. Subgroup analysis showed that treadmill training in the first three months after stroke produces statistically and clinically relevant improvements in walking speeds and endurance. For people treated in the chronic phase (i.e. more than six months post-stroke) the effects were lower. Treadmill training at higher frequencies may produce greater effects on walking speed and endurance; however, this was not significant.

In practice, treadmill training should be used when stroke patients can walk independently. Therapists should be aware that treadmill training may be used as an option but not as a stand-alone treatment to improve walking speed and endurance in people who are able to walk independently. It appears that people who can walk after stroke, but not those who cannot, may profit from treadmill training (with and without body weight support) to improve their walking abilities. Further research should specifically investigate the effects of different frequencies, durations or intensities (in terms of speed increments and inclination) of treadmill training, as well as the use of handrails. Future trials should include people who can already walk, but not dependent walkers who are unable to walk unaided.

SUMMARY OF FINDINGS FOR THE MAIN COMPARISON [Explanation]

Treadmill (with or without BWS) for walking after stroke

Patient or population: patients with walking after stroke
Settings: Inpatient and outpatient
Intervention: Treadmill (with or without BWS)

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Control	Treadmill (with or without BWS)				
Walking speed (m/sec) at end of treatment phase Measures of timed gait	The mean walking speed (m/sec) at end of treatment phase in the control groups was **0.59 m/sec**	The mean walking speed (m/sec) at end of treatment phase in the intervention groups was **0.07 higher** (0.03 to 0.11 higher)		1891 (35 studies)	⊕⊕◯◯ **low**[1,2]	
Walking speed (m/sec) at end of treatment phase - dependent in walking at start of treatment Measures of timed gait	The mean walking speed (m/sec) at end of treatment phase - dependent in walking at start of treatment in the control groups was **0.26 m/sec**	The mean walking speed (m/sec) at end of treatment phase - dependent in walking at start of treatment in the intervention groups was **0.01 lower** (0.06 lower to 0.03 higher)		752 (9 studies)	⊕⊕◯◯ **low**[1,3]	

Walking speed (m/sec) at end of treatment phase - independent in walking at start of treatment Measures of timed gait	The mean walking speed (m/sec) at end of treatment phase - independent in walking at start of treatment in the control groups was **0.67 m/sec**	The mean walking speed (m/sec) at end of treatment phase - independent in walking at start of treatment in the intervention groups was **0.11 higher** (0.06 to 0.16 higher)		1139 (26 studies)	⊕⊕⊕◯ **moderate**[1,2,4]
walking endurance (m) at the end of treatment Measures of timed gait	The mean walking endurance (m) at the end of treatment in the control groups was **203.7 m**	The mean walking endurance (m) at the end of treatment in the intervention groups was **20.08 higher** (6.14 to 34.03 higher)		1388 (20 studies)	⊕⊕◯◯ **low**[1,2]
walking endurance (m) at the end of treatment - dependent in walking at start of treatment Measures of timed gait	The mean walking endurance (m) at the end of treatment - dependent in walking at start of treatment in the control groups was **115.3 m**	The mean walking endurance (m) at the end of treatment - dependent in walking at start of treatment in the intervention groups was **5.09 lower** (23.41 lower to 13.22 higher)		639 (5 studies)	⊕⊕◯◯ **low**[1,3]
walking endurance (m) at the end of treatment - independent in walking at start of treatment Measures of timed gait	The mean walking endurance (m) at the end of treatment - independent in walking at start of treatment in the control groups was **240.9 m**	The mean walking endurance (m) at the end of treatment - independent in walking at start of treatment in the intervention groups was **30.61 higher** (14.02 to 47.2 higher)		749 (15 studies)	⊕⊕⊕◯ **moderate**[1,2,4]

*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% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval;

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] Downgraded due to several ratings with "unclear" or even "high" risk of bias
[2] Downgraded due to CIs embracing effect size of least clinically important benefit
[3] Downgraded due to CIs embracing effect size of null hypothesis
[4] Upgraded due to evidence of a dose response gradient

BACKGROUND

Description of the condition

Stroke ranks as the sixth highest cause of burden of disease worldwide in terms of disability adjusted life years and is the single most important cause of severe disability in people living in their own homes (Murray 2012). An inability or an impaired ability to walk is a significant contributor to long-term disability and burden of care after stroke. Approximately one-third of people surviving acute stroke are unable to walk three months after admission to a general hospital (Langhorne 2009).

High-quality evidence from systematic reviews indicates that organised (stroke unit) care decreases physical dependence after stroke compared with general medical care (SUTC 2013). This organised care is characterised by early mobilisation and multidisciplinary rehabilitation (including physiotherapy) co-ordinated by regular team meetings (Langhorne 2002). The effectiveness of specific physiotherapy gait training strategies, however, is still not very clear. A review of studies comparing different physiotherapy treatments for patients with stroke concluded that "There is insufficient evidence to conclude that any one physiotherapy approach is more effective in promoting recovery of lower limb function or postural control following stroke than any other approach." (Pollock 2007).

Description of the intervention

Improving walking after stroke is one of the main goals of rehabilitation. There is increasing evidence that high-intensity, repetitive, task-specific training might result in better gait rehabilitation (French 2007; Langhorne 2009). One example of potentially intensive, repetitive, task-specific gait training is treadmill training. Walking on a treadmill, with or without body weight supported via a harness connected to an overhead support system, is a method of treating walking impairments post stroke that is becoming increasingly popular. Use of a treadmill permits a greater number of steps to be performed within a training session: that is, it increases the amount of task-specific practice completed. For example, Hesse 2003 reported that people after stroke can perform up to 1000 steps in a 20-minute treadmill training session, compared with only 50 to 100 steps during a 20-minute session of conventional physiotherapy (neurophysiological approach). The speed of the treadmill, the amount of body weight support and the amount of assistance provided by the physiotherapist can all be adjusted in order to provide a sufficient training intensity. This intervention emerged from research involving spinalised cats (Barbeau 1987) and was first used in clinical settings in the 1980s (Finch 1985). Since then, treadmill training with partial body weight support has been increasingly promoted as a treatment to drive recovery after stroke (Charalambous 2013; Langhorne 2009).

Treadmill training with body weight support is costly in terms of equipment and human resources. The treadmill and body weight suspension system alone may cost up to USD 180,000 (Reyes 2000). In addition, the equipment is not portable, so stroke patients must attend a suitably equipped healthcare facility in order to access this treatment. Several published randomised controlled trials (RCTs) have evaluated treadmill training with or without body weight support (Charalambous 2013; Polese 2013).

Why it is important to do this review

Several non-Cochrane systematic reviews evaluating treadmill training with and without body weight support have been published since this Cochrane review first appeared in *The Cochrane Library* 2003, Issue 3 (e.g. Manning 2003; Teasell 2003; van Peppen 2004) and in the last year (Charalambous 2013; Polese 2013). However, all of these reviews are now out of date or had some methodological weaknesses (for example they did not used a comprehensive search strategy for all relevant databases or were prone to language bias because non-English studies were not included). Updating this Cochrane review is required in order to justify the large equipment and human resource cost required to implement treadmill training as well as to confirm the safety and acceptance of this method of training. The first update of this review was published 2005 and included 15 trials with 622 participants. This is the second update of this Cochrane review. The search for trials was extended from March 2005 to July 2013. The aim of this review is to provide an update of the best available evidence about the above-mentioned approach.

OBJECTIVES

To determine if treadmill training and body weight support, individually or in combination, improve walking ability, quality of life, activities of daily living, dependency or death, and institutionalisation or death, compared with other physiotherapy gait training interventions after stroke. The secondary objective was to determine the safety and acceptability of this method of gait training.

METHODS

Criteria for considering studies for this review

Types of studies

We included truly randomised and quasi-randomised controlled trials (including cross-over trials) in the review. We considered procedures such as coin tossing and dice rolling as random. Quasi-random allocation procedures included allocation by hospital record number or birth date, or alternation. We only included the first arm of the data from cross-over trials. We assessed concealment, blinding and the number of withdrawals for all trials, but we did not use these data as inclusion or exclusion criteria.

Treadmill training and body weight support, individually or in combination, must have been implemented in one of the experimental conditions. We were looking for trials that made one of the following comparisons:

- treadmill training with body weight support versus other physiotherapy, placebo or no intervention;
- treadmill training without body weight support versus other physiotherapy, placebo or no intervention;
- treadmill training with body weight support versus treadmill training without body weight support; and
- body weight support (without treadmill training) versus other physiotherapy, placebo or no intervention.

Treadmill training and body weight support, individually or in combination, may have been implemented with physiotherapy co-intervention(s). Where co-intervention(s) were comparable for experimental and control groups, we grouped the trials according to the first four comparisons. In some cases, however, the co-intervention(s) used were not the same for the treatment and control groups. For example, treadmill training with body weight support may be implemented as one component of a task-oriented physiotherapy programme and compared with non task-oriented physiotherapy (Richards 1993). Task-oriented physiotherapy programmes involve task and context-specific training of motor skills based on a movement science or motor relearning framework (Carr 1998). Non-task-oriented physiotherapy includes neurophysiological approaches to treatment, such as Bobath (Bobath 1990), Brunnstrom (Brunnstrom 1970), Rood (Goff 1969) and proprioceptive neuromuscular facilitation (Knott 1968). While these trials cannot differentiate the effects of treadmill training and body weight support from other co-interventions, they do evaluate the intervention as part of a treatment package. We identified such trials and described them separately.

We included trials that evaluated any intensity and duration of treadmill training and body weight support that exceeded a single treatment session. Where necessary, we obtained details of the treatment and control interventions via correspondence with the trialists.

Types of participants

We included trials of adults who had suffered a stroke and exhibited an abnormal gait pattern. We used the World Health Organization's (WHO) definition of stroke: "rapidly developing clinical signs of focal (at times global) disturbance of cerebral function, lasting more than 24 hours or leading to death, with no apparent cause other than that of vascular origin." (Hatano 1976). We defined an abnormal gait pattern as walking with a slow speed, exhibiting kinematic deviations during gait (Moore 1993; Moseley 1993) or an inability to walk.

We envisaged that some trials may have included participants with other types of upper motor neurone lesions (e.g. traumatic brain injury, multiple sclerosis). However, we did not identify any mixed trials. If we identify trials using mixed types of participants in future updates of this review, we will attempt to obtain data for the stroke subgroup only via correspondence with the trialists.

Types of interventions

The primary question was whether treadmill training and body weight support, individually or in combination, could improve walking compared with other gait training methods, placebo or no treatment. We therefore included any trial that attempted to evaluate such a comparison. Treadmill training involves walking on a standard treadmill; assistance, feedback or guidance may be provided by a health professional (usually a physiotherapist). Some of the patient's body weight may be supported during this training using a harness attached to an overhead support system. Alternatively, this type of body weight support can be used without a treadmill.

Types of outcome measures

The primary analyses focused on the ability to walk both at the end of the treatment period (that is, immediate or short-term effects) and at the end of the scheduled follow-up (that is, long-term effects). We examined the ability to walk using dichotomous and continuous variables.

The dichotomous variable was 'dependence on personal assistance', where we defined 'dependence' as the inability to walk indoors (with or without a gait aid) without personal assistance or supervision. If reported, we used data from functional scales (or parts of functional scales relating to walking) to define the level of dependence. Suitable scales (with criterion for 'dependence') are:

- Motor Assessment Scale (Carr 1985), a score of two or less;
- Functional Independence Measure (Hamilton 1994), a score of five or less for the walking item;
- Barthel Index (Collin 1988), a score of three (independent, but may use any aid) or less for the ambulation item;
- Rivermead Mobility Index (Collen 1991), an answer of 'no' to the 'walking inside, with an aid if necessary' item; and
- Functional Ambulation Category (Holden 1984), a score of two or less.

We used walking dependence at the start of treatment to group trials in each comparison in the analyses.

The continuous variables were:

- independent walking speed measured over a short distance (e.g. six to 10 metres); and
- independent walking endurance measured over a long distance (e.g. Six-Minute Walk Test) expressed as a total distance walked.

These tests could be performed with or without a gait aid, but must have been completed without personal assistance. Wade 1992 reported that independent walking speed over a short distance is a simple, reliable, valid and sensitive measure of walking performance. Walking over a long distance is a valid (Wade 1992) and reliable (Guyatt 1984) measure of walking endurance with established reference equations (Enright 1998). Where participants could not walk unless assisted, we allocated a speed and distance score of zero.

Secondary outcome measures included patient quality of life, ability to perform activities of daily living and the combined outcomes of death or dependency, and death or institutional care. Quality of life scales include the Frenchay Activities Index, Medical Outcomes Study Short Form Health Survey Questionnaire, Nottingham Health Profile, Quality of Life Index and Sickness Impact Profile (de Haan 1993).

Activities of daily living scales include the Barthel Index, Modified Rankin Scale and Nottingham Extended Activities of Daily Living Scale (Wade 1992); and the Index of Activities of Daily Living, Instrumental Activities of Daily Living Scale, Functional Activities Questionnaire and Blessed Functional Activities Scale (Pohjasvaara 1997).

We used the Stroke Unit Trialists' Collaboration definitions for death or dependency and death or institutional care (SUTC 2013). The criterion for dependency is scoring less than 18 on the Barthel Index or greater than two on the Modified Rankin Scale, while institutional care refers to care in a residential home, nursing home or hospital at the end of the scheduled follow-up.

We determined the safety and acceptance of treadmill training. We used the prevalence of adverse events during the treatment period as a measure of safety. We categorised adverse events into injurious falls, other injury, major cardiovascular events and any other adverse outcomes. We examined the reason for participants withdrawing from the studies as a marker for acceptance. We analysed this withdrawal data qualitatively.

Search methods for identification of studies

See the 'Specialized register' section in the Cochrane Stroke Group module. For this update we extended the search for trials from March 2005 (when the first update of this review was published) to July 2013. We searched for trials in all languages and arranged translation of relevant trial reports published in languages other then English.

Electronic searches

We searched the Cochrane Stroke Group Trials Register (last searched June 2013) and the following electronic bibliographic databases:

- The Cochrane Central Register of Controlled Trials (CENTRAL) and the Database of Reviews of Effects (DARE) (*The Cochrane Library*2013, Issue 7) (Appendix 1);
- MEDLINE (1966 to July 2013) (Appendix 2);
- EMBASE (1980 to July 2013) (Appendix 3);
- CINAHL (1982 to June 2013) (Appendix 4);
- AMED (1985 to July 2013) (Appendix 5); and
- SPORTDiscus (1949 to June 2013) (Appendix 6).

We developed the search strategies with the help of the Cochrane Stroke Group Trials Search Co-ordinator and adapted the MEDLINE search strategy for the other databases.

We identified and searched the following ongoing trials and research registers:

- International Standard Randomised Controlled Trial Number Register at http://www.controlled-trials.com/isrctn/ (searched September 2013);
- Clinical trials.gov at www.clinicaltrials.gov (searched September 2013); and
- Stroke Trials Register at www.strokecenter.org (searched September 2013).

Searching other resources

We also:

- handsearched the following relevant conference proceedings:
  - World Congress of NeuroRehabilitation (2006, 2008, 2010 and 2012);
  - World Congress of Physical Medicine and Rehabilitation (2005, 2007, 2009, 2011 and 2013);
  - World Congress of Physical Therapy (2007 and 2011);
  - Deutsche Gesellschaft für Neurotraumatologie und Klinische Neurorehabilitation (2005 to 2013);
  - Deutsche Gesellschaft für Neurologie (2005 to 2013);
  - Deutsche Gesellschaft für Neurorehabilitation (2005 to 2013); and
  - Asian Oceania Conference of Physical and Rehabilitation (2008 to 2012);
- screened reference lists of all relevant articles; and
- contacted trialists, experts and researchers in our field of study.

Data collection and analysis

On 28 March 2013 we were contacted by the Cochrane Stroke Group; the authors of the 2005 version of the published Cochrane review of 'Treadmill training and body weight support for walking

after stroke' intimated that they were no longer able to update this review. Our author team accepted the invitation to take over this review and update it.

We contacted the original review authors of the 2005 review and received data for all studies included in the 2005 version. We updated these original study data, including eligible studies from 2005 onwards.

Selection of studies

For this update, two review authors (BE and JM) read the titles and abstracts of the records identified from the electronic searches and eliminated obviously irrelevant studies. We retrieved the full texts of the remaining studies and two review authors (MP, BE) ranked the studies as relevant, possibly relevant or irrelevant according to our inclusion criteria (types of studies, participants, aims of interventions). Two review authors (JM, MP) then examined whether the relevant and possibly relevant publications fitted the population, intervention, comparison, outcome (PICO) strategy of our study question. We resolved disagreements by discussion with all authors. If we needed further information, we contacted trial authors.

We excluded studies that did not match our inclusion criteria regarding the type of study, participants or type of interventions and those that were not RCTs.

Data extraction and management

For this update, two review authors (BE, JM) independently extracted trial and outcome data from the selected trials. If one of the review authors was involved in an included trial, another review author extracted the trial and outcome data from that trial. In accordance with the 'Risk of bias' tool described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011), we used checklists to independently assess:

- methods of random sequence generation;
- methods of allocation concealment;
- blinding of assessors;
- blinding of patients;
- adverse effects and drop outs;
- important imbalances in prognostic factors at baseline;
- participants (country, number of participants, age, gender, type of stroke, time from stroke onset to study entry, inclusion and exclusion criteria, cognition, pre-existing neurological impairment(s), neurological history);
- comparison (details of interventions in treatment and control groups, duration of treatment, details of co-interventions in the groups);
- outcomes and their time point of measurement.

All review authors checked the extracted data for agreement. If these authors could not reach consensus, a researcher not involved in data extraction arbitrated. If necessary, we contacted the researchers to request more information.

Assessment of risk of bias in included studies

For this update of the review two authors (BE and JM) independently assessed the risk of bias in the included trials in accordance with the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). We described the agreement between authors during the assessment of risk of bias and we resolved disagreement by reaching consensus through discussion. We contacted trialists for clarification and to request missing information.

Measures of treatment effect

For all outcomes representing continuous data, we entered means and standard deviations. We calculated a pooled estimate of the mean difference (MD) with 95% confidence interval (CI). If studies did not use the same outcome measure we calculated standardised mean differences (SMD) instead of MDs. For all binary outcomes we calculated risk differences (RD) with 95% CI. For all analyses we used The Cochrane Collaboration's Review Manager software, RevMan 5.2 (RevMan 2012) and used a random-effects model for all analyses.

Dealing with missing data

We contacted the relevant principal investigators to retrieve missing data.

Assessment of heterogeneity

We used the I^2 statistic to assess heterogeneity. We used a random-effects model, regardless of the level of heterogeneity. Thus, in the case of heterogeneity we did not violate the preconditions of a fixed-effect model approach. We visually examined publication bias using funnel plots.

Subgroup analysis and investigation of heterogeneity

We did three subgroup analyses for time between the stroke and the start of training, the intensity of training and the duration of training. However, for the types of co-interventions implemented in conjunction with treadmill training we were not able to conduct a subgroup analysis.

Sensitivity analysis

We performed a sensitivity analysis based on the methodological quality of trials (involving treadmill training) including true versus quasi-randomisation, concealed versus unconcealed allocation and blinded versus non-blinded outcome assessment.

RESULTS

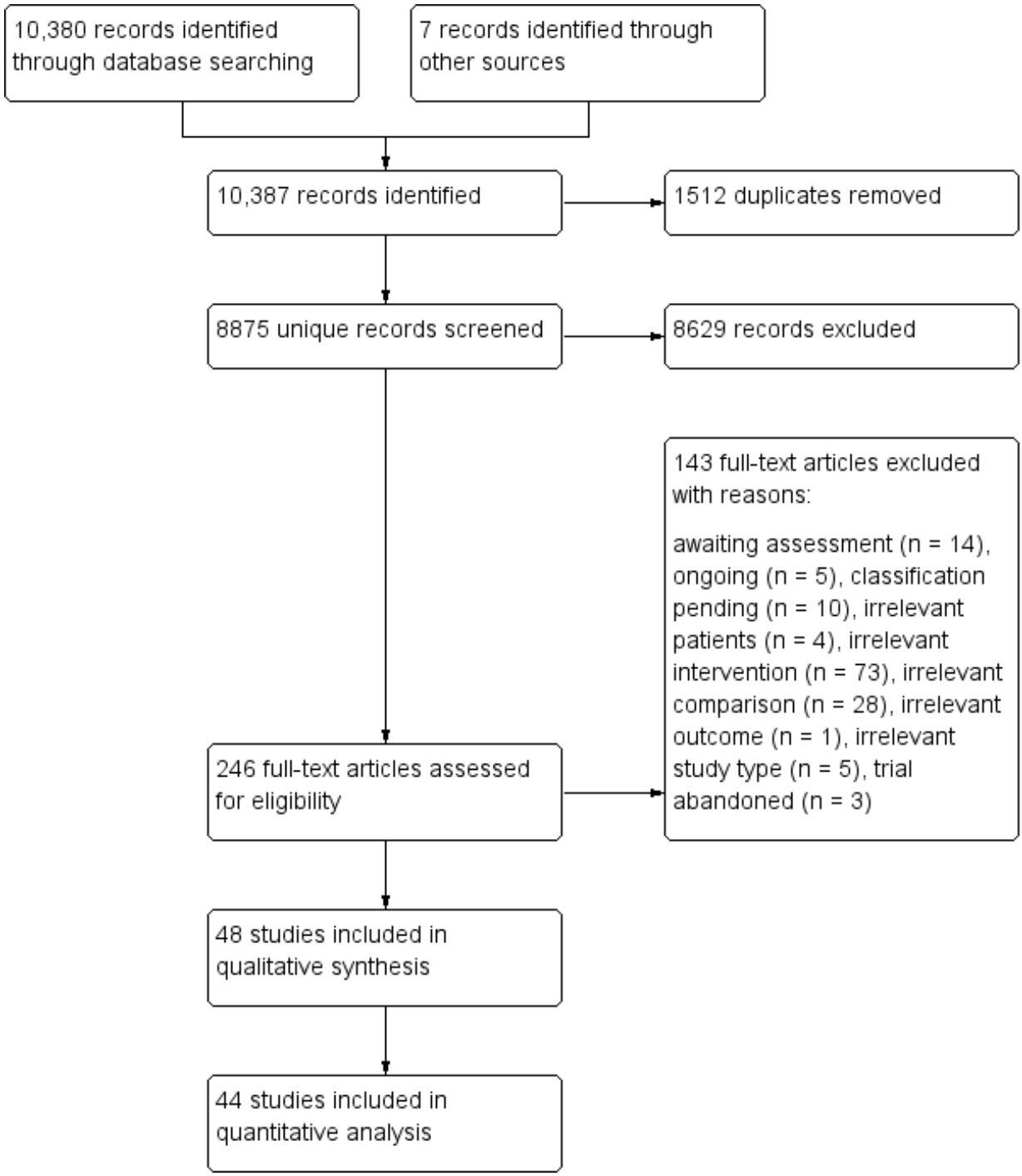
Description of studies

See Characteristics of included studies; Characteristics of excluded studies; Characteristics of studies awaiting classification and Characteristics of ongoing studies.

Results of the search

Figure 1 shows the flow diagram for the selection of studies. The searches of the electronic databases and trials registers generated 8875 unique references for screening. After excluding non-relevant citations we obtained the full texts of 246 papers; of these, we included 46 trials in the qualitative analysis and 44 trials in the quantitative analysis of the review.

Figure 1. Flow diagram.



Included studies

We included 44 studies involving a total of 2658 participants in the quantitative analysis of this review (Ada 2003; Ada 2010; Ada 2013; Kim 2011; da Cunha Filho 2002; Deniz 2011; Du 2006; Duncan 2011; Eich 2004; Franceschini 2009; Gan 2012; Globas 2011; Hoyer 2012; Jaffe 2004; Kang 2012; Kosak 2000; Kuys 2011; Langhammer 2010; Laufer 2001; Liston 2000; Luft 2008; MacKay-Lyons 2013; Macko 2005; Mehrberg 2001; Moore 2010; Nilsson 2001; Nilsson 2001a; Nilsson 2001b; Olawale 2009; Pohl 2002; Richards 1993; Richards 2004; Scheidtmann 1999; Smith 2008; Sullivan 2007; Suputtitada 2004; Takami 2010; Toledano-Zarhi 2011; Visintin 1998; Visintin 1998a; Visintin 1998b; Weng 2004; Weng 2006; Werner 2002a; Yang 2010; Yen 2008; Zhang 2008; Zhu 2004; see the Characteristics of included studies). Two included studies have been split up into two sub-studies each (Nilsson 2001; Visintin 1998).

- 22 studies (1588 participants) compared treadmill training with body weight support to other physiotherapy intervention.
- 16 studies (823 participants) compared treadmill training without body weight support to other physiotherapy intervention, no intervention or sham.
- two studies (100 participants) compared treadmill training with body weight support to treadmill training without body weight support.
- four studies (147 participants) did not state whether they used body weight support or not.

No studies compared body weight support without treadmill training to another physiotherapy intervention.

The data from two studies were sub-divided for the analyses and the corresponding patients were not double counted. The Nilsson 2001 and Visintin 1998 studies recruited both dependent and independent walkers, so the data were sub-divided into two comparisons for each trial. For the Nilsson 2001 trial, we separately analysed data from the 54 participants (26 experimental and 28 control) who were dependent walkers at the start of treatment (Nilsson 2001a) and data from the 19 participants (10 experimental and nine control) who were independent walkers at the start of treatment (Nilsson 2001b). For the Visintin 1998 trial, we performed separate analyses for data from the 59 participants (33 experimental and 26 control) (Visintin 1998a) and 20 participants (10 experimental and 10 control) (Visintin 1998b) who were dependent and independent walkers at the start of treatment, respectively. We obtained these walking dependency data through correspondence with the authors.

The characteristics of participants in the included studies are listed in Table 1. The characteristics of the experimental interventions are listed in Table 2. The outcomes used in the included studies are described in detail in the Characteristics of included studies. The reporting of adverse events and drop outs was incomplete for all trials and described in detail in Table 3 and Table 4. If these data were not explicitly reported, we attempted to obtain the missing information through correspondence with the trialists.

Excluded studies

We excluded 55 studies for various reasons (see Characteristics of excluded studies).

Seventeen studies are still awaiting classification, mainly due to being conference abstracts with sparse outcome data reported and we were unable to contact the authors (see the Characteristics of studies awaiting classification).

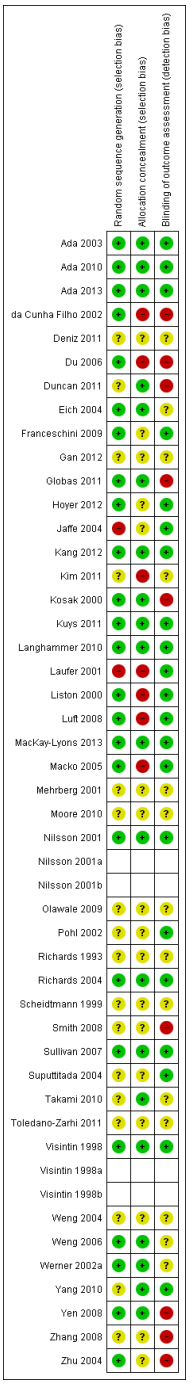
Thirteen studies are ongoing (see the Characteristics of ongoing studies).

We excluded all these studies from the main analysis.

Risk of bias in included studies

Two authors independently assessed the methodological quality of the included trials using the 'Risk of bias' tool (using the categories random sequence generation, allocation concealment and blinding of outcome assessors; Figure 2).

Figure 2. 'Risk of bias' summary: review authors' judgements about each risk of bias item for each included study.



We wrote to all trialists requesting clarification of some design features or the provision of missing information in order to complete the quality ratings (correspondence was via email or letter, with a reminder being send after three weeks and then every three months if we did not get a response). If no data were provided or no contact achieved we used published data only for all analysis. Three trials used a cross-over design with random allocation to the order of treatments (Liston 2000; Scheidtmann 1999; Werner 2002a). All other studies used a parallel-group design with true randomisation or quasi-randomisation (Laufer 2001) to groups.

Random sequence generation (selection bias)

Twenty-five of the 44 included studies described appropriately the method of random sequence generation (see Figure 2).

Allocation concealment (selection bias)

Twenty of the 44 included studies described appropriately the method of concealing allocation of participants to groups (see Figure 2).

Blinding (performance bias and detection bias)

Twenty-one of the 44 included studies described the outcome assessors as being blinded to group allocation (see Figure 2).

We explored publication bias visually by inspecting funnel plots for all comparisons (plots only shown for analyses 1.1 and 1.2 (Figure 3, Figure 4)). Our inspection did not indicate clear evidence for publication bias or our inspection was not suggestive of systematic heterogeneity. The only systematic heterogeneity in the funnel plots was found between categories of people after stroke who were dependent or independent walkers at study onset (as we described in detail above).

Figure 3. Funnel plot of comparison: 1 Treadmill (with or without body weight support) versus other intervention, outcome: 1.1 Walking speed (m/s) at end of treatment phase.

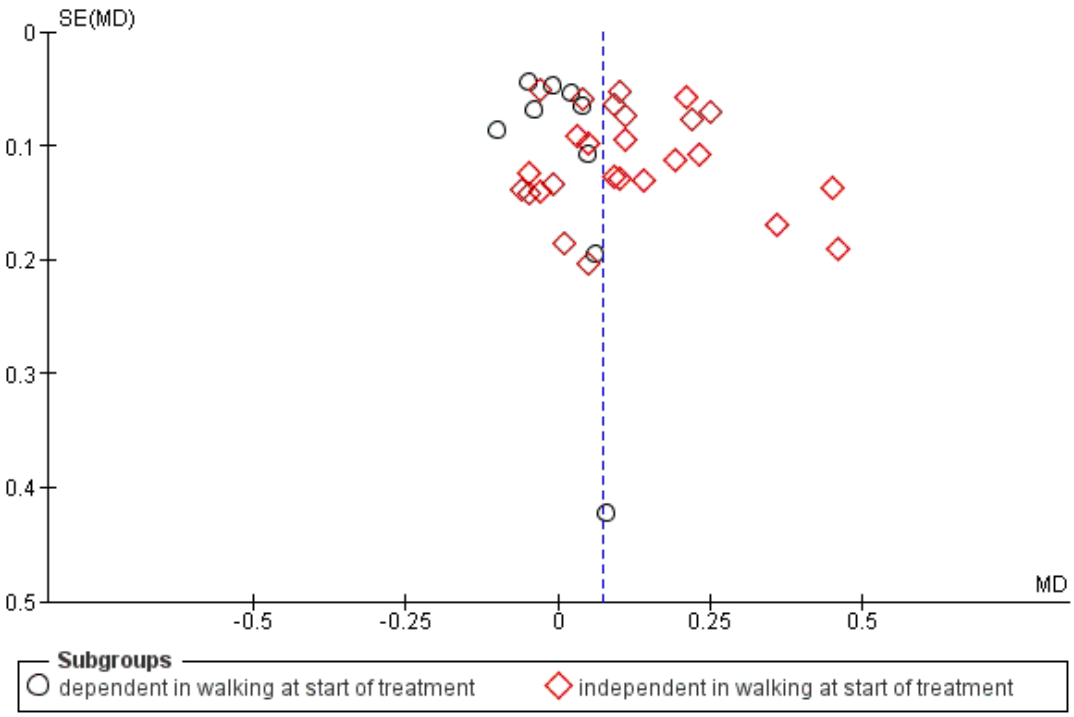
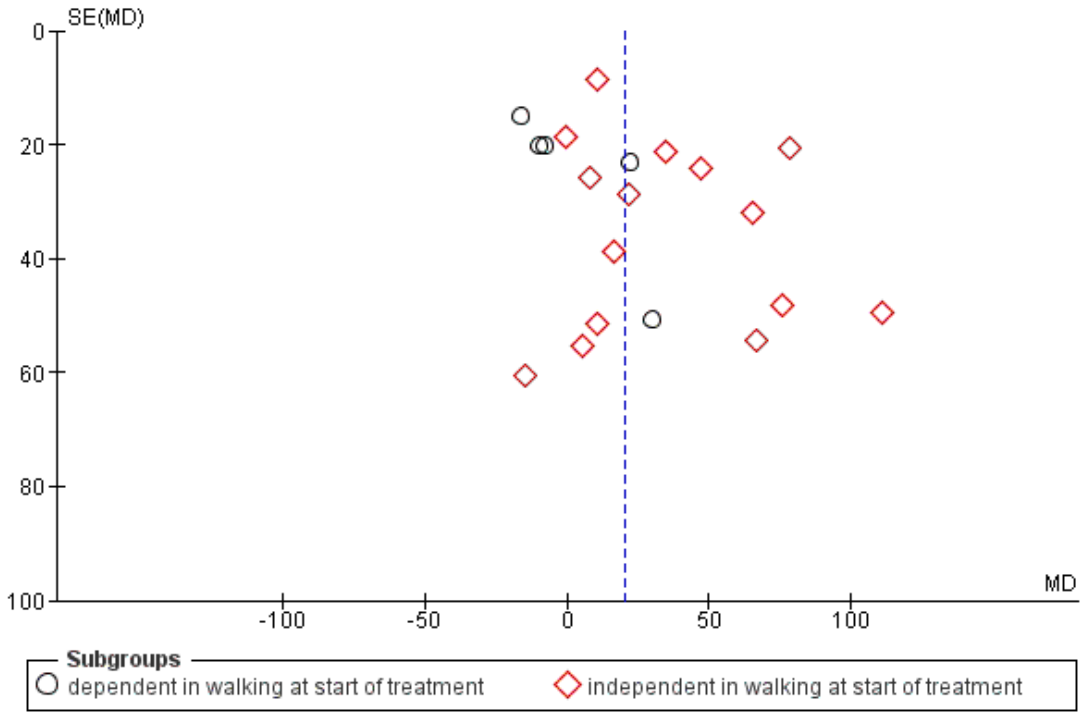


Figure 4. Funnel plot of comparison: 1 Treadmill (with or without body weight support) versus other intervention, outcome: 1.2 Walking endurance (m) at end of treatment.



Effects of interventions

See: **Summary of findings for the main comparison** Treadmill (with or without BWS) for walking after stroke

Comparison 1: Treadmill (with or without body weight support) versus another intervention

Outcome 1.1: Walking speed (m/s) at the end of the treatment phase

Thirty-five studies with a total of 1891 participants provided data for walking velocity (metres per second, m/s) at study end (Analysis 1.1).

Overall, the use of treadmill training in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.07 m/s (95% CI 0.03 to 0.11; P = 0.0003; level of heterogeneity I^2 = 44%) (Analysis 1.1).

In nine studies with a total of 752 participants who were dependent in walking at study onset the use of treadmill training in walking rehabilitation for patients after stroke did not increase the walking velocity significantly. The pooled mean difference (MD, random-effects model) for walking velocity was -0.01 m/s (95% CI -0.06 to 0.03; P = 0.52; level of heterogeneity I^2 = 0%) (Analysis 1.1).

In 26 studies with a total of 1139 participants who were independent in walking at study onset the use of treadmill training in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.11 m/s (95% CI 0.06 to 0.16; P < 0.0001; level of heterogeneity I^2 = 37%) (Analysis 1.1).

We did find statistically significant differences in walking velocity between dependent and independent walkers (Chi^2 = 14.71, df = 1, P = 0.0001).

Outcome 1.2: Walking endurance (m) at the end of treatment

Twenty trials with a total of 1388 participants provided data for walking endurance (walking capacity; metres (m) walked in six minutes) at study end (Analysis 1.2).

Overall, the use of treadmill training in walking rehabilitation for patients after stroke did increase the walking endurance signifi-

durance was 20.08 m (95% CI 6.14 to 34.03; P = 0.005; level of heterogeneity I^2 = 35%) (Analysis 1.2).
In five studies with a total of 639 participants who were dependent in walking at study onset the use of treadmill training in walking rehabilitation for patients after stroke did not increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was -5.09 m (95% CI -23.41 to 13.22; P = 0.59; level of heterogeneity I^2 = 0%) (Analysis 1.2).
In 15 studies with a total of 749 participants who were independent in walking at study onset the use of treadmill training in walking rehabilitation for patients after stroke did increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was 30.61 m (95% CI 14.02 to 47.20; P = 0.0003; level of heterogeneity I^2 = 30%) (Analysis 1.2).
We did find statistically significant differences in walking endurance between dependent and independent walkers (Chi^2 = 8.02, df = 1, P = 0.005).

Comparison 2: Treadmill training with body weight support compared to other physiotherapy interventions

Outcome 2.1: Dependence on personal assistance to walk at the end of the treatment phase

Nineteen studies with a total of 1210 participants measured dependence on personal assistance to walk at the end of the treatment phase (Analysis 2.1).
Overall, the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did not increase the chance of walking independently compared with other physiotherapy interventions (RD 0.00, 95% CI -0.02 to 0.02; P = 0.92; level of heterogeneity I^2 = 0%) (Analysis 2.1).
In eight studies with a total of 814 participants who were dependent in walking at study onset the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did not increase the chance of walking independently compared with other physiotherapy interventions (RD -0.00, 95% CI -0.03 to 0.03; P = 0.92; level of heterogeneity I^2 = 0%) (Analysis 2.1).
In 11 studies with a total of 396 participants who were independent in walking at study onset the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did not increase the chance of walking independently compared with other physiotherapy interventions (RD -0.00, 95% CI -0.03 to 0.03; P = 1.00; level of heterogeneity I^2 = 0%) (Analysis 2.1).
We did not find statistically significant differences between dependent and independent walkers (Chi^2 = 0.01, df = 1, P = 0.94).

Outcome 2.2: Walking speed (m/s) at the end of the treatment phase

Nineteen studies with a total of 1163 participants provided data for walking velocity (metres per second, m/s) at study end (Analysis 2.2).
Overall, the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.07 m/s (95% CI 0.01 to 0.12; P = 0.02; level of heterogeneity I^2 = 57%) (Analysis 2.2).
In eight studies with a total of 738 participants who were dependent in walking at study onset the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did not increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was -0.01 m/s (95% CI -0.06 to 0.03; P = 0.51; level of heterogeneity I^2 = 0%) (Analysis 2.2).
In 11 studies with a total of 425 participants who were independent in walking at study onset the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.14 m/s (95% CI 0.07 to 0.22; P < 0.001; level of heterogeneity I^2 = 42%) (Analysis 2.2).
We did find statistically significant differences in walking velocity between dependent and independent walkers (Chi^2 = 13.17, df = 1, P = 0.0003).

Outcome 2.3: Walking endurance (m) at the end of the treatment phase

Ten trials with a total of 869 participants provided data for walking endurance (walking capacity; metres (m) walked in six minutes) at study end (Analysis 2.3).
Overall, the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was 26.35 m (95% CI 2.51 to 50.19; P = 0.03; level of heterogeneity I^2 = 60%) (Analysis 2.3).
In five studies with a total of 639 participants who were dependent in walking at study onset the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did not increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was -5.09 m (95% CI -23.41 to 13.22; P = 0.59; level of heterogeneity I^2 = 0%) (Analysis 2.3).
In five studies with a total of 230 participants who were independent in walking at study onset the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was

56.77 m (95% CI 34.50 to 79.04; P < 0.00001; level of heterogeneity I^2 = 0%) (Analysis 2.3).
We did find statistically significant differences in walking endurance between dependent and independent walkers (Chi^2 = 17.68, df = 1, P < 0.0001).

Outcome 2.4: Dependence on personal assistance to walk at the end of scheduled follow-up

Five studies with a total of 285 participants measured dependence on personal assistance to walk at the end of scheduled follow-up (Analysis 2.4).
In two studies with a total of 170 participants who were dependent in walking at study onset the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did not increase the chance of walking independently compared with other physiotherapy interventions (RD -0.02, 95% CI -0.18 to 0.15; P = 0.83; level of heterogeneity I^2 = 40%) (Analysis 2.4).
In three studies with a total of 115 participants who were independent in walking at study onset the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did not increase the chance of walking independently compared with other physiotherapy interventions (RD 0.00, 95% CI -0.05 to 0.05; P = 1.00; level of heterogeneity I^2 = 0%) (Analysis 2.4).

Outcome 2.5: Walking speed (m/s) at the end of scheduled follow-up

Seven trials with a total of 751 participants provided data for walking velocity (metres per second, m/s) at the end of scheduled follow-up (Analysis 2.5).
Overall, the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did not increase the walking velocity at the end of scheduled follow-up significantly. The pooled MD (random-effects model) for walking velocity was 0.04 m/s (95% CI -0.06 to 0.14; P = 0.40; level of heterogeneity I^2 = 40%) (Analysis 2.5).
In three studies with a total of 556 participants who were dependent in walking at the end of scheduled follow-up the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did not increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was -0.05 m/s (95% CI -0.13 to 0.03; P = 0.20; level of heterogeneity I^2 = 0%) (Analysis 2.5).
In four studies with a total of 195 participants who were independent in walking at the end of scheduled follow-up the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did not increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.12 m/s (95% CI -0.00 to 0.25; P = 0.06; level of heterogeneity I^2 = 65%) (Analysis 2.5).

Outcome 2.6: Walking endurance (m) at the end of scheduled follow-up

Five trials with a total of 689 participants provided data for walking endurance (walking capacity; metres (m) walked in six minutes) at the end of scheduled follow-up (Analysis 2.6).
Overall, the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did not increase the walking endurance at the end of scheduled follow-up significantly. The pooled MD (random-effects model) for walking endurance was 32.36 m (95% CI -3.10 to 67.81; P = 0.07; level of heterogeneity I^2 = 63%) (Analysis 2.6).
In two studies with a total of 510 participants who were dependent in walking at study onset the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did not increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was -6.78 m (95% CI -34.57 to 21.02; P = 0.63; level of heterogeneity I^2 = 0%) (Analysis 2.6).
In three studies with a total of 179 participants who were independent in walking at study onset the use of treadmill training with body weight support in walking rehabilitation for patients after stroke did increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was 58.88 m (95% CI 29.10 to 88.66; P = 0.0001; level of heterogeneity I^2 = 0%) (Analysis 2.6).

Comparison 3: Treadmill training without body weight support compared to other physiotherapy intervention

Outcome 3.1: Walking speed (m/s) at the end of the treatment phase

Fifteen trials with a total of 714 participants who were ambulatory at study onset provided data for walking velocity (metres per second, m/s) at the end of the treatment phase (Analysis 3.1).
Overall, the use of treadmill training without body weight support in gait rehabilitation for ambulatory patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.08 m/s (95% CI 0.03 to 0.14; P = 0.004; level of heterogeneity I^2 = 23%) (Analysis 3.1).

Outcome 3.2: Walking endurance (m) at the end of the treatment phase

Ten trials with a total of 519 participants provided data for walking endurance (walking capacity; metres (m) walked in six minutes) at the end of the treatment phase (Analysis 3.2).
Overall, the use of treadmill training without body weight support in gait rehabilitation for patients after stroke did not increase the

walking endurance significantly. The pooled MD (random-effects model) for walking velocity was 11.91 m (95% CI -1.34 to 25.17; P = 0.08; level of heterogeneity I^2 = 0%) (Analysis 3.2).

Comparison 4: Treadmill training with body weight support compared to treadmill training without body weight support

In this update of the review we did not find any additional studies for this comparison. Only one trial with 79 participants was included in this comparison (Visintin 1998a; Visintin 1998b) (more details may be found in Analysis 4.1).

Comparison 5: Adverse events for all included trials

Outcome 5.1: Adverse events during the treatment phase

Twenty-four trials with a total of 1511 participants provided data for adverse events during the treatment phase (Analysis 5.1).
Overall, the use of treadmill training with or without body weight support in gait rehabilitation for patients after stroke did not increase the risk of adverse events during the treatment phase (RD (random-effects model) 0.02, 95% CI -0.01 to 0.05; P = 0.14; level of heterogeneity I^2 = 51%). The adverse events during the treatment phase are described in detail for each trial in Table 3.

Comparison 6: Drop outs for all included trials

Outcome 6.1: Drop outs

Outcome 6.1.1: Drop outs by the end of the treatment phase

Forty-four trials with a total of 2658 participants provided data for drop outs at study end (Analysis 6.1).
Overall, the use of treadmill training with or without body weight support in gait rehabilitation for patients after stroke did not increase the risk of patients dropping out by the end of the treatment phase (RD (random-effects model) 0.00, 95% CI -0.01 to 0.02; P = 0.62; level of heterogeneity I^2 = 0%). The reasons for drop outs and all adverse events during the treatment phase are described in detail for each trial in Table 3 and Table 4.

Outcome 6.1.2: Drop outs by the end of scheduled follow-up (cumulative)

Eleven trials with a total of 657 participants provided data for drop outs by the end of scheduled follow-up (cumulative) (Analysis 6.1).
Overall the use of treadmill training with or without body weight support in gait rehabilitation for patients after stroke did not increase the risk of patients dropping out by the end of scheduled follow-up (cumulative) (RD (random-effects model) -0.02, 95% CI -0.08 to 0.04; P = 0.56; level of heterogeneity I^2 = 20%). The reasons for drop outs are described in detail for each trial in Table 3 and Table 4.

Comparison 7: Sensitivity analysis: by trial methodology

Outcome 7.1: Walking speed (m/s) at the end of the treatment phase (all trials involving treadmill training)

To examine the robustness of the results, we specified variables (adequate sequence generation process, adequate concealed allocation and blinded assessors for primary outcome) in a sensitivity analysis that we believed could influence the size of the effect observed for walking speed (m/s) at the end of the treatment phase (Analysis 7.1).

Studies with adequate sequence generation process

We included 23 trials with a total of 1069 participants which had an adequate sequence generation process (Analysis 7.1). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.05 m/s (95% CI 0.02 to 0.09; P = 0.002; level of heterogeneity I^2 = 0%).

Studies with adequate concealed allocation

We included 18 trials with a total of 1145 participants which had adequate concealed allocation (Analysis 7.1). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.06 m/s (95% CI 0.01 to 0.11; P = 0.010; level of heterogeneity I^2 = 31%).

Studies with blinded assessors for the primary outcome

We included 20 trials with a total of 1383 participants which had blinded assessors for the primary outcome (Analysis 7.1). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.07 m/s (95% CI 0.02 to 0.12; P = 0.007; level of heterogeneity I^2 = 39%).

Comparison 8: Subgroup analysis: treadmill (with or without body weight support) versus other, by duration of illness (independent in walking only)

Outcome 8.1: Walking speed (m/s) at the end of the treatment phase

In our planned subgroup analysis comparing walking speed at the end of the intervention phase in patients in the acute and chronic phases of stroke we arranged all included studies in one of two subgroups (acute and chronic phase).

Acute phase: less than or equal to three months after stroke, independent in walking

Ten trials with a total of 318 participants investigated patients in the acute or subacute phase, defined as less than or equal to three months after stroke (Analysis 8.1). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.15 m/s (95% CI 0.05 to 0.24; P = 0.002; level of heterogeneity I^2 = 49%).

Chronic phase: more than three months after stroke, independent in walking

Fifteen trials with a total of 806 participants investigated patients in the chronic phase, defined as more than three months after stroke (Analysis 8.1). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.10 m/s (95% CI 0.04 to 0.15; P = 0.0005; level of heterogeneity I^2 = 31%).
We did not find statistically significant differences in walking velocity between participants treated in the acute/subacute phase compared with participants treated in the chronic phase after stroke (Chi^2 = 0.83, df = 1, P = 0.36).

Outcome 8.2: Walking endurance (m) at the end of the treatment phase

Acute phase: less than or equal to three months after stroke, independent in walking

Five trials with a total of 178 participants investigated patients in the acute or subacute phase, defined as less than or equal to three months after stroke (Analysis 8.2). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was 48.6 m (95% CI 23.97 to 73.32; P = 0.0001; level of heterogeneity I^2 = 6%).

Chronic phase: more than three months after stroke, independent in walking

Ten trials with a total of 571 participants investigated patients in the chronic phase, defined as more than three months after stroke (Analysis 8.2). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was 18.06 m (95% CI 2.56 to 33.56; P = 0.02; level of heterogeneity I^2 = 8%).
We did find statistically significant differences in walking endurance between participants treated in the acute/subacute phase compared with participants treated in the chronic phase after stroke (Chi^2 = 4.23, df = 1, P = 0.04).

Comparison 9: Subgroup analysis: treadmill (with or without body weight support) versus other interventions, by intensity (frequency) of training (independent in walking only)

In our planned subgroup analysis comparing walking speed at the end of the intervention phase at different intensities (frequencies) of training we arranged all included studies in one of three subgroups (treadmill training five times per week or more, three to four times per week, less than three times per week or unclear frequency).

Outcome 9.1: Walking speed (m/s) at the end of the treatment phase

Treadmill training five times per week or more

Thirteen trials with a total of 483 participants investigated patients with an intensity (frequency) of training of five times per week or more (Analysis 9.1). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.13 m/s (95% CI 0.08 to 0.17; P < 0.0001; level of heterogeneity I^2 = 38%).

Treadmill training three to four times per week

Twelve trials with a total of 626 participants investigated patients with an intensity (frequency) of training three to four times per week (Analysis 9.1). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.08 m/s (95% CI 0.03 to 0.13; P = 0.004; level of heterogeneity I^2 = 39%).

Treadmill training less than three times per week or unclear frequency

One trial with a total of 30 participants investigated patients with an intensity (frequency) of training less of than three times a week (Analysis 9.1). The use of treadmill training in walking rehabilitation for patients after stroke did not increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.05 m/s (95% CI -0.14 to 0.24; P = 0.61; level of heterogeneity not applicable).
We did not find statistically significant differences in walking velocity between participants treated at different intensities of training (Chi^2 = 2.04, df = 1, P = 0.36).

Outcome 9.2: walking endurance (m) at the end of the treatment phase

Treadmill training five times per week

Four trials with a total of 233 participants investigated patients with an intensity (frequency) of training of five times a week or more (Analysis 9.2). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was 48.54 m (95% CI 24.40 to 72.68; P < 0.0001; level of heterogeneity I^2 = 12%).

Treadmill training three to four times per week

Ten trials with a total of 488 participants investigated patients with an intensity (frequency) of training of three to four times per week (Analysis 9.2). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was 17.67 m (95% CI 1.58 to 33.76; P = 0.03; level of heterogeneity I^2 = 8%).

Treadmill training less than three times per week or unclear

One trial with a total of 28 participants investigated patients with an intensity (frequency) of training of less than three times a week (Analysis 9.2). The use of treadmill training in walking rehabilitation for patients after stroke did not increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was -15.00 m (95% CI -133.26 to 103.26; P =0.80; level of heterogeneity not applicable).
We did not find statistically significant differences in walking endurance between participants treated at different intensities of training (Chi^2 = 4.83, df = 2, P = 0.09).

Comparison 10: Subgroup analysis: treadmill (with or without body weight support) versus other interventions, by duration of training period (independent in walking only)

In our planned subgroup analysis comparing walking speed at the end of the intervention phase after different durations of treatment we arranged all included studies into one of three subgroups (treadmill training duration of more than four weeks, equal to four weeks or less than four weeks).

Outcome 10.1 Walking speed (m/s) at the end of the treatment phase

Treadmill training duration of more than four weeks

Twelve trials with a total of 699 participants investigated patients with a duration of training of more than four weeks (Analysis 10.1). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.05 m/s (95% CI 0.00 to 0.10; P = 0.03; level of heterogeneity I^2 = 0%).

Treadmill training duration of four weeks

Ten trials with a total of 319 participants investigated patients with a duration of training of four weeks (Analysis 10.1). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.17 m/s (95% CI 0.11 to 0.23; P < 0.0001; level of heterogeneity I^2 = 10%).

Treadmill training duration of less than four weeks

Four trials with a total of 121 participants investigated patients with a duration of training of less than four weeks (Analysis 10.1). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking velocity significantly. The pooled MD (random-effects model) for walking velocity was 0.20 m/s (95% CI 0.02 to 0.38; P = 0.03; level of heterogeneity I^2 = 53%).
We did find statistically significant differences in walking velocity between participants treated with training for different durations (Chi^2 = 9.85, df = 2, P = 0.007).

Outcome 10.2: Walking endurance (m) at the end of the treatment phase

In our planned subgroup analysis comparing walking endurance at the end of the intervention phase after different durations of

treatment we arranged all included studies into one of three subgroups (treadmill training duration of more than four weeks, equal to four weeks or less than four weeks).

Treadmill training duration of more than four weeks

Ten trials with a total of 603 participants investigated patients with a duration of training of more than four weeks (Analysis 10.2). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was 23.72 m (95% CI 5.94 to 41.50; P = 0.009; level of heterogeneity I^2 = 0%).

Treadmill training duration of four weeks

Five trials with a total of 146 participants investigated patients with a duration of training of four weeks (Analysis 10.2). The use of treadmill training in walking rehabilitation for patients after stroke did increase the walking endurance significantly. The pooled MD (random-effects model) for walking endurance was 51.13 m (95% CI 5.40 to 96.85; P = 0.03; level of heterogeneity I^2 = 71%).

Treadmill training duration of less than four weeks

No trials investigated patients with a duration of training of less than four weeks.

We did not find statistically significant differences in walking endurance between participants treated with training for different durations (Chi^2 = 1.20, df = 1, P = 0.27).

Other outcomes

We did not analyse the secondary outcomes of patient quality of life, ability to perform activities of daily living and the combined outcomes of death or dependency, and death or institutional care because these variables were not reported or due to insufficient data in many of the included studies.

We did not perform the planned subgroup analyses for the types of co-interventions implemented in conjunction with treadmill training due to insufficient data.

DISCUSSION

Summary of main results

The aim of this review was to evaluate the effect of treadmill training and body weight support, individually or in combination, for walking after stroke. We included 44 trials with 2658 participants in this update. Overall, the use of treadmill training with body weight support did not increase the chance of walking independently compared with people after stroke receiving other physiotherapy interventions but not treadmill training. The use of treadmill training with body weight support in walking rehabilitation for patients after stroke did increase the walking velocity and walking endurance significantly compared with other physiotherapy interventions.

Overall, treadmill training with or without body weight support produced statistically significant higher walking speed and endurance, 0.07 m/s and 20 m respectively, compared with people not receiving treadmill training. For people who could walk independently at the start of treatment, treadmill training with or without body weight support produced statistically significant higher walking speed and endurance, 0.11 m/s and 30 m respectively, compared with people not receiving treadmill training. These results raise the question: how clinically relevant are these statistically significant effects?

For people after stroke Flansbjer 2005 described the smallest possible change (the standard error of measurement (SEM) and the smallest real clinical differences (95% SRD)). The SEMs and the 95% SRDs for walking speed were 0.07 m/s and 0.15 to 0.25 m/s and the SEMs and the 95% SRDs for walking endurance were 18.6 m and 37 to 66 m. Our results might, according to Flansbjer 2005, be interpreted as follows: the overall effects of treadmill training with or without body weight support can be measured in practice but cannot be interpreted as a clinically relevant improvement.

We did not find any benefit for people after stroke who could not walk independently at the start of treatment. We did not find enough studies of the effects of treadmill training with or body weight support on activities and quality of life to draw any appropriate conclusions. We did not find enough studies of the effects of body weight support without treadmill training to draw any appropriate conclusions.

Adverse events and drop outs did not occur more frequently in people receiving treadmill training and these were not judged to be clinically serious events.

Our subgroup analysis showed that, for people after stroke who walk independently, treadmill training in the first three months after stroke produces walking speeds that are statistically and clinically relevant (Flansbjer 2005). For people treated in the chronic phase the effects on walking speed were lower (not clinically relevant). However, the subgroup differences did not differ significantly.

Our subgroup analysis showed that, for people after stroke who walk independently, treadmill training in the first three months after stroke produces a walking endurance which is statistically and clinically relevant (Flansbjer 2005). For people treated in the chronic phase the effects on walking endurance were lower (not clinically relevant). The subgroup differences did differ significantly, indicating that people treated in the first three months after stroke have higher gains in walking endurance compared with

training in the chronic phase after stroke.

Our subgroup analysis showed that, for people after stroke who walk independently, treadmill training with higher intensities (frequency of training: five times versus three to four times versus less than three times per week) may produce greater effects on walking speed and endurance. However, this trend toward subgroup differences was not significant.

Our subgroup analysis showed that, for people after stroke who walk independently, treadmill training with shorter treatment periods may produce greater effects on walking speed and endurance. However, this trend toward subgroup differences was only significant for walking speed.

Possible recommendations based on our findings are that treadmill training should be used when people after stroke can walk independently and when improvement of walking speed and endurance is the aim of therapy. Therapists should apply higher intensities of treadmill training and may use relatively short periods of treatments, e.g. four weeks. The greatest effect of treadmill training is to be expected in the first three months after stroke.

Overall completeness and applicability of evidence

The results of this review seem to be quite generalisable to inpatient settings in industrialised countries. However, there are factors producing uncertainty for generalisations.

1. The investigated study population was quite heterogeneous (e.g. age, time post stroke, severity of stroke and especially walking ability).
2. The investigated experimental and control conditions were heterogeneous (e.g. type of training, frequency and duration of training; some studies had no active control group or compared with no intervention).

Hence, the results may be of limited applicability for all people after stroke.

Quality of the evidence

We found heterogeneity regarding trial design (parallel-group or cross-over design, two or more intervention groups), but it is not clear if this could have limited the quality of the evidence. Furthermore, in our sensitivity analysis examining the effects of methodological quality on the effectiveness of the intervention we found that the benefits (improving walking speed) were relatively robust when we removed trials with an inadequate sequence generation process, inadequate concealed allocation and no blinded assessors for the primary outcome (Analysis 7.1).

Although the methodological quality of the included trials seemed generally moderate (Figure 2), trials investigating treadmill training with or without body weight support are subject to potential methodological limitations. These limitations include inability to blind the therapist and participants, so-called contamination (provision of the intervention to the control group) and co-intervention (when the same therapist unintentionally provides additional care to either treatment or comparison group). All these potential methodological limitations introduce the possibility of performance bias. However, as discussed previously, this was not supported in our sensitivity analyses by methodological quality.

Potential biases in the review process

The methodological rigour of Cochrane reviews minimises bias in the process of conducting systematic reviews. We are confident that our detailed search strategy combined with detailed handsearching efforts identified all relevant trials. It is possible that we did not identify studies published in the grey literature, but it would be unlikely that this would have a significant impact on our results. Because the grey literature tends to include trials with relatively small numbers of participants and inconclusive results, inclusion of this literature may actually decrease the size of the effect detected in our review (McAuley 2000).

Another potential source for the introduction of bias could have been that two of the review authors (JM, MP) were involved in conducting and analysing one of the 44 included trials (Pohl 2002). However, the third review author (BE) extracted the outcome data from raw data and described the risk of bias of this trial. Excluding Pohl 2002 from the pooled analyses did not change the results significantly so we believe that this one trial has not biased our overall evidence.

Agreements and disagreements with other studies or reviews

There are several recent reviews about treadmill training with or without body weight support; for example, two reviews were published in 2013 (Charalambous 2013; Polese 2013).

The review of Polese 2013 included nine studies of treadmill training with 977 participants and concluded that treadmill training resulted in faster walking than no intervention or a non-walking intervention immediately after the intervention period (MD 0.14 m/s, 95% CI 0.09 to 0.19). The review of Charalambous 2013 included 15 studies of treadmill training and concluded that treadmill-based interventions post stroke may increase and retain walking speed, but a pooled analysis with forest plots was not provided. In comparison, we found more studies (44 studies included in this update) than in the reviews of Charalambous 2013 and Polese 2013 and we found smaller effects on walking speed, MD 0.07 m/s, 95% CI 0.03 to 0.11 (based on 35 included studies of treadmill training with 1891 participants). These differences could be due to the comprehensive search in our review update and to our inclusion of studies not published in English. This update is the most comprehensive review about the topic to date.

We have found in this update of the review significant effects for walking velocity and endurance but not for dependence, and that patients who can walk independently profit more from treadmill training than patients who cannot walk. Initially, this might be difficult to interpret. However, we believe that the overall results of this review are somewhat 'confounded' by the results of patients who cannot walk. We found evidence that this patient group may not profit from treadmill training. Treadmill training appears, therefore, to be an appropriate adjunct intervention that might improve certain important walking parameters such as speed and endurance for people who are already able walk alone. This might appear a little ironic to researchers because treadmill training with body weight support was designed to get non-ambulatory walkers walking. Another Cochrane review found evidence that the chance of regaining independent walking ability for patients after stroke increases when electromechanical and robotic-assisted gait training devices are used in combination with physiotherapy (Mehrholz 2013). Interestingly, whereas independent walking improved, neither walking velocity nor walking capacity improved. Perhaps one conclusion could be that different interventions are suitable for different patients. For example, for severely affected patients who cannot walk independently electromechanical and robotic-assisted gait training devices in combination with physiotherapy are recommended (Mehrholz 2013). However, when patients after stroke recover and start walking, then treadmill training may improve important walking parameters such as speed and endurance, as our update showed. Therefore, the combination of approaches should be recommended.

Finally, it should be mentioned that treadmill training in and of itself is perhaps not the 'main issue'. We believe that treadmill training just offers a very easy approach for high-intensity, repetitive, task-specific walking training, which is recommended for gait rehabilitation (Langhorne 2009).

AUTHORS' CONCLUSIONS

Implications for practice

The results of this review were conclusive in part. Overall, people after stroke who receive treadmill training with or without body weight support are not more likely to improve their ability to walk independently, but their speed of walking and their walking capacity may improve. More specifically, people after stroke who are able to walk independently (but not those who are unable to walk independently) seem to benefit from this type of intervention. This review found that improvements in walking speed and endurance in people who are able to walk independently have persisting beneficial effects. However, our review suggests that patients after stroke who are not able to walk independently at the start of treatment may not benefit from treadmill training with or without body weight support.

In practice, therapists should be aware that treadmill training may be used as an option but not as stand-alone treatment to improve the walking speed and endurance of patients who are able to walk independently. It appears that patients who are able to walk independently, but not patients who are unable to walk independently, may profit from treadmill training with and without body weight support to improve their walking abilities.

Implications for research

Further research should specifically investigate the effects of different frequencies, durations or intensities (in terms of speed increments and inclination) of treadmill training, as well as the use of handrails. To answer these research questions future trials should include patients who are already ambulatory and exclude non-ambulatory patients.

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

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

Ada 2003

Methods	Parallel-group design Concealed randomisation of participants by ranking the participants according to independent walking speed at baseline (from fastest to slowest) and then allocating each descending pair of participants by coin toss 14% drop outs at the end of treatment and 10% drop outs at the end of the follow-up phase Outcome assessors were blinded to group allocation
Participants	14 participants in the EXP group and 15 participants in the CTL group Inclusion criteria: less than 5 years post stroke; first stroke; clinically diagnosed hemiparesis; aged 50 to 85 years; can walk 10 metres independently with a speed less than 1 m/s; discharged from rehabilitation Exclusion criteria: cardiovascular disease that would preclude participation in training (assessed by the participant's medical practitioner); severe cognitive deficits that would preclude participation in training
Interventions	Treated as outpatients for 3 x 30-minute sessions per week for 4 weeks Treadmill training (EXP): participants walk on a treadmill (no body weight support was provided using a harness) and complete some overground walking training (the proportion of overground training is gradually increased) Sham training (CTL): home-based exercises based on written instructions with weekly telephone contact to review and update the exercises
Outcomes	Assessed at baseline, after treatment phase and 3-month follow-up: • independent preferred walking speed over 10 m (barefoot and without gait aids) • step length and width • cadence • walking endurance - maximum distance covered in 6 minutes using preferred gait aid • 30-item Stroke Adjusted Sickness Impact Profile
Notes	Obtained unpublished data by interview and correspondence with the trialists

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomly allocated by coin toss to 1 of 2 groups
Allocation concealment (selection bias)	Low risk	By an investigator independent of recruitment and measurement

Ada 2003 (*Continued*)

Blinding of outcome assessment (detection bias) All outcomes	Low risk	Assessor blinded

Ada 2010

Methods	Parallel-group design Concealed randomisation Outcome assessor was blinded to group allocation
Participants	Country: Australia 64 participants in the EXP group and 62 participants in the CTL group Inclusion criteria: within 28 days of their first stroke, between 50 and 85 years of age, hemiparesis or hemiplegia clinically diagnosed, and nonambulatory (defined as scoring 0 or 1 on item 5 (walking) of the Motor Assessment Scale for Stroke) Exclusion criteria: clinically evident brain stem signs, severe cognitive and/or language deficits that precluded them from following instructions, unstable cardiac status or any premorbid conditions that precluded them from rehabilitation 126 stroke patients who were unable to walk were recruited and randomly allocated to an experimental or a control group within 4 weeks of stroke
Interventions	Both the EXP and the CTL groups underwent a maximum of 30 minutes per day of walking practice with assistance from 1 therapist for 5 days per week EXP group involved walking on a treadmill supported in a harness: initial body weight support was set so that the knee was within 15 degrees of extension in mid-stance; initial speed of the treadmill was set so that the therapist had time to assist the leg to swing through while maintaining a reasonable step length CTL group involved assisted overground walking
Outcomes	The primary outcome was the proportion of participants achieving independent walking within 6 months Independent walking was defined as being able to walk 15 metres overground barefoot without any aids; participants were tested once per week until they achieved independent walking or were discharged from the rehabilitation unit and were tested again at 6 months
Notes	MOBILISE trial

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Random permuted (computer-generated) blocks
Allocation concealment (selection bias)	Low risk	A central office was used

Ada 2010 (*Continued*)

Blinding of outcome assessment (detection bias) All outcomes	Low risk	Assessor was blinded for primary outcome

Ada 2013

Methods	RCT Method of randomisation: computer-generated Blinding of outcome assessors: stated as 'yes' by the investigator Adverse events: not stated Deaths: none Drop outs: 4 (0 in EXP group A, 1 in EXP group B, 3 in CTL group) ITT: yes
Participants	Country: Australia 102 participants (34 in EXP group A, 34 in EXP group B, 34 in CTL group) Ambulatory at study onset Mean age: 63 years; 64 to 70 years (control and EXP groups respectively) Inclusion criteria: within 5 years of their first stroke, adults capable of providing consent (defined as having a MMSE score of > 23), had been discharged from formal rehabilitation, were community dwelling and walked slowly (defined as being able to walk 10 metres across flat ground in bare feet without any aids taking more than 9 seconds) Exclusion criteria: unstable cardiac status precluding them from participation in a treadmill training programme (i.e. permission not granted by their medical practitioner), or had severe cognitive and/or language deficits (aphasia) precluding them from participation in the training sessions (i.e. unable to follow 2-step commands)
Interventions	3 arms: EXP group A undertook 30minutes of treadmill and overground walking 3 times per week for 4 months EXP group B undertook treadmill training for 2 months CTL group had no intervention
Outcomes	Outcomes were recorded at baseline and after 2, 4, 6 and 12 months • distance in the 6-Minute Walk Test • walking speed • step length and cadence • health status • community participation • self efficacy • falls
Notes	The AMBULATE trial We combined the results of both treadmill groups (EXP group A and EXP group B) as 1 group and compared with the results of the CTL group

Risk of bias

Ada 2013 (*Continued*)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated, independent and concealed randomisation was used to assign each participant in this study
Allocation concealment (selection bias)	Low risk	Independent and concealed allocation was used
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Outcome measures were collected by therapists trained in the measurement procedures who were blind to group allocation

da Cunha Filho 2002

Methods	Parallel-group design Participants randomised to groups using a random number table Allocation to groups was not concealed 13% drop outs at the end of the treatment phase Outcome assessors were not blinded to group allocation
Participants	7 participants in the EXP group and 8 participants in the CTL group Inclusion criteria: less than 6 weeks post stroke; hemiparetic stroke based on clinical examination or MRI, or both; significant gait deficit - speed of no more than 36 m/min or FAC 0 to 2 (that is, needs assistance); sufficient cognition to participate in training (at least 21 on the MMSE); ability to stand and take at least 1 step with or without assistance; informed consent Exclusion criteria: any co-morbidity or disability other than hemiparesis that would preclude gait training; recent myocardial infarction; any uncontrolled health condition for which exercise is contraindicated (e.g. diabetes); severe lower extremity joint disease or rheumatoid arthritis that would interfere with gait training; obesity (mass more than 110 kg)
Interventions	Treated as inpatients for 5 x 20-minute sessions per week for 2 to 3 weeks BWSTT (EXP): participants walked on a treadmill with up to 30% of their body weight supported using a harness Regular gait training (CTL): strengthening, functional and mobility activities
Outcomes	Assessed at baseline and after treatment phase: • FAC • FIM - locomotion score • fast walking speed over 5 metres using a gait aid and personal assistance, if required • walking endurance - maximum distance walked in 5 minutes, using parallel bars if necessary • energy expenditure during gait • bike ergometer exercise test

da Cunha Filho 2002 (*Continued*)

Notes	The rating of drop outs and the allocation concealment classification were changed based on correspondence from the trialist

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random number table
Allocation concealment (selection bias)	High risk	Inadequate (based on correspondence from the investigator)
Blinding of outcome assessment (detection bias) All outcomes	High risk	Not blinded (based on correspondence from the investigator)

Deniz 2011

Methods	RCT Method of randomisation: not described Blinding of outcome assessors: yes Adverse events: not stated Deaths: none Drop outs: none ITT: yes
Participants	Country: Turkey 20 participants (10 in EXP group, 10 in CTL group) Ambulatory at study onset: yes Mean age: 62 years (CTL and EXP groups respectively) Inclusion criteria: ischaemic or haemorrhagic stroke prior 6 weeks to study enrolment, confirmed by MRI, MMSE score > 21, supported or independent 1-minute free-standing, significant loss of ambulation (FAC < 3) Exclusion criteria: recurrent stroke interfering with the study, severe contractures of the lower extremity joints, severe cardiac conditions, uncontrolled diabetes mellitus, Parkinson's Disease, current thrombosis in the legs, aphasia, depression and body weight > 110 kg
Interventions	2 arms: CTL group used general physiotherapy, 5 times per week for 4 weeks (300 minutes a week) EXP group received BWSTT, 5 times per week for 4 weeks (300 minutes a week)
Outcomes	Outcomes were recorded at baseline, at the end of the intervention phase and at 3-month follow-up FAC, Rivermead Motor Evaluation Gross (RMD1) and total gross function (RMD2), Berg Balance Scale, Barthel Index, walking capacity (6-Minute Walk Test), walking speed

Deniz 2011 (*Continued*)

	(10 metre walk), cadence rate, ratios of right-left step length, muscle activity (EMG)	
Notes		
Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Not reported
Allocation concealment (selection bias)	Unclear risk	Not reported
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Du 2006

Methods	RCT, parallel-group design Method of randomisation: random number table Allocation concealment: unclear Blinding of outcome assessors: not stated by the authors Adverse events: not stated by the authors Deaths: not stated by the authors Drop outs: not stated by the authors ITT: unclear
Participants	Country: China 128 participants (67 in EXP group, 61 in CTL group) Ambulatory at study onset: 26/61 participants (43%) of the EXP group and 22/67 participants (33%) of the CTL group Mean age: 58 to 56 years (CTL and EXP groups respectively) Inclusion criteria: $\leq$ 3 months after stroke, stable stroke, Brunnstrom stage > 2 Exclusion criteria: severe cognitive dysfunction, acute myocardial infarction, unstable angina pectoris, other severe medical conditions of the inner organs
Interventions	2 arms, treated as inpatients and outpatients: CTL group used conventional treatment techniques, 2 times per day for 4 weeks EXP group used BWSTT in addition to the same training as in the CTL group for the same time and frequency
Outcomes	Outcomes were recorded at baseline and after the end of the intervention phase: • walking ability (FAC) • lower limb function (FMA) • activities in daily living (FIM)
Notes	

Du 2006 (*Continued*)

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Random number table
Allocation concealment (selection bias)	High risk	To be confirmed
Blinding of outcome assessment (detection bias) All outcomes	High risk	To be confirmed

Duncan 2011

Methods	Parallel-group design Participants were randomised to 3 groups using a stratified randomisation procedure Allocation to groups was concealed 11.5% drop outs at the end of the treatment phase Outcome assessors were not rigorously blinded to group allocation
Participants	Country: USA 408 participants Inclusion criteria: age of 18 years or older, a stroke within 45 days before study entry and the ability to undergo randomisation within 2 months after the stroke, residual paresis in the leg affected by stroke, the ability to walk 3 metres with assistance from no more than 1 person and the ability to follow a 3-step command, the treating physician's approval of participation in the study, a self selected speed for walking 10 metres of less than 0.8 m per second, and residence in the community by the time of randomisation Exclusion criteria: dependency on assistance in activities of daily living before the stroke, contraindications to exercise, pre-existing neurologic disorders and inability to travel to the treatment site
Interventions	3 groups: Group 1 (EXP) received training on a treadmill with the use of BWS 2 months after the stroke had occurred (early locomotor training) Group 2 (EXP) received this training 6 months after the stroke had occurred (late locomotor training) Group 3 (CTL) participated in an exercise programme at home managed by a physical therapist 2 months after the stroke (home-exercise programme) Each intervention included 36 sessions of 90 minutes each for 12 to 16 weeks
Outcomes	The primary outcome was the proportion of participants in each group who had an improvement in functional walking ability 1 year after the stroke Further outcomes were: walking speed; distance walked in 6 minutes; number of steps walked per day; Stroke Impact Scale; FMA legs; Berg Balance Scale; Specific Balance Confidence score

Duncan 2011 (*Continued*)

Notes	We combined the results of both EXP groups (Group 1 and Group 2) as 1 group and compared them with the results of the CTL group (Group 3)	
Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Authors describe that participants were randomly assigned to 1 of 3 groups. Authors describe a stratified randomisation procedure in ratios of 140:120:120 stratified by severity. The method of randomisation generation is, however, not described
Allocation concealment (selection bias)	Low risk	The method of allocation concealment is described as: "The study coordinator registers the patient, enters the baseline data into the web based database system, and then obtains group assignment from the data management and analysis center."
Blinding of outcome assessment (detection bias) All outcomes	High risk	Per diem therapists did the assessments

Eich 2004

Methods	Parallel-group design Concealed randomisation of participants to groups by having a person independent of the study asking the participant to draw a sealed opaque envelope from a box (each envelope contained the group allocation and there were 25 EXP and 25 CTL envelopes) 0% drop outs at the end of treatment and 2% drop outs at the end of the follow-up phase Outcome assessors were blinded to group allocation
Participants	25 participants in the EXP group, and 25 participants in the CTL group Inclusion criteria: first time supratentorial stroke; less than 6 weeks post stroke; aged 50 to 75 years; scores 50 to 80 on 100-point Barthel Index; able to walk a minimum distance of 12 metres with either intermittent help or stand-by assistance; cardiovascular stable; participation in a 12-week comprehensive rehabilitation programme; no other neurologic or orthopaedic disease impairing walking; able to understand the purpose and content of the study; written consent
Interventions	Treated as inpatients for 5 x 30-minute sessions per week for 6 weeks TTBWS (EXP): participants walked on a treadmill with up to 15% of their body weight supported using a harness; the slope and speed of the treadmill were adjusted to achieve a training heart rate

Eich 2004 (*Continued*)

	Regular gait training (CTL): tone-inhibiting and gait preparatory manoeuvres and walking practice on the floor and stairs based on Bobath (non-task-oriented 'neurophysiological')
Outcomes	Assessed at baseline, after treatment phase and 3 months later: • fast walking speed over 10 metres with or without a gait aid (supervision and personal assistance was provided, if required) • walking endurance - maximum distance walked in 6 minutes without rest stops, the test was terminated if the participant needed to stop and rest, with or without a gait aid (use of supervision and personal assistance not reported) • walking ability using the Rivermead Motor Assessment scale (13-point scale) • walking quality using an adapted checklist from Los Ranchos Los Amigos Gait Analysis Handbook (41-point scale)
Notes	Method of randomisation and the allocation concealment classification were changed based on correspondence from the trialist

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Using sealed envelopes
Allocation concealment (selection bias)	Low risk	Using sealed envelopes chosen by an independent person
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	The primary outcomes were not blinded, the secondary outcomes walking ability (Rivermead Motor Assessment scale) and walking quality were blinded

Franceschini 2009

Methods	RCT Method of randomisation: software generated Blinding of outcome assessors: stated as 'yes' by the trialists Adverse events: not stated Drop outs: 20 (10 in EXP group, 10 in CTL group) ITT: unclear
Participants	Country: Italy 102 participants (52 in EXP group, 50 in CTL group) Not ambulatory at study onset Mean age: 66 to 71 years (CTL and EXP group respectively) Inclusion criteria: within 45 days of the onset of hemiparesis caused by right or left ischaemic or haemorrhagic stroke, able to control the sitting position on a rigid plane surface with the legs hanging freely and without the help of the arms for at least 30

	seconds; able to control the trunk in the upright position even with the help of the upper extremities gripping a fixed support or other aid (cane, tripod); without lower limb spasticity (Ashworth scale 1), in stable cardiovascular condition with a low, although slightly greater, risk for vigorous exercise than apparently healthy persons (Class B according to the American College of Sports Medicine) Exclusion criteria: significant disability before stroke (modified Rankin Scale 2); significant pre stroke gait disability (Walking Handicap scale 2) and mild gait impairment at time of enrolment (ability to walk without aids for at least 3 metres or to walk for more than 6 metres with the aid of a cane or tripod); patients having done previous treadmill training and/or with a Class C or D exercise risk according to the American College of Sports Medicine criteria or Class III or IV in the New York Heart Association classification system; patients with orthopaedic or other disorders causing a gait limitation before stroke onset Participants who did not complete the treatment (EXP or CTL) within 5 weeks of study inclusion were excluded from the analysis
Interventions	EXP group received conventional rehabilitative treatment plus gait training with BWS on a treadmill CTL group received conventional treatment with overground gait training only All participants were treated in 60-minute sessions every weekday for 4 weeks
Outcomes	Outcome measures were: • Motricity Index • Trunk Control test • Barthel Index • FAC • 10-metre and 6-Minute Walk Test • Walking Handicap Scale Assessments were done at baseline, after 20 sessions of treatment, 2 weeks after treatment and 6 months after stroke
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomisation scheme was generated by custom-made software that used the Lehmer algorithm
Allocation concealment (selection bias)	Unclear risk	Allocation concealment is not described
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Assessments were done by therapists and physicians not involved in the treatment of the patient

Gan 2012

Methods	RCT Method of randomisation: not stated Blinding of outcome assessors: unclear Adverse events: not stated Deaths: not stated Drop outs: unclear ITT: unclear
Participants	Country: Philippines 205 participants (102 in EXP group, 103 in CTL group) Ambulatory status at study onset: unclear Mean age: unclear Inclusion criteria: unclear Exclusion criteria: unclear
Interventions	Interventions: either to BWS supported overground gait training or BWS supported treadmill training group BWS was provide by using an overhead harness system with up to 40% of their BWS at the beginning of the training Treadmill speed in the BWS-treadmill group was initially started at 0.5 mph Progression was accomplished by decreasing percentage of BWS or increasing treadmill speed based on gait pattern and endurance
Outcomes	Main outcome measures: study outcome measures included: • balance using the Berg Balance Scale • cadence • 10-metre walking • speed
Notes	Only published as abstract

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Method of random sequence generation not described
Allocation concealment (selection bias)	Unclear risk	Method of allocation concealment not described
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Method of blinding not described

Globas 2011

Methods	RCT Method of randomisation: computer-based Blinding of outcome assessors: not blinded Adverse events: 1 recurrent stroke (EXP group) Drop outs: 2 (2 in EXP group, 0 in CTL group) ITT: stated by the trialists
Participants	Country: Switzerland and Germany 38 participants (20 in EXP group, 18 in CTL group) Ambulatory at study onset Mean age: 69 years (both CTL and EXP groups) Inclusion criteria: hemiparetic gait as evaluated by a neurologist with at least 1 clinical sign for paresis, spasticity or circumduction of the affected leg while walking, and the ability to walk on the treadmill at $\geq$ 0.3 km/hour for 3 minutes with handrail support Exclusion criteria: unstable angina pectoris, heart failure (New York Health Association > II°), haemodynamically significant valvular dysfunction, peripheral arterial occlusive disease, dementia (MMSE < 20), aphasia (unable to follow 2 commands), major depression (CES-D > 16) and other medical conditions precluding participation in aerobic exercise, as well as patients already performing aerobic exercise training for > 20 minutes per day and > 1 day per week
Interventions	3 months (3 times per week) progressive graded, high-intensity aerobic treadmill exercise (TAEX) or conventional care physiotherapy
Outcomes	• peak VO_2 during maximum effort treadmill walking • walking ability measured in 6-minute walks • 10-Metre Walk Test at comfortable (self selected) and maximum walking speeds • functional leg strength, the 5-Chair-Rise (5CR) • Berg Balance Scale • self rated mobility and activities for daily living function assessed by the Rivermead Mobility Index (RMI) • physical and mental health measured by the Medical Outcomes Study Short-Form 12 (SF-12)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	A computer-based pseudo random number generator and the Moses-Oakford assignment algorithm were used to develop the randomisation schedule
Allocation concealment (selection bias)	Low risk	The procedure was performed by study independent staff at the Department of Biostatistics, University of Ulm, Germany

Blinding of outcome assessment (detection bias) All outcomes	High risk	No blinding of outcomes was done

Hoyer 2012

Methods	RCT Method of randomisation: computer-based Blinding of outcome assessors: yes Adverse events: not described Drop outs: 0 ITT: not stated by the trialists, probably done because no drop outs were reported
Participants	Country: Norway 60 participants (30 in EXP group, 30 in CTL group) Not ambulatory at study onset Mean age: 52 years (both groups) Inclusion criteria: admission for a primary rehabilitation stay, mainly < 6 months after onset of stroke, use of wheelchair, dependent on assistance for walking with or without walking aids, medically stable, no neurological or orthopaedic contraindications for walking, and sufficient cognitive capacity to understand information and instructions Exclusion criteria: the patients' need of assistance should not be beyond 1 person for shorter transfer and for taking some steps over ground
Interventions	2 arms: Traditional gait training or treadmill therapy In the traditional gait training group intensive gait training (30 minutes) and functional training (30 minutes) daily for minimum of 10 weeks was conducted In the treadmill therapy participants walked on a motorised, raised treadmill, secured by a harness combined with a suspension system releasing body weight; this group received 30 sessions of TTBWS, plus conventional gait training and other functional training for a period of minimum 10 weeks; TTBWS was conducted daily for the first 4 weeks (20 sessions), and then 1 to 2 times a week (10 sessions) for the remaining 6 weeks; on days without TTBWS, conventional gait training was conducted; each treadmill session lasted for 30 minutes, including necessary pauses, but excluding equipment preparation Time for daily training (5 days a week) was the same in the 2 intervention groups, 30 minutes for walking and 30 minutes for other functional training, including selective training of the trunk and extremities, balance and transfer, customised to individual deficits and needs Additional self training, individually or by the staff, was allowed
Outcomes	Outcomes were recorded at baseline and after 4 to 6 weeks and after 10 to 12 weeks Primary outcomes: walking ability (FAC and EU-walking scale) Secondary outcomes: walking velocity and steps, walking endurance
Notes	

Risk of bias

Hoyer 2012 (*Continued*)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	60 numbers concealed in envelopes were prepared by an external statistician
Allocation concealment (selection bias)	Unclear risk	Not described, probably done because concealed envelopes were used
Blinding of outcome assessment (detection bias) All outcomes	Low risk	A pool of 8 experienced assessors blinded to group allocation were involved in testing

Jaffe 2004

Methods	Parallel-group design Concealed randomisation of participants to groups by using an Excel spreadsheet with group allocation masked using black cells 15% drop outs at the end of the treatment phase and 15% drop outs at the end of the 2-week follow-up Blinding of outcome assessors to group allocation
Participants	11 participants in the EXP group and 12 participants in the CTL group Inclusion criteria: at least 6 months post stroke; hemiplegia secondary to documented lesion; able to walk independently or with stand-by supervision (with or without a gait aid); asymmetric gait pattern and short step length; 'average' or 'minimal impairment' in all Cognistat test categories; informed consent Exclusion criteria: any medical condition that would prevent participation in a training programme; inability to follow instructions
Interventions	Treated as outpatients for 6 x 1-hour sessions per week for 2 weeks Virtual reality and treadmill training (EXP): participants practiced stepping over virtual objects while walking on a treadmill, with a harness to prevent falls (each session consisted of 12 trials of stepping over 10 obstacles) Overground training (CTL): participants practiced stepping over real objects while walking overground, with a gait belt for safety (each session consisted of 12 trials of stepping over 10 obstacles; task-oriented)
Outcomes	Assessed at baseline, after treatment phase and 2 weeks later: • independent preferred walking speed over 6 m with or without a gait aid (supervision, but not personal assistance, was provided) • independent fast walking speed over 6 m with or without a gait aid (supervision, but not personal assistance, was provided) • walking endurance - maximum distance walked in 6 minutes with or without a gait aid (supervision, but not personal assistance, was provided) • spatial and temporal gait variables • ability to clear obstacles

Jaffe 2004 (*Continued*)

Notes	Rating of concealed allocation, assessor blinding and drop outs, and the allocation concealment classification were changed based on correspondence from the trialist

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Method not described
Allocation concealment (selection bias)	Unclear risk	Unclear concealed randomisation
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blinding of outcome assessors to group allocation

Kang 2012

Methods	RCT Method of randomisation: sealed envelopes Blinding of outcome assessors: stated as 'yes' by the investigator Adverse events: not stated Drop outs: 2 (2 in EXP groups, 0 in CTL group) ITT: unclear
Participants	Country: Republic of Korea 32 participants (11 in first EXP group, 11 in second EXP group and 10 in CTL group) Ambulatory at study onset Mean age: 56 years (CTL and EXP groups) Inclusion criteria: hemiparetic stroke patients 6 months after diagnosis; patients who could walk on their own for more than 15 minutes; patients without visual disabilities or hemianopia; (4) patients who had a mini-mental state examination score of 21 or higher; Brunnstrum stage > 4 Exclusion criteria: cardiovascular problems; orthopaedic and other neurological diseases except stroke for influencing gait
Interventions	3 arms 1. wore a head-mounted display to receive speed modulated optic flow during treadmill training for 30 minutes 2. treadmill training 3. regular therapy for the same time, 3 times per week for 4 weeks
Outcomes	Before and after treatment: • Timed Up-and-Go Test • Functional Reach Test • 10-Metre Walk Test • 6-Minute Walk Test

Kang 2012 (*Continued*)

Notes	We combined the results of both EXP groups (arms 1 and 2) as 1 group and compared with the results of the CTL group (arm 3)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Sealed envelopes
Allocation concealment (selection bias)	Low risk	Independent person who picked one of the sealed envelopes before the start of the intervention
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Other physical therapists than the treating physical therapists used in this study for the blinding measurements

Kim 2011

Methods	RCT Method of randomisation: not described Blinding of outcome assessors: no Adverse events: not stated Deaths: none Drop outs: not described ITT: not described
Participants	Country: Republic of Korea 20 participants in the EXP group and 24 participants in the CTL group Inclusion criteria: stroke, able to maintain standing independently for 30 seconds and to walk independently more than 30 metres and able to understand and follow instructions Exclusion criteria: orthopaedic surgery or impairment, Modified Ashworth scale of 2 or more
Interventions	2 arms 1. EXP group received treadmill training 2. CTL group received lower extremity muscle strength training Both groups received walking therapy for 30 minutes, 3 times a week for 6 weeks
Outcomes	Outcomes were recorded at baseline and after 6 weeks • 10-Metre Walk Test • Timed Up and Go Test • Berg Balance Scale • dynamic mean balance in per cent
Notes	

Kim 2011 (*Continued*)

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Method of randomisation not described
Allocation concealment (selection bias)	High risk	Not described, probably not done
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not described, probably not done

Kosak 2000

Methods	Parallel-group design Participants randomised to groups using a random number table Concealed allocation to groups by a person independent of the study 5% drop outs at the end of the treatment phase Blinding of outcome assessors to group allocation
Participants	22 participants in the EXP group and 34 participants in the CTL group Inclusion criteria: no prior stroke; independent with ambulation prior to stroke; no active angina pectoris or orthostatic hypertension; free of other neurologic or orthopaedic disorders that might preclude walking; FIM walking subscore less than or equal to 3 (indicating at least moderate assistance is required for ambulation); hemiparesis with iliopsoas strength less than or equal to 3 out of 5 (indicating significant weakness - full range of movement against gravity only); written informed consent
Interventions	Treated as inpatients for 5 x 45-minute sessions per week for an average of 12.5 (SD 4. 7) total treatment sessions Treadmill training with body weight support (EXP): participants walked on a treadmill and were provided with manual guidance for weight shifting, leg advancement and foot placement Aggressive bracing assisted walking (CTL): participants walked with the assistance of knee-ankle combination bracing and a hemi-bar (non-task-oriented - 'orthopaedic')
Outcomes	Assessed at baseline and after treatment phase: • preferred walking speed over a 2-minute test period (participants allowed to use gait aids and personal assistance, if required) • walking endurance - the distance walked at a preferred speed until the participant indicated fatigue or they exhibited fatigue-related deterioration in gait (participants allowed to use gait aids and personal assistance, if required)
Notes	Rating of concealed allocation and the allocation concealment classification were changed based on correspondence from the trialist

Kosak 2000 (*Continued*)

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Random number table
Allocation concealment (selection bias)	Low risk	Concealed allocation to groups by a person independent of the study
Blinding of outcome assessment (detection bias) All outcomes	High risk	Not described

Kuys 2011

Methods	RCT Method of randomisation: computer-generated random number programme Blinding of outcome assessors: stated as 'yes' by the investigator Adverse events: none Drop outs: 2 (2 in EXP group, 0 in CTL group) ITT: described as ITT used
Participants	Country: Australia 30 participants (15 in EXP group, 15 in CTL group) Ambulatory at study onset Mean age: 72 to 63 years (control and EXP group respectively) Inclusion criteria: diagnosis of first stroke confirmed by CT scan, were referred for physiotherapy rehabilitation and scored 2 or more on the walking item of the Motor Assessment Scale (i.e. were able to walk with stand-by help), were medically stable, were able to understand simple instructions Exclusion criteria: normal walking speed was considered normal (> 1.2 m/s), any cardiovascular problems that limited their participation in rehabilitation or had other neurological or musculoskeletal conditions affecting their walking
Interventions	2 arms: 1. EXP group walked on the treadmill for 30 minutes (excluding rests), 3 times a week for 6 weeks, at an intensity of 40% to 60% heart rate reserve or a Borg Rating of Perceived Exertion of 11 to 14 2. CTL group received usual physiotherapy intervention only
Outcomes	Details of treadmill walking (duration, heart rate reserve, treadmill speed and distance walked) were recorded for each session: • comfortable and fast walking speed and walking pattern were quantified from a 10-Metre Walk Test as linear kinematics (step length, cadence) using a GAITRite system and angular kinematic parameters using a two-dimensional web cam kinematic software analysis application, and • walking capacity was measured using the 6-Minute Walk Test before and after 6

Kuys 2011 (*Continued*)

	weeks intervention and after 18 weeks follow-up
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated random number programme
Allocation concealment (selection bias)	Low risk	Allocation was concealed from the recruiter through the use of consecutively numbered envelopes
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Measures were taken by assessors blinded to group allocation

Langhammer 2010

Methods	RCT Method of randomisation: by sealed envelopes Blinding of outcome assessors: stated as 'yes' by the investigator Adverse events: not stated Deaths: no Drop outs: 5 (3 in EXP group, 2 in CTL group) ITT: unclear
Participants	Country: Norway 39 participants (21 in EXP group, 18 in CTL group) Not ambulatory at study onset Mean age: 75 to 74 years (control and EXP group respectively) Inclusion criteria: stroke, neurological impairment and age above 50 years Exclusion criteria: barriers to taking part in a physical rehabilitation programme, insufficient language, an unstable cardiac status, neurosurgery and a premorbid history of orthopaedic problems or any problems that would prevent a patient from walking
Interventions	2 arm: 1. treadmill training (with handrails to hold on but no body weight or other safety support) 2. walking outdoors for 30 minutes 5 days a week during the inpatient stay until discharge from hospital (length of stay was 16 days in EXP group, and 17 days in CTL group)
Outcomes	Main measures: Six-Minute Walk Test, a 10-Metre Walk Test and pulse rates at rest and in activity

Langhammer 2010 (*Continued*)

Notes		
Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Sealed envelopes
Allocation concealment (selection bias)	Low risk	By a person not involved; sealed envelopes
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Assessor blinded

Laufer 2001

Methods	Parallel-group design Alternate assignment of participants to groups, therefore allocation to groups not concealed 14% drop outs at the end of the treatment phase Blinding of outcome assessors to group allocation
Participants	15 participants in the EXP group and 14 participants in the CTL group Inclusion criteria: first supratentorial stroke in anterior brain circulation as evidenced by CT scanning; no additional neurological or orthopaedic deficiencies impairing ambulation; no cardiac, respiratory or medical condition that could interfere with the protocol; no severe cognitive or communication impairment; onset of stroke no more than 90 days prior to recruitment; ability to walk on treadmill at a speed of at least 0.2 km/hour for 2 minutes without rest with minimal to moderate assistance; have begun ambulation training
Interventions	Treated as inpatients for 5 sessions of up to 20 minutes per week for 3 weeks (15 treatment sessions) Treadmill training (EXP): participants walked on a treadmill at a comfortable speed with a therapist assisting leg movements, they were permitted use a handrail for external support if required; no body weight support using a harness was provided Overground walking (CTL): participants walked on a floor surface using gait aids, assistance and rest periods as needed
Outcomes	Assessed at baseline and after treatment phase: • independent fast walking speed over 10 m (participants allowed to use gait aids and supervision, if required) • FAC • standing balance test • gait aids used • temporal characteristics of gait • stride length

Laufer 2001 (*Continued*)

	• calf muscle EMG activity
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Alternately assigned to groups by order of admittance
Allocation concealment (selection bias)	High risk	Not described, inadequate
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blinding of outcome assessors to group allocation

Liston 2000

Methods	Cross-over group design Participants randomised to groups by the toss of a coin Allocation concealment not reported 17% drop outs at the end of the first treatment phase Blinding of outcome assessors to group allocation
Participants	10 participants allocated to the EXP then CTL order, and 8 participants allocated to the CTL then EXP order Inclusion criteria: higher level gait disorder; CT scan with large vessel infarct, basal ganglia and white matter lacunes, or extensive leukoaraiosis; discharged from all rehabilitation services; informed consent Exclusion criteria: severe cognitive impairment; significant physical impairments from other causes
Interventions	Treated as inpatients or outpatients for 3 x 1-hour sessions per week for 4 weeks Treadmill training (EXP): participants walked on a treadmill for as long as they felt comfortable, rest breaks were allowed; no body weight support was provided using a harness Conventional physiotherapy (CTL): a schedule of 31 interventions in 3 treatment modules: gait ignition or failure, postural alignment and other
Outcomes	Assessed at baseline, at cross-over (4 weeks), after treatment phase (at 8 weeks) and 6 weeks after final treatment: • independent preferred walking speed over 10 m using a gait aid and supervision, if required • walking step length • walking cadence • sit-to-stand test • 1-leg stand

Liston 2000 (*Continued*)

	• s-test for walking • ADL-oriented assessment of mobility • Nottingham Extended ADL Scale
Notes	The rating of drop outs was changed based on correspondence from the trialist Trial treated as a parallel-group design for this review by using the first treatment phase data only (that is baseline and cross-over data only)

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	By the toss of a coin
Allocation concealment (selection bias)	High risk	Not reported
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blinding of outcome assessors to group allocation

Luft 2008

Methods	RCT Method of randomisation: computer-based list Blinding of outcome assessors: stated as 'yes' by the investigator Adverse events: not stated Deaths: not stated Drop outs: 42 (20 in EXP group, 22 in CTL group) ITT: no
Participants	Country: USA 113 participants (57 in EXP group, 56 in CTL group) Ambulatory at study onset Mean age: 64 to 63 years (CTL and EXP group respectively) Inclusion criteria: first clinical ischaemic stroke, older than 45 years of age with chronic hemiparetic gait 6 or more months after completion of conventional subacute rehabilitation Exclusion criteria: heart failure, unstable angina, peripheral arterial occlusive disease, dementia (MMSE $\leq$ 23 for those with 9th grade education or more and $\leq$ 17 for those with 8th grade education or less), significant aphasia (unable to follow 2-point commands), untreated major depression (CES-D 16) and other medical conditions precluding participation in aerobic exercise
Interventions	2 arms: 1. treadmill training sessions (training goal was 3 x 40-minute exercise sessions per week at an aerobic intensity of 60% of heart rate reserve. Duration and intensity started low (10 to 20 minutes, 40% to 50% heart rate reserve) and increased

Luft 2008 (*Continued*)

	approximately 5 minutes and 5% heart rate reserve every 2 weeks as tolerated 2. stretching sessions (performed 13 supervised traditional stretching movements on a raised mat table with a therapist's assistance) over a 6-month period
Outcomes	Assessed at baseline, 3 and 6 months: • maximum walking velocity and VO_2 peak during a treadmill stress test • maximum comfortable walking velocity during a 10-metre walk and a 6-Minute Walk Test)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-based list
Allocation concealment (selection bias)	High risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blinded assessors

MacKay-Lyons 2013

Methods	RCT Method of randomisation: computer-generated, blocked randomisation Blinding of outcome assessors: stated as 'yes' by the investigator Adverse events: not stated Deaths: not stated Drop outs: 5 (2 in EXP group, 3 in CTL group) ITT: all analyses were conducted on an ITT basis (that means carrying the last observation forward for those lost to follow-up)
Participants	Country: Canada 50 participants (24 in EXP group, 26 in CTL group) Ambulatory at study onset Mean age: 59 to 62 years (control and EXP group respectively) Inclusion criteria: men and women older than 18 years, within 1 month of a first ischaemic stroke confirmed by neuroimaging, inpatients in the stroke rehabilitation unit and able to walk 5 metres with or without use of ambulatory aids, ankle orthoses or stand-by assistance Exclusion criteria: contraindications to maximal exercise stress testing, musculoskeletal or cognitive limitations that could preclude participation in the programme, or involvement in other pharmacological or physical intervention studies

MacKay-Lyons 2013 (*Continued*)

Interventions	2 arms: 1. body weight supported treadmill training + usual care 2. usual care All individuals participated in 60-minute physiotherapy sessions 5 times weekly as inpatients for 6 weeks and 3 times weekly as outpatients for another 6 weeks for a total of 48 sessions Substitute sessions for missed appointments were provided
Outcomes	Assessments were done at baseline, post-training, at 6 and 12-month follow-up: • peak oxygen consumption, VO_{2peak} • walking ability (6-Minute Walk Test and 10-metre walk) • Berg Balance Scale • motor impairment (Chedoke-McMaster Stages of Recovery, Leg and Foot)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated, blocked randomisation
Allocation concealment (selection bias)	Low risk	A person not involved in the study prepared and safeguarded individual, opaque sealed envelopes containing group and physiotherapist allocation, which were opened after completion of the baseline assessment
Blinding of outcome assessment (detection bias) All outcomes	Low risk	All outcome assessments were conducted by a blinded assessor located off-site

Macko 2005

Methods	Parallel-group design Participants randomised to groups using a computer-generated randomisation scheme that was stratified by walking speed (less than 0.44 m/s and more than or equal to 0.44 m/s) and age (less than 65 years and more than or equal to 65 years) Concealed allocation to groups not reported 26% drop outs at the end of the treatment phase Blinding of outcome assessors to group allocation for gait and balance outcomes (i.e. outcomes 1, 2, 3 and 6)
Participants	32 participants in the EXP group and 29 participants in the CTL group Inclusion criteria: chronic ischaemic stroke (less than 6 months); residual mild to moderate hemiplegic gait deficits; completion of all conventional physiotherapy; aged 45 years or more; (5) independently ambulant with or without a gait aid or stand-by help Exclusion criteria: heart failure, unstable angina, peripheral arterial occlusive disease;

	aphasia (inability to follow 2-point commands); dementia; untreated major depression; other medical conditions precluding aerobic exercise
Interventions	Treated as outpatients for 3 x 40-minute sessions per week for 6 months Treadmill training (EXP): participants walked on a treadmill to achieve a target aerobic intensity of 60% to 70% heart rate reserve (progressive aerobic training); no body weight support was provided using a harness Conventional physiotherapy (CTL): participants completed a supervised stretching and low-intensity walking programme (5 minutes walking on a treadmill at 30% to 40% heart rate reserve without body weight support; task-oriented)
Outcomes	Assessed at baseline and after treatment phase: • independent self selected walking speed over 30 feet (participants allowed to use gait aids and supervision, if required) • independent fastest comfortable walking speed over 30 feet (participants allowed to use gait aids and supervision, if required) • walking endurance - maximum distance covered in 6 minutes using preferred gait aid • peak exercise capacity • rate of oxygen consumption during submaximal effort treadmill walking (economy of gait) • balance using an instrumented balance assessment system
Notes	Method of randomisation and rating of assessor blinding were changed based on correspondence from the trialist Obtained unpublished data by correspondence with the trialists

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer-generated randomisation scheme
Allocation concealment (selection bias)	High risk	Not reported
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blinding of outcome assessors to group allocation for gait and balance outcomes (i.e. outcomes 1, 2, 3 and 6)

Mehrberg 2001

Methods	RCT Method of randomisation: not stated Blinding of outcome assessors: not stated Adverse events: not stated Deaths: not stated Drop outs: not stated ITT: unclear
Participants	Country: USA 21 participants (9 in EXP group, 11 in CTL group; according to the authors, 1 participant appears to be missing) Ambulatory status at study onset unclear Mean age: unclear Inclusion criteria: severe hemiparetic patients after stroke (defined as inability to raise and hold affected leg) Exclusion criteria: not stated
Interventions	2 arms: 1. body weight supported walking (no treadmill) 2. traditional physical therapy 1 hour per day for 3 weeks
Outcomes	Tinetti Balance Scale Functional Ambulation Categories Scandinavian Stroke Scale
Notes	Only published as conference proceeding

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not described
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not described

Moore 2010

Methods	RCT with baseline period, followed by cross-over design Method of randomisation: not stated Blinding of outcome assessors: stated as 'yes' by the investigator Adverse events: not stated Deaths: not stated Drop outs: 10 (unclear in which period/group) ITT: unclear
Participants	Country: USA 30 participants (probably 15 in EXP group, 15 in CTL group) Ambulatory at study onset Mean age: 57 to 67 years (CTL and EXP group respectively) Inclusion criteria: $\leq$ 3 months after stroke, ability to stand or walk 5 metres Exclusion criteria: orthopaedic problems, contractures, NYHA III-IV
Interventions	2 arms: A, A-B, B-A 20 out of 30 participants with chronic stroke completed a repeated baseline measure, randomised cross-over trial in which walking performance was assessed during the last 4 weeks of clinical physical therapy before discharge secondary to reaching a plateau, followed by 4 weeks of intensive locomotor training and 4 weeks of no intervention
Outcomes	Outcome measures included clinical and physiological (metabolic) measures of walking overground and on a treadmill, and measures of daily stepping activity in the home and community, including during clinical physical therapy and subsequent locomotor therapy sessions
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Method of randomisation not stated
Allocation concealment (selection bias)	Unclear risk	Method not stated
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not stated

Nilsson 2001

Methods	Parallel-group design Participants randomised to groups using a random number computer program Concealed allocation to groups using sealed, opaque and consecutively numbered envelopes 10% drop outs at the end of the treatment phase, 18% drop outs at the 10-month follow-up Blinding of outcome assessors to group allocation
Participants	36 participants in the EXP group and 37 participants in the CTL group Inclusion criteria: first stroke with residual hemiparesis; aged less than 70 years; onset of stroke no more than 8 weeks prior to recruitment; take longer than 14 seconds to walk 10 metres; informed consent Exclusion criteria: patients with heart disease, psychiatric illness or incapable of co-operating; patients with other severe disabilities (e.g. rheumatoid arthritis) that might hinder training; patients participating in other studies
Interventions	Treated as inpatients for 5 x 30-minute sessions per week for the duration of inpatient rehabilitation Treadmill training with body weight support (EXP): participants walked on a treadmill with up to 2 therapists assisting leg movements, they were permitted to use a handrail for external support if required Overground walking training (CTL): participants practiced walking on a floor surface based on a Motor Relearning Program guidelines
Outcomes	Assessed at baseline, after treatment phase (when discharged from inpatient rehabilitation) and 10 months after stroke: • preferred walking speed over 10 metres (participants allowed to use gait aids and personal assistance if required) • FAC • FIM • FMA • Berg Balance Scale
Notes	Allocation concealment classification was changed based on correspondence from the trialist Data divided into 2 comparisons, see Nilsson 2001a and Nilsson 2001b

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Random number computer program
Allocation concealment (selection bias)	Low risk	Sealed, opaque and consecutively numbered envelopes

Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blinding was done

Nilsson 2001a

Methods	See Nilsson 2001
Participants	See Nilsson 2001
Interventions	See Nilsson 2001
Outcomes	See Nilsson 2001
Notes	For Nilsson 2001a, data from the 54 participants who were dependent walkers at the start of treatment were used (26 EXP and 28 CTL); these walking dependency data were obtained through correspondence with the authors

Nilsson 2001b

Methods	See Nilsson 2001
Participants	See Nilsson 2001
Interventions	See Nilsson 2001
Outcomes	See Nilsson 2001
Notes	For Nilsson 2001b, data from the 19 participants who were independent walkers at the start of treatment were used (10 EXP and 9 CTL); these walking dependency data were obtained through correspondence with the authors

Olawale 2009

Methods	RCT Method of randomisation: not described Blinding of outcome assessors: unclear Adverse events: not reported Deaths: not reported Drop outs: 7 (2 in EXP group, 5 in CTL group) ITT: no
Participants	Country: Nigeria 60 participants (20 in EXP group, 40 in CTL group) Ambulatory at study onset: yes Mean age: 57 years (CTL and EXP group respectively) Inclusion criteria: stroke > 3 months but < 24 months prior to enrolment, ability to walk 10 metres independently without the help of assistive devices, written informed consent Exclusion criteria: not reported

Olawale 2009 (*Continued*)

Interventions	3 arms: 1. CTL group 1 used standard physiotherapy, 3 times a week for 12 weeks (3 hours a week) 2. CTL group 2 used standard physiotherapy including overground walking exercises for the same time and frequency 3. EXP group 1 used treadmill training for the same time and frequency
Outcomes	Outcomes were recorded at baseline, at 4, 8 and after 12 weeks (at the end of the intervention phase) Outcomes: walking speed (10-Metre Walk Test), walking capacity (6-Minute Walk Test)
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Not described
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not described

Pohl 2002

Methods	Parallel-group design Participants randomised to groups (block randomisation with participants stratified for walking speed) Concealed allocation to groups using sealed, opaque envelopes 13% drop outs at the end of the treatment phase Blinding of outcome assessors to group allocation
Participants	22 participants in the EXP 1 group, 22 participants in the EXP 2 group and 25 participants in the CTL group Inclusion criteria: hemiparesis caused by ischaemic stroke; impaired gait (takes 5 to 60 seconds to walk 10 metres); hemiparesis more than 4 weeks; no or slight spasticity (0 or 1 on the Ashworth scale); able to walk without assistance (FAC of 3 or more); informed consent Exclusion criteria: previous treadmill training; class C or D exercise risk (American College of Sports Medicine Guidelines); cognitive deficits (less than 26 out of 30 on Mini Mental State Examination); movement disorders, orthopaedic or other gait influencing disease

Interventions	Treated as inpatients for 3 x 30-minutes sessions (EXP 1 and EXP 2) or 45-minute sessions (CTL) per week for 4 weeks Speed-dependent treadmill training with body weight support (EXP 1): participants walked on a treadmill without therapist assistance, speed was progressed using an aggressive protocol Limited progressive treadmill training with body weight support (EXP 2): participants walked on a treadmill with therapists assisting the walking cycle, speed was progressed using conservative protocol Conventional gait therapy (CTL): traditional physiotherapy based on neurophysiological techniques
Outcomes	Assessed at baseline and after treatment phase: • independent preferred walking speed over 10 m using gait aids, if required • FAC • cadence • stride length
Notes	The rating of concealed allocation and the allocation concealment classification were changed based on correspondence from the trialist In the update of 2005 the data from this study were divided into 2 comparisons: half of the control group data were used for each comparison. Based on the raw data we combined both experimental groups into 1 group. According to Chapter 16.5.4 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011) we combined both treadmill groups, group LTT and group STT together to one treadmill group (to create a single pair-wise comparison) and compared it with the control group We used raw data provided by the trialists

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Not described
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Outcome assessors were blinded

Richards 1993

Methods	Parallel-group design Participants randomised to groups using a stratified block randomisation scheme Concealed allocation to groups not reported 15% drop outs at the end of the treatment phase, number of drop outs not reported at 3 and 6-month follow-ups Blinding of outcome assessors to group allocation
Participants	10 participants in the EXP group, 8 participants in the CTL 1 group and 9 participants in the CTL 2 group Non-ambulatory at study onset Inclusion criteria: resident within 50 km of Quebec; aged 40 to 80 years; less than 7 days after onset of first stroke; clinically identifiable middle cerebral artery syndrome of thromboembolic origin involving sub-cortical structures confirmed by CT; under medical supervision of study neurologists; informed consent; middle-band disability according to Garraway (i.e. excluded patients independent in ambulation as well as those who were unconscious) Exclusion criteria: other neurological problems; major medical problems that would incapacitate functional capacity (patients independent in ambulation were excluded)
Interventions	Treated as inpatients for 6 weeks for a mean of 1.74 (SD 0.15) (EXP), 1.79 (SD 0.10) (CTL 1) and 0.72 (SD 0.10) (CTL 2) hours per day Early intensive task-oriented physiotherapy (EXP): treatment started as early as possible after stroke and included treadmill training (no body weight support was provided using a harness), tilt table exercises and resisted exercises using isokinetic equipment Early intensive traditional physiotherapy (CTL 1): treatment started as early as possible after stroke and included traditional physiotherapy based on neurophysiological techniques Delayed non-intensive traditional physiotherapy (CTL 2): treatment started later after stroke and included less intense traditional physiotherapy based on neurophysiological techniques
Outcomes	Assessed at baseline, after treatment phase and 3 and 6 months later: • walking speed over 4 metres (personal assistance could be used, but speed of test (preferred or fast), supervision and gait aid use not reported) • 15-item Barthel Index • FMA • Berg Balance Scale
Notes	3 and 6-month follow-up data not reported We chose to compare the EXP and CTL 1 groups only for this review because they had the same intensity and starting time of therapy

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not described

Richards 1993 (*Continued*)

Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Evaluators were blind to group allocation

Richards 2004

Methods	RCT Method of randomisation: stratified randomisation with random permuted blocks and random block size Blinding of outcome assessors: yes Adverse events: not reported Deaths: not reported Drop outs: 15 (7 in EXP group, 8 in CTL group) ITT: yes
Participants	Country: Canada 63 participants (32 in EXP group, 31 in CTL group) Ambulatory at study onset Mean age: 61 to 63 years (CTL and EXP group respectively) Inclusion criteria: age between 30 and 89 years, with first or second episode of ischaemic stroke with residual deficit, Barthel Ambulation Subscore > 10, gait speed between 0.1 and 0.6 m/s Exclusion criteria: haemorrhagic stroke, ability to understand and follow verbal instructions, major medical problems (diabetes, cancer, aphasia, orthopaedic disorders) interfering with the intervention
Interventions	2 arms: 1. CTL group received physiotherapy in an eclectic approach, 5 times per week for 8 weeks (5 hours per week) 2. EXP group received treadmill training without body weight support, reciprocal stepping and limb loading for the same time and frequency
Outcomes	Outcomes were recorded at baseline, at the end of the intervention phase and 3 months later Primary outcomes: gait speed by walking 5 metres, 10 metres or 30 metres at preferred speed Secondary outcomes: lower extremity function (FMA), Timed Up and Go, Functional Independence (Barthel Ambulation Subscore)
Notes	Contamination addressed in the study design by issues of location and personnel

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**

Richards 2004 (*Continued*)

Random sequence generation (selection bias)	Low risk	Stratified randomisation with random permuted blocks and random block size
Allocation concealment (selection bias)	Low risk	After randomisation, treating therapists were informed about assignment
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Outcome assessor was blinded to group assignment

Scheidtmann 1999

Methods	Cross-over group design Participants randomised to groups (method of randomisation and concealment not stated) 0% drop outs at the end of the first treatment phase Blinding of outcome assessors to group allocation not reported
Participants	15 participants allocated to the EXP then CTL order, and 15 participants allocated to the CTL then EXP order Inclusion criteria: hemiparesis; stroke (infarct or haemorrhage); at least 4 weeks post stroke; not able to walk; able to stand for 20 seconds Exclusion criteria: cardiovascular problems or infections with a decrease in general health
Interventions	Treated as inpatients for 5 x 1-hour sessions per week for 3 weeks Treadmill training with body weight support (EXP): participants walked on a treadmill with partial body weight support provided by a harness for 30 minutes plus completed 30 minutes of usual physiotherapy per day Usual physiotherapy (CTL): participants completed 2 x 30-minute sessions of usual physiotherapy per day
Outcomes	Assessed at baseline, at cross-over (3 weeks) and after treatment phase (at 6 weeks): • RMAS • walking speed over 10 m (item 6 of the RMAS) (the speed of test (preferred or fast), personal assistance, supervision and gait aid use were not reported) • a unique gait scale based on clinical assessment
Notes	Trial treated as a parallel-group design for this review by using the first treatment phase data only (that is baseline and cross-over data only)

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Not described

Scheidtmann 1999 (*Continued*)

Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not described

Smith 2008

Methods	RCT Method of randomisation: modified random assignment, matched-pair CTL group design; stratified regarding (1) motor impairment (measured by FMA) and (2) side of hemiparesis Blinding of outcome assessors: no Adverse events: not reported Deaths: not reported Drop outs: not reported ITT: unclear
Participants	Country: USA 20 participants (10 in EXP group, 10 in CTL group) Ambulatory at study onset: yes Mean age: 56 to 58 years (CTL and EXP group respectively) Inclusion criteria: informed consent, ischaemic stroke in the distribution of the middle cerebral artery < 3 months, but > 2 years prior to study enrolment, walking slower than prior to the stroke Exclusion criteria: cognitive impairment, inability to ambulate, concomitant pathology interfering with treadmill walking
Interventions	2 arms: 1. CTL group received weekly telephone calls, asking about the quality of the participant's week and encouraging them to record life events in a log 2. EXP group additionally received treadmill training 12 times per month (mean intensity: 1 hour per week)
Outcomes	Outcomes were recorded at baseline, at the end of the intervention phase and at 6-week follow-up Outcomes: depression (Beck Depression Inventory); Stroke Impact Scale (SIS)
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Not described
Allocation concealment (selection bias)	Unclear risk	Not described

Smith 2008 (*Continued*)

Blinding of outcome assessment (detection bias) All outcomes	High risk	Outcome assessor was not blinded

Sullivan 2007

Methods	RCT, parallel-group design Method of randomisation: stratified block randomisation (block size not stated) Blinding of outcome assessors: yes Adverse events: 21 cumulative adverse events in 18 patients until follow-up Deaths: none Drop outs: 9 until follow-up (6 in EXP group, 3 in CTL group) ITT: yes, last observation carried forward for primary outcomes
Participants	Country: USA 80 participants (60 in EXP group, 20 in CTL group) Ambulatory at study onset: yes Mean age: 63 and 60 years (CTL and EXP group respectively) Inclusion criteria: aged 18 and above, ischaemic or haemorrhagic stroke confirmed by CT, MRI or clinical criteria, 4 to 60 months post stroke, ambulate at least 10 metres with assistive or orthotic device, FAC 2 or above, walking speed < 1 m/s, informed consent, approval of primary care physician Exclusion criteria: serious medical conditions interfering with the study protocol such as high blood pressure, high resting heart rate, lower limb orthopaedic conditions, recent botulinum toxin injections, recent baclofen delivery, MMSE score < 24, co-interventions aiming at gait training or lower extremity strengthening, prior enrolment to similar studies, plans to move out of the area of study centres during the next year
Interventions	4 arms: 1. CTL group received combined resistive leg cycling and upper-extremity ergometry, 4 times per week for 6 weeks (4 hours per week) 2. EXP group 1 received combined body weight supported treadmill training and upper extremity ergometry for the same time and frequency 3. EXP group 2 received combined body weight supported treadmill training and resistive leg cycling for the same time and frequency 4. EXP group 3 received combined body weight supported treadmill training and lower extremity progressive-resistive exercise for the same time and frequency
Outcomes	Primary outcome was recorded at baseline, after 12 and 24 treatment sessions and at 6-month follow-up Secondary outcomes were recorded at baseline, at the end of the intervention phase and at 6-month follow-up Primary outcome: overground self selected walking speed Secondary outcomes: fast walking speed, 6-Minute Walk Test, lower extremity FMA, Berg Balance Scale, 16-item Stroke Impact Scale (SIS-16), Medical Outcomes Study Short Form Health Survey (SF-36), lower extremity isometric peak torque

Notes	The 3 experimental groups (using body weight supported treadmill training) were collapsed together and compared with the CTL group

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Random sequence was generated at a central data management centre
Allocation concealment (selection bias)	Low risk	Allocation was performed by a central data management centre
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Outcome assessors were blinded

Suputtitada 2004

Methods	RCT, parallel-group design Method of randomisation: block randomisation (block size of 4) Blinding of outcome assessors: yes Adverse events: not reported Deaths: not reported Drop outs: not reported ITT: unclear
Participants	Country: Thailand 48 participants (24 in EXP group, 24 in CTL group) Ambulatory at study onset: yes Mean age: 65 to 61 years (CTL and EXP group respectively) Inclusion criteria: stroke > 6 months prior to enrolment, able to sit at the edge of the bed independently, independent ambulation with or without gait aids, being able to communicate with therapists, informed consent Exclusion criteria: cardiac risk factors, hyperkinetic movement disorders, using orthoses or prostheses, training less than 2 consecutive weeks
Interventions	2 arms: 1. CTL group received overground walking, 7 times per week for 4 weeks (2.9 hours per week) 2. EXP group received body weight supported treadmill training for the same time and frequency
Outcomes	Outcomes were recorded at baseline and the end of the intervention phase Measures of timed gait (10-Metre Walk Test); balance ability (Berg Balance Scale)
Notes	

Suputtitada 2004 (*Continued*)

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Not described
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Outcome assessor was blinded

Takami 2010

Methods	RCT Method of randomisation: drawing envelopes containing a lot Blinding of outcome assessors: not described Adverse events: not reported Deaths: not reported Drop outs: 3 (1 in EXP group 1, 2 in EXP group 2, none in the CTL group) ITT: unclear
Participants	Country: Japan 36 participants (12 in EXP group 1, 12 in EXP group 2, 12 in CTL group) Ambulatory at study onset: yes Mean age: 67/71/66 years (CTL and EXP groups 1 and 2 respectively) Inclusion criteria: receive physical therapy, being able to walk 10 metres unassisted, less than 5 weeks post stroke, FIM-L score < 5, perfect score on the Berg Balance Scale (BBS) or the Rivermead Mobility Index (RMI) Exclusion criteria: time to complete 10-Metre Walk Test < 4 sec, factors interfering with the study like parkinsonism, dementia, severe communication disorders and orthopaedic conditions
Interventions	3 arms: 1. CTL group received conventional physiotherapy including overground walking, 6 times per week for 3 weeks (4 hours per week) plus ADL training 5 times per week for 3 weeks (3.3 hours) 2. EXP group received control intervention 6 times per week for 3 weeks (3 hours per week) and additional body weight supported treadmill training in forward direction 6 times per week for 3 weeks (1 hour per week) 3. EXP group received control intervention 6 times per week for 3 weeks (3 hours per week) and additional body weight supported treadmill training in backward direction 6 times per week for 3 weeks (1 hour per week)
Outcomes	Primary outcomes were recorded at baseline and once weekly during the 3-week intervention phase Primary outcomes: balance ability (BBS), RMI, 10-metre maximum walking speed, walk

Takami 2010 (*Continued*)

	ratios during 10 metres of forward walking and 5 metres of backward walking Secondary outcomes: Motricity Index, Functional Independence Measure Locomotor (FIM-L), modified Borg scale
Notes	Both EXP groups (using body weight supported treadmill training) were collapsed together and compared with the CTL group

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Not described
Allocation concealment (selection bias)	Low risk	Quote: "[subjects] were randomly allocated [...] using an envelope method."
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not clearly described by the authors, however (quote:) "...a physical therapist measured the required time and number of steps [of measures of timed gait]."

Toledano-Zarhi 2011

Methods	RCT, parallel-group design Method of randomisation: not described Blinding of outcome assessors: not described Adverse events: none Deaths: none Drop outs: 1 in EXP group ITT: yes
Participants	Country: Israel 28 participants (14 in EXP group, 14 in CTL group) Ambulatory at study onset: yes Mean age: 65 years Inclusion criteria: ischaemic stroke within 1 to 3 weeks after the event, modified Rankin scale < 2 Exclusion criteria: systolic blood pressure > 200 mm Hg, diastolic blood pressure > 110 mm Hg, unstable heart conditions, dementia, age > 80 years
Interventions	2 arms: 1. CTL group received a home exercise booklet with included instructions for flexibility and muscle strength exercises 2. EXP group received supervised exercise programme including treadmill training twice per week for 6 weeks (180 minutes per week exercise training, including 70 to 110 minutes per week treadmill training) additionally to the control intervention

Toledano-Zarhi 2011 (*Continued*)

Outcomes	Outcomes were recorded at baseline and at the end of the intervention phase: • gait endurance (6-Minute Walk Test) • dynamic balance (four square step test) • stairs ascending (seconds) • stair descending (seconds) • modified Bruce test: exercise duration (minutes) • modified Bruce test: exercise (metabolic equivalents) • heart rate rest (beats per minute) • heart rate work (beats per minute) • blood pressure rest systolic • blood pressure rest diastolic • blood pressure work systolic • blood pressure work diastolic
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not described
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not described

Visintin 1998

Methods	Parallel-group design Participants randomised to groups using a stratified block randomisation scheme Allocation was concealed using sealed and numbered envelopes 21% drop outs at the end of the treatment phase, 48% drop outs at the 3-month follow-up Blinding of outcome assessors to group allocation
Participants	50 participants in the EXP group and 50 participants in the CTL group Inclusion criteria: admitted to the Jewish Rehabilitation Hospital for physical rehabilitation after stroke; abnormal gait; no severe cardiac problems; no comorbid conditions contraindicating treadmill training; not cerebellar, bilateral or brain stem stroke; able to understand simple commands; anticipated length of stay of at least 4 weeks; onset of stroke no more than 6 months prior to recruitment; able to ambulate pre-stroke; first admission during study period; treadmill training time slot available; informed consent

Visintin 1998 (*Continued*)

Interventions	Treated as inpatients for 4 x 20-minute session per week for 6 weeks Treadmill training with body weight support (EXP): participants walked on a treadmill with partial body weight support using a harness and the assistance of 1 to 2 therapists Treadmill training only (CTL): participants walked on a treadmill with the assistance of 1 to 2 therapists; no body weight support was provided using a harness
Outcomes	Assessed at baseline, after treatment phase and 3 months later: • preferred walking speed over 3 m (personal assistance and gait aids could be used) • walking endurance - maximum distance walked up to a maximum of 320 m (personal assistance and gait aids could be used) • Berg Balance Scale • Stroke Rehabilitation Assessment of Movement
Notes	The rating of concealed allocation and the allocation concealment classification were changed based on correspondence from the trialist Data divided into 2 comparisons, see Visintin 1998a and Visintin 1998b

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Drawing lots out of a box
Allocation concealment (selection bias)	Low risk	Allocation was concealed using sealed and numbered envelopes
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Outcome assessors were blind to group allocation

Visintin 1998a

Methods	See Visintin 1998
Participants	See Visintin 1998
Interventions	See Visintin 1998
Outcomes	See Visintin 1998
Notes	For Visintin 1998a, data from the 59 participants who were dependent walkers at the start of treatment and who did not drop out before the end of the treatment phase were used (33 EXP and 26 CTL); these walking dependency data were obtained through correspondence with the authors

Visintin 1998b

Methods	See Visintin 1998
Participants	See Visintin 1998
Interventions	See Visintin 1998
Outcomes	See Visintin 1998
Notes	For Visintin 1998b, data from the 20 participants who were independent walkers at the start of treatment and who did not drop out before the end of the treatment phase were used (10 EXP and 10 CTL); these walking dependency data were obtained through correspondence with the authors

Weng 2004

Methods	RCT, parallel-group design Method of randomisation: stratified randomisation, generation of random sequence not stated Allocation concealment: not described Blinding of outcome assessors: unclear Adverse events: none Deaths: none Drop outs: 5 (2 in EXP group, 3 in CTL group) ITT: no
Participants	Country: China 50 participants (25 in EXP group, 25 in CTL group) Ambulatory at study onset: yes (FAC $\geq$ 3) Mean age: 55 years (CTL and EXP group) Inclusion criteria: comply with the Fourth National Stroke diagnostic criteria; stable disease, blood pressure and heart rate control in the normal range, lower extremity Brunnstrom stage $\geq$ 2, lower extremity limb paralysis without severe clonus and joint stiffness (Ashworth scale $\leq$ 2),patients being able to walk more than 10 metres independently or under supervision and without the help of assistive devices, walking speed $\geq$ 0.17 m/s Exclusion criteria: history of myocardial infarction, severe ventricular arrhythmias, chronic heart failure; lower extremity total joint replacement or severe arthritis, recurrent stroke, other severe conditions
Interventions	2 arms, treated as inpatients: 1. CTL group received 5 daily sessions of 20 minutes conventional training for 4 weeks 2. EXP group received 5 daily sessions of 20 minutes of body weight supported treadmill training for 4 weeks
Outcomes	Outcomes were assessed at baseline and at the end of the intervention phase: • lower limb function (lower extremity FMA) • balance ability (Berg Balance Scale) • ADL-performance (FIM) • ambulation (FAC)

Weng 2004 (*Continued*)

	• maximal walking speed
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not described
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not described

Weng 2006

Methods	RCT, parallel-group design Method of randomisation: random number table Allocation concealment: sealed envelopes Blinding of outcome assessors: unclear Adverse events: not stated by the authors Deaths: not stated by the authors Drop outs: unclear ITT: unclear
Participants	Country: China 26 participants (13 in EXP group, 13 in CTL group) Ambulatory at study onset: able to walk 10 metres without aids Mean age: 50 to 51 years (CTL and EXP group respectively) Inclusion criteria: comply with the Fourth National Stroke diagnostic criteria; stable disease, blood pressure and heart rate control in the normal range, lower extremity Brunnstrom stage $\geq$ 2, lower extremity limb paralysis without severe clonus and joint stiffness (Ashworth scale $\leq$ 2), patients being able to walk more than 10 m independently and without the help of assistive devices Exclusion criteria: history of myocardial infarction, severe ventricular arrhythmias, chronic heart failure, lower extremity total joint replacement or severe arthritis, recurrent stroke, other severe conditions
Interventions	2 arms, treated as inpatients: 1. CTL group received 5 daily sessions of 60 minutes conventional training for 3 weeks 2. EXP group received 5 daily sessions of 30 minutes conventional training and 30 minutes of additional backward walking with body weight support on a treadmill for 3 weeks

Weng 2006 (*Continued*)

Outcomes	Outcomes were assessed at baseline and at 3 weeks follow-up: • lower extremity FMA • Berg Balance Scale
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random number table
Allocation concealment (selection bias)	Low risk	Sealed envelopes
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not described

Werner 2002a

Methods	Cross-over group design Participants randomised to groups (group allocation in envelopes that were drawn by an independent person) 0% drop outs at the end of the first treatment phase Blinding of outcome assessors to group allocation
Participants	15 participants allocated to the EXP then CTL order, and 15 participants allocated to the CTL then EXP order Inclusion criteria: first stroke; supratentorial lesion; 4 to 12 weeks post stroke; aged less than 75 years; not able to walk (FAC of 2 or less); able to sit unsupported on the edge of a bed; able to stand for at least 10 seconds with help; written informed consent Exclusion criteria: hip and knee extension deficit of more than 20 degrees; passive dorsiflexion of the affected ankle to less than a neutral position; severe impairment of cognition or communication; evidence of cardiac ischaemia, arrhythmia, decompression or heart failure; feeling of 'overexertion' or heart rate exceeding the age-predicted maximum (i.e. 190 beats/minute minus age) during training; resting systolic blood pressure exceeding 200 mmHg at rest or dropping by more than 10 mmHg with increasing workload
Interventions	Treated as inpatients for 5 x 15 to 20-minute sessions per week for 2 weeks 1. Treadmill training with body weight support (EXP): participants walked on a treadmill with partial body weight support provided by a harness 2. GaitTrainer with body weight support (CTL): participants walked on a GaitTrainer with partial body weight support provided by a harness
Outcomes	This was an A-B-A (or B-A-B) design, so participants were assessed at baseline, at first cross-over (2 weeks), at second cross-over (4 weeks) and after treatment phase (6 weeks): • FAC

Werner 2002a (*Continued*)

	• fast walking speed over 10 m with personal assistance and gait aids, if required • RMAS • ankle spasticity (modified Ashworth Scale)
Notes	The number of drop outs was changed based on correspondence with the trialists Trial treated as a parallel-group design for this review by using the first treatment phase data only (that is baseline and first cross-over data only)

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Lots with sealed opaque envelopes that were drawn by an independent person
Allocation concealment (selection bias)	Low risk	Sealed opaque envelopes that were drawn by an independent person
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Outcome assessors were blinded to group assignment

Yang 2010

Methods	RCT in parallel-group design Method of randomisation: drawing lots out of an envelope Blinding of outcome assessors: yes Adverse events: not reported Deaths: none Drop outs: none ITT: yes
Participants	Country: Taiwan 18 participants (10 in EXP group, 8 in CTL group) Mean age: 55 to 57 years (CTL and EXP group respectively) Inclusion criteria: diagnosis with unilateral hemiparesis due to stroke with < 6 months or > 12 months post stroke, being able to follow simple verbal commands Exclusion criteria: unstable medical conditions, history of other diseases interfering with the study, history of seizure, severe cardiovascular conditions/pacemaker
Interventions	4 arms: 1. EXP group 1 with patients < 6 months post stroke received body weight supported treadmill training for 30 minutes followed by 20 minutes general exercise programme, 3 times per week for 4 weeks (150 minutes per week) 2. CTL group 1 with patients < 6 months post stroke received the general exercise programme for 50 minutes, 3 times per week for 4 weeks (150 minutes per week) 3. EXP group 2 with patients > 12 months post stroke received body weight supported treadmill training for 30 minutes followed by 20 minutes general exercise

Yang 2010 (*Continued*)

	programme, 3 times per week for 4 weeks (150 minutes per week) 4. CTL group 2 with patients > 12 months post stroke received the general exercise programme for 50 minutes, 3 times per week for 4 weeks (150 minutes per week)
Outcomes	Outcomes were recorded at baseline and at the end of the intervention phase Primary outcomes: motor threshold and cortical map size Secondary outcomes: lower limb function (FMA)
Notes	We combined the experimental groups and compared them with the combined controlled groups

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not described
Allocation concealment (selection bias)	Low risk	Drawing lots out of an envelope
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Outcome assessor was blinded

Yen 2008

Methods	RCT Method of randomisation: not described Adverse events: not stated Deaths: none Drop outs: none ITT: yes
Participants	Country: Taiwan 14 participants (7 in EXP group, 7 in CTL group) Ambulatory at study onset: able to walk 10 metres Mean age: 56 to 57 years (CTL and EXP group respectively) Inclusion criteria: unilateral stroke with unilateral hemiparesis, ≥ 6 months post stroke, ability to walk at least 10 metres independently with or without assistance, no severe, cognitive impairment, stable medical condition Exclusion criteria: history of seizure, any orthopaedic or neurological conditions interfering with the study, cardiac problems/pacemaker, metallic implants in the head, walk with normal gait pattern, inability to walk pre-stroke
Interventions	2 arms: 1. CTL group used general physiotherapy, 2 to 5 times per week for 4 weeks (100 to 250 minutes per week) 2. EXP group additionally to the control intervention received 12 additional sessions

Yen 2008 (*Continued*)

	of BWSTT, 3 times per week for 4 weeks (90 minutes per week)
Outcomes	Outcomes were recorded at baseline and at the end of the intervention phase • balance performance (Berg Balance Scale) • gait performance (GAITRite) at maximal walking speed • corticomotor activity
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Independent person selected one of the sealed envelopes containing a lot
Allocation concealment (selection bias)	Low risk	Independent person selected one of the sealed envelopes containing a lot
Blinding of outcome assessment (detection bias) All outcomes	High risk	Outcome assessor was not blinded

Zhang 2008

Methods	RCT, parallel-group design Method of randomisation: no details described by the authors Allocation concealment: no details described by the authors Blinding of outcome assessors: no blinding Adverse events: not stated by the authors Deaths: not stated by the authors Drop outs: not clearly stated by the authors ITT: unclear
Participants	Country: China 39 participants (19 in EXP group, 20 in CTL group) Ambulatory at study onset: not stated by the authors Mean age: 63 years (CTL and EXP group respectively) Inclusion criteria: ischaemic or haemorrhagic stroke confirmed by CT or MRI; aged 52 to 70 years; stable vital signs, conscious, being able to adhere to instructions; lower limb dysfunction Brunnstrom stage 2; blood pressure > 140/90 mm Hg, no myocardial infarction or angina pectoris Exclusion criteria: not stated by the authors
Interventions	2 arms, treated as inpatients: 1. CTL group used conventional physical therapy (treatment dosage not stated) 2. EXP group received conventional physical therapy and additional BWSTT for 5 x 30-minute sessions, 8 weeks, started with 40% weight-bearing relief and 0.2 km/hour

Zhang 2008 (*Continued*)

	and was gradually decreased or increased, respectively
Outcomes	Outcomes were assessed at baseline and at the end of the intervention phase: • ankle dorsiflexion (tibialis anterior muscle) EMG activity • ankle plantarflexion (gastrocnemius muscle) EMG activity • co-contraction ratio of agonist and antagonist
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Not described
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	High risk	Not described

Zhu 2004

Methods	RCT, parallel-group design Method of randomisation: random number table Allocation concealment: unclear Blinding of outcome assessors: no Adverse events: not reported by the authors Drop outs: none, all participants completed the study ITT: yes
Participants	Country: China 20 participants (10 in EXP group, 10 in CTL group) Ambulatory at study onset: not stated by the authors Mean age: 58 to 57 years (CTL and EXP group respectively) Inclusion criteria: aged 30 to 80 years; ischaemic or haemorrhagic stroke; confirmed by CT or MRI; not able to walk (FAC of 2 or less); being able to stand up without help; MMSE $\geq$ 21 points Exclusion criteria: other conditions than stroke affecting ambulation, such as history of spinal cord injury or amputation; myocardial infarction; severe heart failure; poor kidney function; uncontrolled diabetes mellitus; activated rheumatic diseases; MMSE < 21 points; body weight $\geq$ 110 kg
Interventions	2 arms, treated as inpatients: 1. treadmill training with body weight support (EXP): participants walked on the Pneu-weight system 5 sessions per week for 4 weeks (duration of sessions not stated), therapy (duration, body weight support) was tailored to the patients individual

	capabilities 2. traditional gait training (CTL): conventional functional gait training 5 sessions per week for 4 weeks (duration of sessions not stated)
Outcomes	Assessed at baseline and at the end of the intervention phase: • walking ability (FAC) • balance ability (BBS) The following outcomes were measured by footprint analysis: • ipsilateral stepping length • contralateral stepping length • contralateral stride • ipsilateral stride • contralateral step angle • ipsilateral step angle • cadence • step width • walking speed
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Random number table
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	High risk	Outcome assessor was not blinded

ADL: activities of daily living
BBS: Berg Balance Scale
BWS: body weight support
BWSTT: body weight supported treadmill training
CT: computed tomography
CTL: control
EMG: electromyographic activity
EXP: experimental
FAC: Functional Ambulation Category
FIM: Functional Independence Measure
FMA: Fugl-Meyer Assessment
ITT: intention-to-treat
km/hr: kilometres per hour
LTT: limited progressive treadmill training
m/min: metre per minute

m/s: metre per second
MMSE: Mini Mental State Examination
MRI: magnetic resonance imaging
NYHA: New York Heart Association
RCT: randomised controlled trial
RMAS: Rivermead Motor Assessment Scale
RMI: Rivermead Mobility Index
SD: standard deviation
STT: speed-dependent treadmill training
TBC: to be confirmed
TTBWS: treadmill training with body weight support

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

Study	Reason for exclusion
Aschbacher 2006	Irrelevant intervention: electromechanical device training
Bayat 2005	Described only a single-session application of treadmill training
Bleckert 2006	Both groups received treadmill training and differed only in the speed of the treadmill
Blennerhassett 2004	Irrelevant intervention: circuit class training
Borsje 2003	Correspondence with the author revealed that the trial was abandoned
Brissot 2006	Investigated electromechanically assisted gait training
Caldwell 2000	Correspondence with the author revealed that the trial was abandoned after the recruitment of only 5 participants (each allocated to 1 of 3 treatment groups)
Daly 2004	Both groups received treadmill training; the parameter that was experimentally manipulated was electrical stimulation
Daly 2011	Both groups received treadmill training and differed only by means of functional electrical stimulation
Dean 2000	Irrelevant intervention: circuit class training
DEGAS 2007	Irrelevant intervention: electromechanical device training
Dias 2007	Irrelevant intervention: electromechanical device training
English 2007	Irrelevant intervention: circuit class training
Fisher 2008	Irrelevant intervention: electromechanical device training
Forrester 2004	Evaluated a single treatment session, not a full course of treatment

(*Continued*)

Freivogel 2009	Mixed population of patients with traumatic brain injury, spinal cord injury and stroke; only 2 out of 16 included patient had a stroke
Globokar 2005	Irrelevant intervention: electromechanical device training
Hidler 2009	Irrelevant intervention: electromechanical device training
Hornby 2008	Irrelevant intervention: robotic device training
Husemann 2007	Irrelevant intervention: electromechanical device training
Jang 2005	Irrelevant intervention: electromechanical device training
Jeong 2008	Irrelevant intervention: electromechanical device training
Khanna 2003	Correspondence with the author revealed that the trial was abandoned before the commencement of recruitment
Kim 2001	Irrelevant intervention: electromechanical device training
Kim 2008	Irrelevant intervention: electromechanical device training
Kovrazhkina 2009	Irrelevant intervention: electromechanical device training
Kwakkel 1999	Correspondence with the author revealed that less than 20% of participants in the EXP group participated in treadmill training (i.e. only 6 out of 31 participants)
Langhammer 2000	Correspondence with the author revealed that treadmill training (with or without body weight support) was not used in either group
Langhammer 2007	Less than 20% of participants in the EXP group received treadmill training
Lau 2010	Both groups received treadmill training which differed only by speed
Lindquist 2011	Quasi-experimental study, without randomisation
Macko 2006	Both groups received treadmill training which differed only by duration and speed
Mayr 2007	EXP group used an electromechanical device on a treadmill
Mayr 2008	Irrelevant intervention: electromechanical device training
McCain 2008	Not a RCT
Nielsen 2007	Irrelevant intervention: electromechanical device training
Pang 2010	Not a RCT

(*Continued*)

Park 2012	Both groups received treadmill training and differed only in the setting (underwater treadmill versus overground treadmill)
Peurala 2005	Did not use treadmill training
Peurala 2009	Irrelevant intervention: electromechanical device training
Ploughman 2008	Evaluation of a single treatment session
Rimmer 2000	Correspondence with the author revealed that only one-third of participants in the EXP group participated in treadmill training
Salbach 2004	Irrelevant intervention: circuit class training
Saltuari 2004	Irrelevant intervention: electromechanical device training
Schwartz 2009	Irrelevant intervention: electromechanical device training
Shafshak 2012	All groups received treadmill training with partial body weight support: the parameter that was experimentally manipulated was upper limb swinging
Sullivan 2002	All groups received treadmill training with partial body weight support; the parameter that was experimentally manipulated was treadmill speed
Tong 2006	Irrelevant intervention: electromechanical device training
Trueblood 2001	A non-random process was used to allocate participants to groups in Part II and Part III Participants chose which treatment they would receive
Tsai 2004	All groups received treadmill training (without partial body weight support); the parameters that were experimentally manipulated were walking direction and treadmill slope
Tsang 2012	Irrelevant outcome: echocardiography
Werner 2002b	Both groups received treadmill training with body weight support; the parameter that was experimentally manipulated was 'conventional' physiotherapy gait training
Westlake 2009	Used robot-assisted training (Lokomat)
Yagura 2006	Both groups received treadmill training with body weight support; the parameter that was experimentally manipulated was therapeutic facilitation
Yang 2008	Both groups received treadmill training and differed only by the EXP group receiving virtual reality as well

EXP: experimental
RCT: randomised controlled trial

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

Al-Jarrah 2011

Methods	Method: not clearly stated, probably RCT Method of randomisation: not described Blinding of outcome assessors: not described Adverse events: not stated Deaths: not stated Drop outs: not stated ITT: unclear
Participants	Country: Jordan 30 people with chronic stroke: 21 in the EXP group and 10 (sic) in the CTL group Ambulatory at study onset: not described Inclusion criteria: not stated Exclusion criteria: not stated
Interventions	2 arms: 1. CTL group received conventional stroke therapy only for 4 weeks, dosage unknown 2. EXP group received combined balance and treadmill exercise in addition to conventional stroke therapy only for 4 weeks, dosage unknown
Outcomes	Outcomes were recorded at baseline and after 4 weeks of therapy: • measures of timed gait (10-Metre Walk Test) • gait capacity (6-Minute Walk Test) • balance ability (Berg Balance Scale) • ADL (FIM)
Notes	Characteristics derived from conference abstract

Baer 2009

Methods	Method: multicentre RCT Method of randomisation: stratified randomisation based on side of lesion and initial FAC score Blinding of outcome assessors: not described Adverse events: not stated Deaths: not stated Drop outs: 8 during intervention phase ITT: unclear
Participants	Country: UK 77 people with subacute stroke within 3 months of stroke onset Ambulatory at study onset: not described Inclusion criteria: stroke as defined by WHO; age over 18; medically stable; 1 minute standing balance (with or without support), ability to understand and follow verbal instructions
Interventions	2 arms: 1. CTL group received "normal gait re-education" for 8 weeks, at least 3 times per week 2. EXP group received gait re-education by treadmill training for 8 weeks, at least 3 times per week

Outcomes	Outcomes were recorded at baseline and after 8 weeks of therapy: Measures of timed gait (10-Metre Walk Test) • Motor Assessment Scale • FAC • gait capacity (6-Minute Walk Test) • ADL (Barthel Index) • modified Rivermead Mobility Index • Timed Up and Go • Stroke Impact Scale
Notes	Characteristics derived from conference abstract

Bartloff 2009

Methods	Still unclear
Participants	Unclear
Interventions	Unclear
Outcomes	Unclear
Notes	

DePaul 2011

Methods	Method: RCT, parallel-group design Method of randomisation: permuted block randomisation with stratification by baseline walking speed Allocation concealment: central randomisation service Blinding of outcome assessors: yes Adverse events: will be reported Deaths: yes Drop outs: will be reported ITT: yes
Participants	Country: Canada Estimated enrolment: 70 people with chronic stroke, 35 in the EXP group and 35 in the CTL group Ambulatory at study onset: yes Inclusion criteria: living in the community at time of entry into study; age > 40 years; within 12 months of onset of a physician-diagnosed ischaemic or haemorrhagic stroke in any brain location (with or without diagnostic imaging) ; ability to walk 10 metres without assistance with self selected gait speed < 1.0 m/s (or typically use a walking aid) ; ability to follow a 2-step verbal command; independent with community ambulation prior to most recent stroke; received physician approval to participate in the study Exclusion criteria: severe cognitive impairment (i.e. MMSE < 24/30 or score less than predicted according to age and education level); severe visual impairment; lower extremity amputation; presence of serious conditions that would limit safe participation in walking exercise

DePaul 2011 (*Continued*)

Interventions	2 arms: 1. CTL group will receive BWSTT 3 times per week for 5 weeks (up to 90 minutes per week) 2. EXP group will receive motor learning walking programme 3 times per week for 5 weeks (up to 120 minutes per week)
Outcomes	Outcomes were recorded at baseline, at the end of 5-week intervention phase and at 2-month follow-up: Primary outcomes: post-intervention comfortable gait speed Secondary outcomes: • fast gait speed (5-Metre Walk Test) • walking endurance (6-Minute Walk Test) • dynamic balance (Functional Balance Test) • balance self efficacy (activities-specific Balance Confidence Scale) • participation in community mobility • walking function (modified FAC) • walking participation (5-day daily step activity - StepWatch 3-step activity monitor) • community reintegration (Life Space Questionnaire) • health-related quality of life (Stroke Impact Scale 3.0) • goal attainment (Patient Specific Functional Scale) • mean number of trainers per training session
Notes	Study was completed in June 2011

Hornby 2012

Methods	Method: RCT, cross-over assignment Method of randomisation: not described Blinding of outcome assessors: yes Adverse events: not described Deaths: not described Drop outs: not described ITT: not described
Participants	Country: USA 30 people with chronic stroke Ambulatory at study onset: not clearly described, probably yes Inclusion criteria: unilateral supratentorial stroke; MMSE > 22; > 6 months stroke duration; < 0.9 m/s gait speed overground Exclusion criteria: lower extremity contracture; osteoporosis; cardiovascular/metabolic/respiratory instability; previous central/peripheral nerve injury; concurrent medications interacting with selective serotonin reuptake inhibitors (SSRIs)
Interventions	2 arms: 1. CTL group will receive placebo drug alone or with BWSTT for 4 weeks 2. EXP group will receive SSRIs alone or with BWSTT for 4 weeks
Outcomes	Outcomes will be assessed at baseline and at the end of the intervention phase at 4 weeks: Primary outcomes: peak treadmill speed Secondary outcomes: overground walking speed

	Other outcomes: gait kinematics, EMG activity
Notes	

Ivey 2010

Methods	Method: RCT, parallel-group design Method of randomisation: by a computer-generated randomisation scheme that was stratified by walking speed (less than 0.44 m/s and more than or equal to 0.44 m/s) and age (less than 65 years and more than or equal to 65 years) Drop outs: 27 drop outs at the end of the treatment phase Blinding of outcome assessors: no ITT: no
Participants	Country: USA 29 participants in the EXP group and 24 participants in the CTL group Inclusion criteria: chronic ischaemic stroke (more than 6 months); residual mild to moderate hemiplegic gait deficits; completion of all conventional physiotherapy; independently ambulant with or without a gait aid or stand-by help Exclusion criteria: vascular surgery; vascular disorders in the lower extremities; symptomatic peripheral arterial occlusive disease
Interventions	Treated as outpatients for 3 x 40-minute sessions per week for 6 months Treadmill training (EXP): participants walked on a treadmill to achieve a target aerobic intensity of 60% to 70% heart rate reserve (progressive aerobic training); no body weight support was provided using a harness Conventional physiotherapy (CTL): participants completed an exercise programme consisting of 13 targeted active and passive supervised stretching movements of the upper and lower body
Outcomes	Assessed at baseline and after treatment phase: • reactive hyperaemic calf blood flow in both legs measured by • resting calf blood flow
Notes	

Ivey 2011

Methods	Method: RCT, parallel-group design Method of randomisation: by a computer-generated randomisation scheme that was stratified by walking speed (less than 0.44 m/s and more than or equal to 0.44 m/s) and age (less than 65 years and more than or equal to 65 years) Drop outs: 27 drop outs at the end of the treatment phase. Blinding of outcome assessors: no ITT: no
Participants	Country: USA 19 participants in the EXP group and 19 participants in the CTL group Inclusion criteria: chronic ischaemic stroke (more than 6 months); residual mild to moderate hemiplegic gait deficits; completion of all conventional physiotherapy; independently ambulant with or without a gait aid or stand-by help Exclusion criteria: patients who had insufficient time for outcome measurement by Doppler sonography

Ivey 2011 (*Continued*)

Interventions	Treated as outpatients for 3 x 40-minute sessions per week for 6 months Treadmill training (EXP): participants walked on a treadmill to achieve a target aerobic intensity of 60% to 70% heart rate reserve (progressive aerobic training); no body weight support was provided using a harness Conventional physiotherapy (CTL): participants completed an exercise programme consisting of 13 targeted active and passive supervised stretching movements of the upper and lower body
Outcomes	Assessed at baseline and after treatment phase: • middle cerebral artery blood flow velocity in either the ipsilesional or contralesional hemisphere
Notes	

Michael 2011

Methods	Method: not described Method of randomisation: not described Drop outs: not explicitly stated Blinding of outcome assessors: unclear ITT: unclear
Participants	Country: USA 10 participants in the EXP group and 13 participants in the CTL group Inclusion criteria: not described Exclusion criteria: not described
Interventions	Treated for 3 x 60-minute sessions per week for 6 months Treadmill training (EXP): participants received treadmill training in combination with adaptive physical activity Conventional physiotherapy (CTL): participants received adaptive physical activity
Outcomes	Assessed at baseline and after treatment phase: • VO_2 peak • Berg Balance Scale • Dynamic Gait Index • 6-Minute Walk Test • step activity
Notes	Characteristics derived from conference abstract

Mokrusch 2004

Methods	Method: not described Method of randomisation: not described Drop outs: not stated Blinding of outcome assessors: unclear ITT: unclear
Participants	Country: Germany 7 participants Inclusion criteria: not described

Mokrusch 2004 (*Continued*)

	Exclusion criteria: not described
Interventions	Treated for 4 weeks Treadmill training (EXP): participants received treadmill training in combination with functional electrical stimulation Conventional physiotherapy (CTL): based on the Bobath/neurodevelopmental approach
Outcomes	Assessed at baseline and after treatment phase: • gait speed • physiological cost index
Notes	Characteristics derived from conference abstract

Muller 2004

Methods	Method: not described Method of randomisation: not described Drop outs: not stated Blinding of outcome assessors: unclear ITT: unclear
Participants	Country: Germany 50 participants in the EXP group, 44 participants in the CTL group Ambulatory at study onset: unclear Inclusion criteria: not clearly described, quote “stroke and spinal patients” Exclusion criteria: not described
Interventions	Treatment duration: unknown Treadmill training (EXP): participants received treadmill training for 45 minutes per session Electromechanical assisted gait training (CTL): using the Lokomat on a treadmill for 45 minutes per session
Outcomes	Assessed at baseline and after treatment phase: 1. effective training time 2. gait endurance (distance walked in therapy sessions)
Notes	Characteristics derived from conference abstract

Shintani 2005

Methods	Unclear
Participants	Unclear
Interventions	Unclear
Outcomes	Unclear
Notes	

Srivastava 2008

Methods	RCT Method of randomisation: not described Blinding of outcome assessors: not described Adverse events: not reported Deaths: not reported Drop outs: not reported ITT: unclear
Participants	Country: India 45 patients Ambulatory at study onset: yes Inclusion criteria: first supratentorial stroke at least 3 months before enrolment, ability to walk (FAC 2 to 4) Exclusion criteria: not described
Interventions	3 arms: 1. CTL group received overground gait training 5 times per week for 4 weeks (100 minutes per week) 2. EXP group 1 used treadmill training without body weight support for the same time and frequency 3. EXP group 2 used treadmill training with body weight support for the same time and frequency
Outcomes	Outcomes were recorded at baseline, at the end of the intervention phase and at 3-month follow-up: • overground walking distance, walking speed and endurance
Notes	Abstract only

Stephenson 2004

Methods	Unclear
Participants	Unclear
Interventions	Unclear
Outcomes	Unclear
Notes	

Thompson 2006

Methods	RCT Method of randomisation: not described Blinding of outcome assessors: not described Adverse events: not stated Deaths: not stated Drop outs: not stated ITT: not stated
Participants	Country: USA 22 participants Ambulatory at study onset: not stated

Thompson 2006 (*Continued*)

	Mean age: 58 years Inclusion criteria: not stated Exclusion criteria: not stated
Interventions	3 arms: 1. CTL: overground walking at a self selected speed, 2 times per week for 4 weeks (40 minutes per week) 2. EXP 1: body weight supported treadmill training at self selected speed, 2 times per week for 4 weeks (40 minutes per week) 3. EXP 2: body weight supported treadmill training at fast speed, 2 times per week for 4 weeks (40 minutes per week)
Outcomes	Outcomes were recorded at baseline, post intervention and after 1-month and 6-month follow-up: • lower limb function (Fugl-Meyer Assessment) • ADL performance (Barthel-Index) • gait endurance (6-Minute Walk Test) • measures of timed gait (10-Metre Walk Test)
Notes	Abstract only

Venkadesan 2009

Methods	Method: not described Method of randomisation: not described Drop outs: not stated Blinding of outcome assessors: unclear ITT: unclear
Participants	Country: India 10 participants in the EXP group, 10 participants in the CTL group Ambulatory at study onset: yes Inclusion criteria: not described Exclusion criteria: not described
Interventions	Treatment duration: unknown Treadmill training (EXP): participants received treadmill training and conventional gait training Conventional gait training (CTL): participants received conventional gait training alone
Outcomes	Time points of assessments unknown: • cadence • stride length
Notes	Characteristics derived from abstract

Xu 2008

Methods	Method: not described Method of randomisation: not described Drop outs: not stated Blinding of outcome assessors: unclear ITT: unclear
Participants	Country: China 36 participants in the EXP group, 40 participants in the CTL group Ambulatory at study onset: not described Inclusion criteria: not described Exclusion criteria: not described
Interventions	Treatment duration: unknown Pneu-weight walking training (EXP): participants received Pneu-weight walking training Underwater gait training (CTL): participants received underwater gait training
Outcomes	Time points of assessments unknown: • improvement of walking ability (outcome measure: unknown)
Notes	Characteristics derived from conference abstract

Yang 2007

Methods	Method: RCT, parallel-group design Method of randomisation: not described Blinding of outcome assessors: not described Adverse events: not stated Deaths: not stated Drop outs: not stated ITT: unclear
Participants	Country: Taiwan 13 participants in the EXP group and 13 in the CTL group Ambulatory at study onset: not described Inclusion criteria: hemiparetic gait disturbances and coronary artery disease Exclusion criteria: not stated
Interventions	2 arms: 1. EXP group received aerobic treadmill exercise for 6 months 2. CTL group received no intervention
Outcomes	Outcomes were recorded at baseline and after 4 weeks of therapy: • aerobic capacity (symptom limited exercise test) • ADL (Barthel Index)
Notes	Characteristics derived from conference abstract

ADL: activities of daily living

BWSTT: body weight supported treadmill training
CTL: control
EMG: electromyographic activity
EXP: experimental
FAC: Functional Ambulation Categories
FIM: Functional Independence Measure
ITT: intention-to-treat
MMSE: Mini Mental State Examination
RCT: randomised controlled trial
WHO: World Health Organization

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

Combs 2012

Trial name or title	Body weight supported treadmill training versus overground walking training in persons with chronic stroke
Methods	Method: RCT Method of randomisation: not described Blinding of outcome assessors: yes ITT: unclear
Participants	Country: USA 20 people with chronic stroke Ambulatory at study onset: yes Inclusion criteria: independent ambulation, walking speed $\leq$ 0.8 m/s Exclusion criteria: not stated
Interventions	2 arms: 1. CTL group received overground walking training for 2 weeks, 5 times per week (150 minutes per week) 2. EXP group received body weight supported treadmill training for 2 weeks, 5 times per week (150 minutes per week)
Outcomes	Outcomes will be assessed at baseline, at the end of the intervention phase and at 3-month follow-up: Primary outcomes: gait speed (10-Metre Walk Test) Secondary outcomes: • gait endurance (6-Minute Walk Test) • fear of falling (Fear of Falling Questionnaire, Falls Efficacy Scale-International)
Starting date	August 2010
Contact information	Stephanie A Combs, PT, PhD, NCS University of Indianapolis, Krannert School of Physical Therapy, Indianapolis, IN, USA
Notes	

Dawes 2013

Trial name or title	Improving community walking after a stroke, a new approach
Methods	Method: pilot RCT Method of randomisation: not described Blinding of outcome assessors: not described ITT: unclear
Participants	Country: UK 50 people with chronic stroke Ambulatory at study onset: yes Inclusion criteria: more than 6 months after first ischaemic stroke; reduced gait capacity (6-Minute Walk Test); being able to perform a simple reciprocal bilateral foot tapping task and to walk safely on a treadmill; informed consent Exclusion criteria: high risk of psychosis; severe aphasia; history of previous stroke; other known contraindication to safe participation; contraindication to MRI
Interventions	2 arms: 1. CTL group will receive 24 sessions of 45 minutes of aerobic walking training 2. EXP group will receive implicit dual task-training during body weight supported treadmill training for 24 sessions of 45 minutes
Outcomes	Outcomes will be assessed at 0, 10 and 20 weeks: • community mobility • health and well being • changes in walking performance (temporal spatial parameters, walking endurance) • adherence to training • brain activation changes
Starting date	February 2013
Contact information	Prof Helen Dawes Oxford Brookes University, Movement Science Group, School of Life Email: hdawes@brookes.ac.uk
Notes	

Forrester 2011

Trial name or title	Ankle robotics training after stroke: effects on gait and balance
Methods	RCT with 3 arms
Participants	Inclusion criteria: ischaemic or haemorrhagic stroke > 6 months prior in men or women aged 18 to 80 years, clear indications of hemiparetic gait by clinical observation, completed all conventional physical therapy, ability to walk on a treadmill with handrail support Exclusion criteria: cardiac history of (1) unstable angina, (2) recent (< 3 months) myocardial infarction, congestive heart failure (NYHA category II), (3) haemodynamically significant valvular dysfunction; major clinical depression: CES-D score > 16 and judgment of clinical depression; medical history: (1) recent hospitalisation (< 3 months) for severe medical disease, (2) symptomatic peripheral arterial occlusive disease, (3)

	orthopaedic or chronic pain conditions that significantly alter gait function, (4) pulmonary or renal failure, (5) active cancer; history of non-stroke neuromuscular disorder restricting gait; aphasia or cognitive functioning that confounds participation, defined as unable to follow 2-step commands; the MMSE will be administered with a cut-off of < 23 (< 17 if education level at or below 8th grade) or judgement of the medical officer; hypertension that is a contraindication for a bout of treadmill training (greater than 160/100 on 2 assessments) ; self report of pregnancy
Interventions	EXP Arm 1: seated robot training group: participants at least 6 months post stroke will use the ankle robot in a seated visuo-motor training paradigm; they will train on the robot 3 times per week for 6 weeks (18 sessions) by playing video games with the paretic ankle; they will be evaluated on outcomes at baseline, post 6 weeks training and again after a 6-week retention period with no training EXP Arm 2: treadmill training with ankle robot group: participants at least 6 months post stroke will wear the ankle robot during treadmill locomotor training; they will walk on a treadmill with the ankle robot adjusted to promote paretic ankle engagement during 3 x weekly training sessions over 6 weeks (18 sessions); they will be evaluated on outcomes at baseline, post-6 weeks training and again after a 6-week retention period with no training Active comparator: Arm 3: treadmill-only group: this group will consist of participants at least 6 months post stroke who engage in treadmill training 3 x weekly for 6 weeks without robotic support; they will be volunteers from another treadmill training study and will be evaluated on outcomes at baseline and post 6 weeks training; they will not receive retention testing at 12 weeks because they will be continuing with regular treadmill training beyond the 6-week period
Outcomes	Primary outcomes: self selected floor walking velocity, velocity and associated spatio-temporal gait parameters from self selected; most comfortable and fastest floor walking over 10 metres Secondary outcomes: gait kinetics, anterior-posterior and medio-lateral ground reaction forces during walking to assess propulsive impulses from paretic and non-paretic sides, Berg Balance Scale, Dynamic Gait Index, Anticipatory Postural Adjustments
Starting date	July 2011
Contact information	Contact: Larry Forrester, PhD Email: Larry.Forrester@va.gov
Notes	Estimated primary completion date: March 2013 (final data collection date for primary outcome measure)

Hollands 2012

Trial name or title	Visual cues for gait training post stroke
Methods	Method: RCT, parallel assignment Method of randomisation: not described Blinding of outcome assessors: yes ITT: unclear
Participants	Country: Australia Target sample size: 60 people with stroke Ambulatory at study onset: yes Inclusion criteria: diagnosis of stroke; being able to walk 10 metres with or without assistance; residual paresis

Hollands 2012 (*Continued*)

	in the lower limb (Fugl-Meyer lower limb score less than 34), informed written consent Exclusion criteria: gait speed more than 0.8 m/s; patients with a premorbid (retrospective) modified Rankin Scale score of greater than 3; gait deficits attributable to non-stroke pathology; visual impairments preventing use of visual cue training (as assessed by Apple Cancellation test), concurrent progressive neurologic disorder, acute coronary syndrome, severe heart failure, confirmed or suspected lower-limb fracture preventing mobilisation, those requiring palliative care, inability to follow a 3-step command (as assessed by Modified MMSE)
Interventions	3 arms: 1. Active comparator: usual care group will receive task-specific overground walking rehabilitation for 8 weeks, 2 times per week (120 minutes per week) 2. EXP: overground visual cue training group will receive overground walking rehabilitation with visual cues for 8 weeks, 2 times per week (120 minutes per week) 3. EXP: treadmill visual cue training group will receive treadmill training with visual cues for 8 weeks, 2 times per week (120 minutes per week)
Outcomes	Outcomes will be assessed at baseline, at the end of the intervention phase and at 3-month follow-up: Primary outcome: participant enrolment, recruitment and retention Secondary outcomes: • 180 degree turn (time taken (s) and number of steps (#) to complete a 180 degree turn) • gait adaptability (the number of times participants fail to hit stepping targets when these are presented unpredictably in timing and location will be used to indicate the ability to adapt the straight gait pattern according to environmental demands) • Timed Up and Go (TUG) test (7 metres) • Fugl-Meyer Lower Limb Motor Assessment • Berg Balance Scale • Falls Efficacy Scale • health-related quality of life (SF-12) • FAC • gait speed (10-metre walk)
Starting date	May 2012
Contact information	Trudy A Pelton, MRes Email: t.a.pelton@bham.ac.uk Kristen Hollands, PhD Email: k.hollands@salford.ac.uk
Notes	

Hornby 2013

Trial name or title	Very Intensive Early Walking in Stroke (VIEWS)
Methods	Method: RCT, parallel assignment Method of randomisation: not described Blinding of outcome assessors: yes ITT: unclear

Hornby 2013 (*Continued*)

Participants	Country: USA 56 people with chronic stroke Ambulatory at study onset: yes Inclusion criteria: subacute (< 6 months) stroke; 18 to 75 years old; history of unilateral, supratentorial, ischaemic or haemorrhagic stroke; being able to walk 10 metres without physical assistance; gait speed less than or equal to 0.8 m/s; medical clearance Exclusion criteria: significant cardiorespiratory or metabolic disease that may limit exercise participation; weight limit > 113 kg; history of previous orthopaedic or neurological conditions which may impair walking; MMSE < 23 Exclusion for transcranial magnetic stimulation (TMS): pacemaker, metal implants in the head region, history of epilepsy or seizures, skull fractures or skull deficits, concussion within the last 6 months, unexplained recurring headaches, medications that lower seizure threshold, pregnancy Exclusion for the MRI: aneurysm clip or coil, metal or wire implants, heart valve prosthesis
Interventions	2 arms: 1. CTL group will receive conventional physiotherapy for 8 weeks, at least 3 times per week 2. EXP group will receive locomotor training including treadmill training, overground walking training, overground walking training and stair climbing for 8 weeks, 5 times per week (200 minutes per week)
Outcomes	Primary outcomes will be assessed at baseline, at the end of the intervention phase at 8 weeks and at 3-month follow-up: • gait speed (change in 10-Metre Walk Test) Secondary outcomes will be assessed at baseline, at the end of the intervention phase at 8 weeks and at 2-month follow-up: • change in 6-Minute Walk Test • change in Berg Balance Scale
Starting date	October 2008
Contact information	Carey Holleran, MPT, NCS Email: cholleran@ric.org Abigal Leddy, PT, DPT Email: aleddy@ric.org
Notes	

Kilbreath 2006

Trial name or title	PBWST (partial body weight supported treadmill training) and muscle power training after sub-acute stroke
Methods	Method: RCT, factorial assignment. Method of randomisation: not reported Blinding of outcome assessors: not clearly stated, probably yes ITT: unclear
Participants	Estimated enrolment: 102 participants aged 45 to 80 years Inclusion criteria: first stroke resulting in hemiplegia; MMSE score > 15; distance walked in 6-Minute Walk Test less than the lower limit of 'normal' according to reference equations for healthy adults (adjusted for

Kilbreath 2006 (*Continued*)

	gender, age, BMI); score on walking subscale of the Motor Assessment Scale of ≥ 2 Exclusion criteria: unstable cardiac disease; known un-repaired aortic or cerebral aneurysm; haemorrhagic stroke, symptomatic hernias, symptom limiting peripheral vascular disease; end-stage congestive cardiac failure; any of the exclusion criteria contraindicating moderate exercise as outlined by American College of Sports Medicine guidelines for cardiac disease rehabilitation or for frail and elderly adults; significant musculotendinous or bony restrictions of either limb; any serious chronic disease independently causing significant disability or profound atrophy of the affected limb will comprise further exclusion criteria
Interventions	2 arms: 1. body weight supported treadmill training for 10 weeks 2. body weight supported treadmill training and power training for 10 weeks
Outcomes	Assessed at baseline, at the end of the intervention phase and at 6-month follow-up: Primary outcome measure: gait capacity (6-Minute Walk Test) Secondary outcome measures: • the total number of steps taken during waking hours (accelerometer) • temporal and spatial variables associated with walking • balance • lower limb muscular strength, power and endurance (pneumatic resistance machines) • cardiorespiratory fitness (maximal effort cycle test and a multistage exercise test) • psychological and functional states (Stroke Impact Scale, a self efficacy scale, Health-related Qualify of Life Questionnaire and a Geriatric Depression Scale)
Starting date	March 2004
Contact information	School of Physiotherapy, University of Sydney, Sydney, New South Wales, Australia, 2141 Contact: Sharon L Kilbreath, PhD Email: s.kilbreath@fhs.usyd.edu.au
Notes	

Lennihan 2003

Trial name or title	Treadmill with partial body weight support versus conventional gait training after stroke
Methods	Unclear
Participants	42 participants will be recruited for the EXP group and 41 participants for the CTL group Inclusion criteria: within 30 days of first stroke; hemiparesis; dependent on supervision or physical assistance from at least 1 person to walk; not ataxic
Interventions	Treated as inpatients for 12 x 30-minute per day sessions over 3 weeks Treadmill training (EXP): participants will walk on a treadmill with partial body weight support using a harness Conventional physiotherapy (CTL): participants will participate in conventional physiotherapy (standing, walking, sit-to-stand, and standing and walking with activity)

Lennihan 2003 (*Continued*)

Outcomes	Assessed 90 days after stroke: • walking speed • walking endurance - maximum distance covered in 6 minutes using preferred gait aid • FIM • National Institute of Health Stroke Scale score • Fugl-Meyer Assessment leg motor score • Tinetti score
Starting date	Unknown
Contact information	Unknown
Notes	Characteristics derived from conference abstract

Macko 2013

Trial name or title	Exercise for sub-acute stroke patients in Jamaica
Methods	Method: RCT, parallel assignment Method of randomisation: stratified based on glucose tolerance (normal versus abnormal) and gait deficit severity Blinding of outcome assessors: no ITT: unclear
Participants	Country: Jamaica 150 people with chronic stroke Ambulatory at study onset: unclear Inclusion criteria: ischaemic stroke within 2 months; BMI of 18 to 40 kg/m²; being able to walk 3 minutes with handrails, assistive device or stand-by aid Exclusion criteria: actively exercising for > 30 minutes per day for 5 days per week; increased alcohol consumption; active abuse of other illegal and illicit drugs; history of severe cardiac conditions; history of (1) peripheral arterial disease with vascular claudication making exercise challenging, (2) orthopaedic or chronic pain condition(s) restricting exercise, (3) pulmonary or renal failure, (4) active cancer, (5) untreated poorly controlled hypertension measured on at least 2 occasions (greater than 160/100), (6) HIV-AIDS or other known inflammatory responses, (7) sickle cell anaemia, (8) medications: heparin, warfarin, Lovenox or oral steroids, (9) currently pregnant, (10) history of type 1 diabetes or insulin dependent type 2 diabetes, (11) poorly controlled type 2 diabetes (HbA1C > 10), (12) dementia (MMSE score < 23 or < 17 if education level at or below 8th grade) and clinical confirmation by clinical evaluation, (13) severe receptive or global aphasia that confounds testing and/or training, operationally defined as unable to follow 2 point commands, (14) hemiparetic gait from a prior stroke preceding the index stroke defining eligibility (more than one stroke), (15) neurologic disorder restricting exercise such as Parkinson's or myopathy, (16) untreated major depression (CES-D > 16 or clinical confirmation), (17) muscular disorder (s) restricting exercise; muscle biopsy exclusion criteria: (1) anticoagulation therapy with heparin, warfarin or Lovenox (antiplatelet therapy is permitted), (2) bleeding disorder
Interventions	2 arms: 1. CTL group will receive best medical stroke care "Get with the guidelines" for Jamaica for 6 months 2. EXP group, in addition to the control intervention, will receive treadmill training for 6 months, 3

Macko 2013 (*Continued*)

	times per week (18 to 90 minutes per week) and group dynamic balance exercise
Outcomes	Outcomes will be assessed at baseline and at the end of the intervention phase at 6 months: Primary outcomes: • thigh and abdominal muscle and fat • whole body protein and skeletal muscle synthesis and breakdown (serial blood sampling and pre-/post-muscle biopsies in the fasted and fed state) • muscle myosin heavy chain isoform (MHC) proportions (muscle biopsy) • leg strength (1 repetitive maximum strength for leg extension, quadriceps and hamstring muscles) • fitness (VO_2 peak testing with open circuit spirometry) • glucose tolerance (2-hour oral glucose tolerance test with serial blood sampling every 30 minutes for glucose and insulin) Secondary outcomes: • muscle TNF alpha (muscle biopsy) • mobility and balance (National Institutes of Health Stroke Scale, modified Ashworth, timed walks, Short Physical Performance Battery, Berg Balance Scale)
Starting date	July 2011
Contact information	Richard F Macko, MD Email: rmacko@grecc.umaryland.edu
Notes	

McDonnell 2009

Trial name or title	Aerobic exercise to improve cardiovascular and neurological health outcomes in the chronic stroke population
Methods	Method: RCT, parallel-group design Method of randomisation: secure web-based computer generation, stratified according to age (< 65 versus > 65) and mobility (the 6-Minute Walk Test, < 160 metres versus > 160 metres) Blinding of outcome assessors: yes ITT: unclear
Participants	Country: Australia Target sample size: 150 participants Ambulatory at study onset: not described Inclusion criteria: aged between 45 and 80 years, diagnosis of first or recurrent stroke, haemorrhage or infarct at least 6 months prior to study entry Exclusion criteria: unable to participate in an exercise programme due to medical conditions such as heart failure, unstable angina, dementia and receptive aphasia, patients on beta-blockers, patients already participating in a supervised aerobic exercise programme, patients who have epilepsy, metallic implants in the skull or cardiac pacemakers will be excluded from the transcranial magnetic stimulation
Interventions	2 arms: 1. EXP group received aerobic treadmill exercise 3 times per week for 12 weeks 2. CTL group received usual care 3 times per week for 12 weeks

McDonnell 2009 (*Continued*)

Outcomes	Outcomes were recorded at baseline, at the end of the 12-week intervention period and at 6 months follow-up: Primary outcome: peak oxygen uptake (VO_2 peak) Secondary outcomes: • Timed Up and Go Test, 6-Minute Walk Test, gait velocity, Sit-to-Stand Test • cognitive function (the Stroop Test, verbal fluency, trail making tests A and B, Rey Auditory Verbal learning test, digit span backwards and forwards, spatial span test, a clock drawing task (CLOX) test, inspection time, Paced Auditory Serial Addition Test) • cerebral blood flow and vessel reactivity (Doppler sonography) • quality of life (Assessment of Quality of Life tool; AQoL) • cost-effectiveness and cost utility using the AQoL to calculate quality adjusted life years (QALYs) • response to stimulation of the motor cortex to induce plasticity (repetitive transcranial magnetic stimulation)
Starting date	August 2009
Contact information	Dr Michelle McDonnell School of Nursing and Midwifery GPO Box 2471 Adelaide SA 5001, Australia Email: michelle.mcdonnell@unisa.edu.au
Notes	

Sale 2012

Trial name or title	Robot walking rehabilitation in stroke patients
Methods	RCT with 3 arms
Participants	Inclusion criteria: between the ages of 18 and 95 years, able to walk 25 feet unassisted or with assistance, first acute event of cerebrovascular stroke, unilateral paresis, ability to understand and follow simple instructions, ability to walk without assistance before stroke, endurance sufficient to stand at least 20 minutes unassisted per participant report Exclusion criteria: unable to understand instructions required by the study (Informed Consent Test of Comprehension), medical or neurological comorbidities that might contribute to significant gait dysfunction, uncontrolled hypertension > 190/110 mm Hg, significant symptoms of orthostasis when standing up, circulatory problems, history of vascular claudication or significant (+ 3) pitting oedema, lower extremity injuries or joint problems (hip or leg) that limit range of motion or function or cause pain with movement, bilateral impairment, severe sensory deficits in the paretic upper limb, cognitive impairment or behavioural dysfunction that would influence the ability to comprehend or participate in the study, women who are pregnant or lactating or both
Interventions	EXP group: robot G-EO: each participant will be asked to perform 15 sessions (3 to 5 days a week for 4 up to 5 weeks) consisting of a treatment cycle using the GE-O system device, according to individually tailored exercise scheduling CTL group: treadmill training: each participant will be asked to perform 15 sessions (3 to 5 days a week for 4 up to 5 weeks) consisting of a treatment cycle using the treadmill system device, according to individually tailored exercise scheduling CTL group: ground treatment: Ground Control Group (cCG): each participant will be asked to perform 15

Sale 2012 (*Continued*)

	sessions (3 to 5 days a week for 4 up to 5 weeks) of traditional lower limb physiotherapy
Outcomes	Outcomes will be assessed at baseline and at 6 months follow-up: Primary outcomes: 6-Minute Walk Test Secondary outcomes: • Fugl-Meyer Assessment (lower limb) • Borg scale • gait parameters with EMG • FAC • Walk Handicap Scale (WHS)
Starting date	September 2012
Contact information	Contact: Patrizio Sale, MD Email: patrizio.sale@gmail.com Contact: Marco Franceschini, MD Email: marco.franceschini@sanraffaele.it
Notes	Estimated enrolment: 90 Estimated study completion date: September 2015 Estimated primary completion date: August 2014 (final data collection date for primary outcome measure)

Smania 2013

Trial name or title	High intensity interval training in chronic stroke patients
Methods	Method: RCT Method of randomisation: not described Blinding of outcome assessors: yes ITT: unclear
Participants	Country: Italy Target sample size: 100 people with stroke Ambulatory at study onset: not described Inclusion criteria: diagnosis of ischaemic or haemorrhagic stroke, confirmed by MRI or CT at least 6 months before the onset of the study; ability to walk in the treadmill at > 0.3 km/hour for 3 minutes handrail support; be able to give informed consent and be motivated to participate in 3-month intensive physical fitness training Exclusion criteria: MMSE < 20; unstable angina pectoris; unstable cardiac conditions; complex ventricular arrhythmia; resting systolic blood pressure > 200 mm/Hg, resting diastolic blood pressure > 100 mm/Hg; aphasia (unable to follow 2 commands); other medical conditions precluding participation in aerobic exercise
Interventions	3 arms: 1. EXP group 1 will receive high-intensity treadmill training for 12 weeks 2. EXP group 2 will receive high-intensity strength training for 12 weeks 3. Active comparator group will receive conventional training consisting of group mobility, balance and stretching exercises for 12 weeks

Smania 2013 (*Continued*)

Outcomes	Primary outcome will be assessed at baseline, at the end of the intervention phase at 12 weeks: 6-Minute Walk Test Secondary outcomes: • 10-Metre Walk Test • Timed Up and Go Test • gait analysis • strength (isokinetic dynamometer) • arterial - venous oxygen difference (Near Infrared Spectroscopy, NIRS) • cardiac output (Portapres) • Oxygen Uptake Efficiency Slope (OUES) • Specific Balance Confidence Scale • SF-36 Health Survey Questionnaire • Stroke Impact scale • peak oxygen consumption (VO_2 peak) • walking energy cost (Wc)
Starting date	March 2013
Contact information	Nicola Smania Email: nicola.smania@univr.it
Notes	

Stookey 2013

Trial name or title	Task-oriented training for stroke: impact on function mobility
Methods	Method: RCT, parallel assignment Method of randomisation: not described Blinding of outcome assessors: no ITT: no
Participants	Country: USA 60 people with stroke Ambulatory at study onset: yes Inclusion criteria: stroke > 6 months prior with residual hemiparetic gait in women or men aged 40 to 85 years, completion of all regular post stroke physical therapy, adequate language and neurocognitive function to participate in testing and training and to give adequate informed consent, able to rise from a chair unaided and able to walk 10 metres without human assistance Exclusion criteria: regular structured aerobic exercise (> 2 x week), raised alcohol consumption by self report, clinical history of severe heart conditions, peripheral arterial obstructive disease with claudication, major orthopaedic, chronic pain or non-stroke neuromuscular disorders restricting exercise, pulmonary or renal failure, poorly controlled hypertension (> 190/110), measured on at least 2 separate occasions, recent hospitalisation for severe disease or surgery, severe or global receptive aphasia which confounds reliable testing and training, untreated major depression as documented by a CES-D score of > 16 and confirmed by clinical interview, pregnancy

Stookey 2013 (*Continued*)

Interventions	2 arms: 1. CTL group will receive a low-intensity lifestyle intervention (group exercises incorporating balance, co-ordination and strength) (time frame not described) 2. EXP group will receive a high-intensity treadmill walking programme (time frame not described)
Outcomes	Outcomes will be assessed at baseline and at 3 months: Primary outcomes: economy of gait Secondary outcomes: • muscular strength • muscular endurance • balance
Starting date	July 2011
Contact information	Alyssa D Stookey, PhD MS Email: alyssa.stookey@va.gov
Notes	

Zielke 2003

Trial name or title	Partial body weight supported treadmill training in early acute stroke rehabilitation
Methods	Unclear
Participants	5 participants will be recruited for the EXP group and 5 participants for the CTL group Inclusion criteria: admitted to inpatient stroke unit between 2 and 30 days following stroke; single infarct stroke confirmed by MRI or CT scan; aged 50 to 75 years; no orthopaedic or additional neurologic conditions that impair ambulation (independent walker, with or without a gait aid, before the stroke); no history of previous stroke (based on medical chart review); no cardiac, respiratory or other medical condition that might interfere with the treatment protocol; able to follow instructions (no significant cognitive or communication deficits); scores at least 1 out of 5 on manual muscle testing of the hip flexors
Interventions	Treated for 3 sessions per week for 2 weeks Treadmill training (EXP): participants will walk on a treadmill with partial body weight support using a harness Overground walking training (CTL): participants will complete overground walking training
Outcomes	Assessed at baseline, and after the treatment phase (2 weeks): 1. Berg Balance Scale 2. walking speed 3. gait portion of the Tinetti assessment 4. FIM - gait score
Starting date	February 2002
Contact information	Donna Zielke, PT MPT Email: dzielke@marionjoy.org

Notes	

BMI: body mass index
BWS: body weight support
BWSTT: body weight supported treadmill training
CES-D: Center for Epidemiologic Studies Depression Scale
CT: computed tomography
CTL: control
EXP: experimental
FAC: Functional Ambulation Categories
FIM: Functional Independence Measure
ITT: intention-to-treat
MMSE: Mini Mental State Examination
MRI: magnetic resonance imaging
RCT: randomised controlled trial

DATA AND ANALYSES

Comparison 1. Treadmill (with or without body weight support) versus other intervention

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Walking speed (m/s) at end of treatment phase	35	1891	Mean Difference (IV, Random, 95% CI)	0.07 [0.03, 0.11]
1.1 dependent in walking at start of treatment	9	752	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.06, 0.03]
1.2 independent in walking at start of treatment	26	1139	Mean Difference (IV, Random, 95% CI)	0.11 [0.06, 0.16]
2 Walking endurance (m) at end of treatment	20	1388	Mean Difference (IV, Random, 95% CI)	20.08 [6.14, 34.03]
2.1 dependent in walking at start of treatment	5	639	Mean Difference (IV, Random, 95% CI)	-5.09 [-23.41, 13.22]
2.2 independent in walking at start of treatment	15	749	Mean Difference (IV, Random, 95% CI)	30.61 [14.02, 47.20]

Comparison 2. Treadmill and body weight support versus other interventions

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Dependence on personal assistance to walk at end of treatment phase	19	1210	Risk Difference (M-H, Random, 95% CI)	-.00 [-0.02, 0.02]
1.1 dependent in walking at start of treatment	8	814	Risk Difference (M-H, Random, 95% CI)	-0.00 [-0.03, 0.03]
1.2 independent in walking at start of treatment	11	396	Risk Difference (M-H, Random, 95% CI)	0.0 [-0.03, 0.03]
2 Walking speed (m/s) at end of treatment phase	19	1163	Mean Difference (IV, Random, 95% CI)	0.07 [0.01, 0.12]
2.1 dependent in walking at start of treatment	8	738	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.06, 0.03]
2.2 independent in walking at start of treatment	11	425	Mean Difference (IV, Random, 95% CI)	0.14 [0.07, 0.22]
3 Walking endurance (m) at end of treatment phase	10	869	Mean Difference (IV, Random, 95% CI)	26.35 [2.51, 50.19]
3.1 dependent in walking at start of treatment	5	639	Mean Difference (IV, Random, 95% CI)	-5.09 [-23.41, 13.22]
3.2 independent in walking at start of treatment	5	230	Mean Difference (IV, Random, 95% CI)	56.77 [34.50, 79.04]

4 Dependence on personal assistance to walk at end of scheduled follow-up	5	285	Risk Difference (M-H, Random, 95% CI)	-0.00 [-0.05, 0.04]
4.1 dependent in walking at start of treatment	2	170	Risk Difference (M-H, Random, 95% CI)	-0.02 [-0.18, 0.15]
4.2 independent in walking at start of treatment	3	115	Risk Difference (M-H, Random, 95% CI)	0.0 [-0.05, 0.05]
5 Walking speed (m/s) at end of scheduled follow-up	7	751	Mean Difference (IV, Random, 95% CI)	0.04 [-0.06, 0.14]
5.1 dependent in walking at start of treatment	3	556	Mean Difference (IV, Random, 95% CI)	-0.05 [-0.13, 0.03]
5.2 independent in walking at start of treatment	4	195	Mean Difference (IV, Random, 95% CI)	0.12 [-0.00, 0.25]
6 Walking endurance (m) at end of scheduled follow-up	5	689	Mean Difference (IV, Random, 95% CI)	32.36 [-3.10, 67.81]
6.1 dependent in walking at start of treatment	2	510	Mean Difference (IV, Random, 95% CI)	-6.78 [-34.57, 21.02]
6.2 independent in walking at start of treatment	3	179	Mean Difference (IV, Random, 95% CI)	58.88 [29.10, 88.66]

Comparison 3. Treadmill training versus other interventions

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Walking speed (m/s) at end of treatment phase	15		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1 independent in walking at start of treatment	15	714	Mean Difference (IV, Random, 95% CI)	0.08 [0.03, 0.14]
2 Walking endurance (m) at end of treatment phase	10		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.1 independent in walking at start of treatment	10	519	Mean Difference (IV, Random, 95% CI)	11.91 [-1.34, 25.17]

Comparison 4. Treadmill and body weight support versus treadmill only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Dependence on personal assistance to walk at end of treatment phase	2		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
1.1 dependent in walking at start of treatment	1		Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
1.2 independent in walking at start of treatment	1		Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

2 Walking speed (m/s) at end of treatment phase	2	Mean Difference (IV, Random, 95% CI)	Totals not selected
2.1 dependent in walking at start of treatment	1	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
2.2 independent in walking at start of treatment	1	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
3 Walking endurance (m) at end of treatment phase	2	Mean Difference (IV, Random, 95% CI)	Totals not selected
3.1 dependent in walking at start of treatment	1	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
3.2 independent in walking at start of treatment	1	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
4 Dependence on personal assistance to walk at end of scheduled follow-up	2	Risk Ratio (M-H, Random, 95% CI)	Totals not selected
4.1 dependent in walking at start of treatment	1	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4.2 independent in walking at start of treatment	1	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
5 Walking speed (m/s) at end of scheduled follow-up	2	Mean Difference (IV, Random, 95% CI)	Totals not selected
5.1 dependent in walking at start of treatment	1	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
5.2 independent in walking at start of treatment	1	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
6 Walking endurance (m) at end of scheduled follow-up	2	Mean Difference (IV, Random, 95% CI)	Totals not selected
6.1 dependent in walking at start of treatment	1	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
6.2 independent in walking at start of treatment	1	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]

Comparison 5. Adverse events for all included trials

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Adverse events during the treatment phase	23	1472	Risk Difference (M-H, Random, 95% CI)	0.02 [-0.01, 0.05]

Comparison 6. Drop outs for all included trials

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Drop outs	44		Risk Difference (M-H, Random, 95% CI)	Subtotals only
1.1 by end of treatment phase	44	2658	Risk Difference (M-H, Random, 95% CI)	0.00 [-0.01, 0.02]
1.2 by end of scheduled follow-up (cumulative)	11	657	Risk Difference (M-H, Random, 95% CI)	-0.02 [-0.08, 0.04]

Comparison 7. Sensitivity analysis: by trial methodology (all trials involving treadmill training)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Walking speed	29		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1 trials with adequate random sequence generation	23	1069	Mean Difference (IV, Random, 95% CI)	0.05 [0.02, 0.09]
1.2 trials with adequate concealed allocation	18	1145	Mean Difference (IV, Random, 95% CI)	0.06 [0.01, 0.11]
1.3 trials with adequate blinding of assessors	20	1383	Mean Difference (IV, Random, 95% CI)	0.07 [0.02, 0.12]

Comparison 8. Subgroup analysis: treadmill (with or without body weight support) versus other, by duration of illness (independent in walking only)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Walking speed (m/s) at end of treatment phase	25		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1 Acute phase: less then or equal to 3 months after stroke independent in walking	10	318	Mean Difference (IV, Random, 95% CI)	0.15 [0.05, 0.24]
1.2 Chronic phase: more than 3 months after stroke independent in walking	15	806	Mean Difference (IV, Random, 95% CI)	0.10 [0.04, 0.15]
2 Walking endurance (m) at end of treatment phase	15		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.1 Acute phase: less then or equal to 3 months after stroke independent in walking	5	178	Mean Difference (IV, Random, 95% CI)	48.64 [23.97, 73.32]
2.2 Chronic phase: more than 3 months after stroke independent in walking	10	571	Mean Difference (IV, Random, 95% CI)	18.06 [2.56, 33.56]

Comparison 9. Subgroup analysis: treadmill (with or without body weight support) versus other, by intensity (frequency) of training (independent in walking only)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Walking speed (m/s) at end of treatment phase	26		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.1 treadmill training 5 times a week or more	13	483	Mean Difference (IV, Fixed, 95% CI)	0.13 [0.08, 0.17]
1.2 treadmill training 3 to 4 times a week	12	626	Mean Difference (IV, Fixed, 95% CI)	0.08 [0.03, 0.13]
1.3 treadmill training less then 3 times a week or unclear frequency	1	30	Mean Difference (IV, Fixed, 95% CI)	0.05 [-0.14, 0.24]
2 Walking endurance (m) at end of treatment phase	15		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.1 treadmill training 5 times a week	4	233	Mean Difference (IV, Random, 95% CI)	48.54 [24.40, 72.68]
2.2 treadmill training 3 to 4 times a week	10	488	Mean Difference (IV, Random, 95% CI)	17.67 [1.58, 33.76]
2.3 treadmill training less then 3 times a week or unclear	1	28	Mean Difference (IV, Random, 95% CI)	-15.0 [-133.26, 103.26]

Comparison 10. Subgroup analysis: treadmill (with or without body weight support) versus other, by duration of training period (independent in walking only)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Walking speed (m/s) at end of treatment phase	26		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1 treadmill training duration more than 4 weeks	12	699	Mean Difference (IV, Random, 95% CI)	0.05 [0.00, 0.10]
1.2 treadmill training duration 4 weeks	10	319	Mean Difference (IV, Random, 95% CI)	0.17 [0.11, 0.23]
1.3 treadmill training duration less then 4 weeks	4	121	Mean Difference (IV, Random, 95% CI)	0.20 [0.02, 0.38]
2 Walking endurance (m) at end of treatment phase	15		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.1 treadmill training duration more than 4 weeks	10	603	Mean Difference (IV, Random, 95% CI)	23.72 [5.94, 41.50]
2.2 treadmill training duration 4 weeks	5	146	Mean Difference (IV, Random, 95% CI)	51.13 [5.40, 96.85]
2.3 treadmill training duration less then 4 weeks	0	0	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]

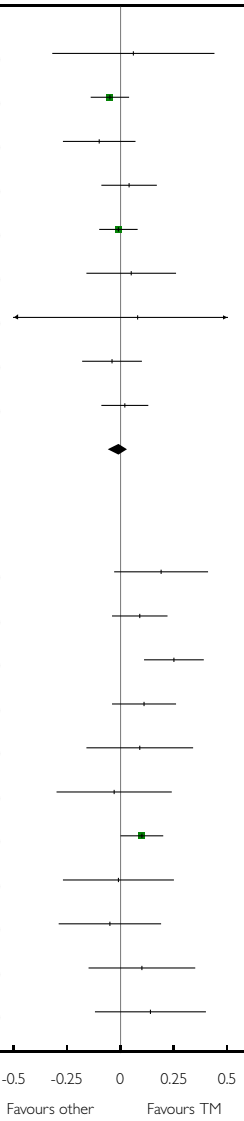
Analysis 1.1. Comparison 1 Treadmill (with or without body weight support) versus other intervention, Outcome 1 Walking speed (m/s) at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 1 Treadmill (with or without body weight support) versus other intervention

Outcome: 1 Walking speed (m/s) at end of treatment phase

Study or subgroup	TM (any type) N	Mean(SD)	Other interventions N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
1 dependent in walking at start of treatment							
da Cunha Filho 2002	6	0.32 (0.42)	7	0.26 (0.25)		0.9 %	0.06 [-0.32, 0.44]
Duncan 2011	282	0.57 (0.4)	126	0.62 (0.42)		5.6 %	-0.05 [-0.14, 0.04]
Franceschini 2009	52	0.5 (0.44)	50	0.6 (0.44)		3.2 %	-0.10 [-0.27, 0.07]
Hoyer 2012	30	0.4 (0.27)	30	0.36 (0.24)		4.2 %	0.04 [-0.09, 0.17]
Kosak 2000	22	0.06 (0.18)	34	0.07 (0.17)		5.4 %	-0.01 [-0.10, 0.08]
Nilsson 2001a	24	0.51 (0.4)	25	0.46 (0.35)		2.4 %	0.05 [-0.16, 0.26]
Richards 1993	9	0.31 (0.2)	5	0.23 (0.93)		0.2 %	0.08 [-0.75, 0.91]
Werner 2002a	15	0.07 (0.19)	15	0.11 (0.19)		4.0 %	-0.04 [-0.18, 0.10]
Zhu 2004	10	0.19 (0.11)	10	0.17 (0.13)		5.0 %	0.02 [-0.09, 0.13]
Subtotal (95% CI)	**450**		**302**			**31.0 %**	**-0.01 [-0.06, 0.03]**
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 3.39$, df = 8 (P = 0.91); $I^2 = 0.0\%$							
Test for overall effect: Z = 0.65 (P = 0.52)							
2 independent in walking at start of treatment							
Ada 2003	11	0.75 (0.26)	14	0.56 (0.3)		2.3 %	0.19 [-0.03, 0.41]
Ada 2013	68	0.64 (0.3498)	34	0.55 (0.28)		4.3 %	0.09 [-0.04, 0.22]
Deniz 2011	10	0.49 (0.18)	10	0.24 (0.13)		4.0 %	0.25 [0.11, 0.39]
Eich 2004	25	0.71 (0.3)	25	0.6 (0.22)		3.8 %	0.11 [-0.04, 0.26]
Globas 2011	20	0.79 (0.29)	18	0.7 (0.46)		1.9 %	0.09 [-0.16, 0.34]
Jaffe 2004	10	0.69 (0.34)	10	0.72 (0.28)		1.7 %	-0.03 [-0.30, 0.24]
Kang 2012	22	0.6 (0.2)	10	0.5 (0.1)		5.0 %	0.10 [0.00, 0.20]
Kim 2011	20	0.58 (0.42)	24	0.59 (0.47)		1.8 %	-0.01 [-0.27, 0.25]
Kuys 2011	15	0.63 (0.3)	15	0.68 (0.37)		2.0 %	-0.05 [-0.29, 0.19]
Langhammer 2010	21	1 (0.4)	18	0.9 (0.4)		1.9 %	0.10 [-0.15, 0.35]
Laufer 2001	13	0.47 (0.4)	12	0.33 (0.24)		1.8 %	0.14 [-0.12, 0.40]



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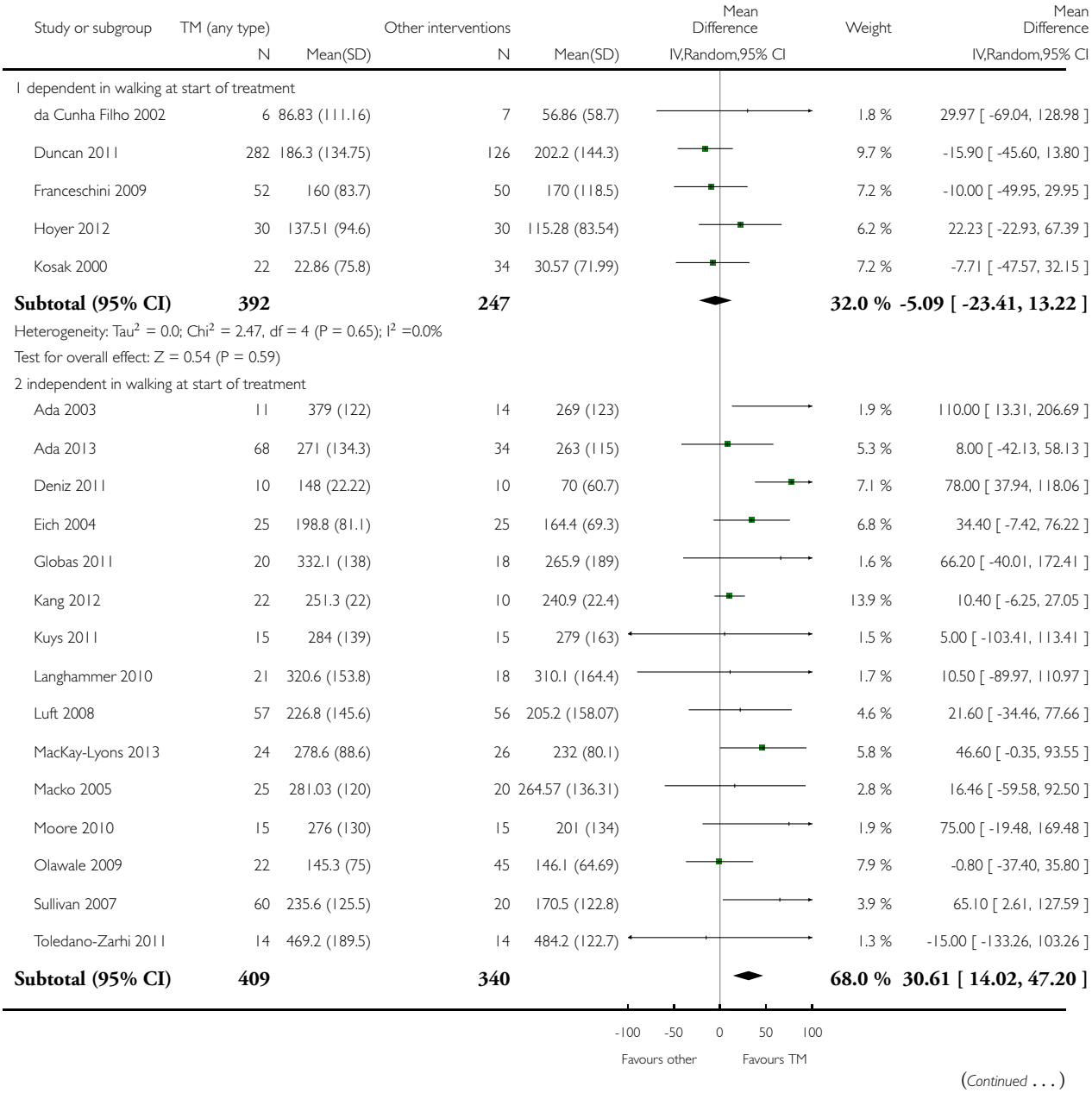
Study or subgroup	TM (any type) N	Mean(SD)	Other interventions N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Liston 2000	7	0.67 (0.33)	8	0.66 (0.39)		1.0 %	0.01 [-0.35, 0.37]
Luft 2008	57	0.82 (0.5)	56	0.71 (0.5)		2.9 %	0.11 [-0.07, 0.29]
MacKay-Lyons 2013	24	0.75 (0.22)	26	0.71 (0.2)		4.6 %	0.04 [-0.08, 0.16]
Macko 2005	25	0.95 (0.45)	20	1 (0.49)		1.6 %	-0.05 [-0.33, 0.23]
Moore 2010	15	0.63 (0.3)	15	0.58 (0.23)		2.8 %	0.05 [-0.14, 0.24]
Nilsson 2001b	8	0.78 (0.3)	9	0.84 (0.27)		1.7 %	-0.06 [-0.33, 0.21]
Olawale 2009	22	0.42 (0.2)	45	0.45 (0.19)		5.2 %	-0.03 [-0.13, 0.07]
Pohl 2002	40	1.43 (0.79)	20	0.97 (0.64)		1.0 %	0.46 [0.09, 0.83]
Richards 2004	32	0.6 (0.38)	31	0.57 (0.35)		3.0 %	0.03 [-0.15, 0.21]
Sullivan 2007	60	0.66 (0.34)	20	0.44 (0.28)		3.7 %	0.22 [0.07, 0.37]
Suputtitada 2004	24	0.49 (0.23)	24	0.28 (0.16)		4.8 %	0.21 [0.10, 0.32]
Takami 2010	24	1.47 (0.45)	12	1.11 (0.49)		1.2 %	0.36 [0.03, 0.69]
Weng 2004	25	1.31 (0.57)	25	0.86 (0.38)		1.7 %	0.45 [0.18, 0.72]
Weng 2006	13	0.95 (0.28)	13	0.72 (0.27)		2.4 %	0.23 [0.02, 0.44]
Yen 2008	7	0.92 (0.32)	7	0.87 (0.43)		0.9 %	0.05 [-0.35, 0.45]
Subtotal (95% CI)	**618**		**521**			**69.0 %**	**0.11 [0.06, 0.16]**
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 39.41$, df = 25 (P = 0.03); I^2 =37%							
Test for overall effect: Z = 4.67 (P < 0.00001)							
Total (95% CI)	**1068**		**823**			**100.0 %**	**0.07 [0.03, 0.11]**
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 60.75$, df = 34 (P = 0.003); I^2 =44%							
Test for overall effect: Z = 3.61 (P = 0.00031)							
Test for subgroup differences: $Chi^2 = 14.71$, df = 1 (P = 0.00), I^2 =93%							

Analysis 1.2. Comparison 1 Treadmill (with or without body weight support) versus other intervention, Outcome 2 Walking endurance (m) at end of treatment.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 1 Treadmill (with or without body weight support) versus other intervention

Outcome: 2 Walking endurance (m) at end of treatment



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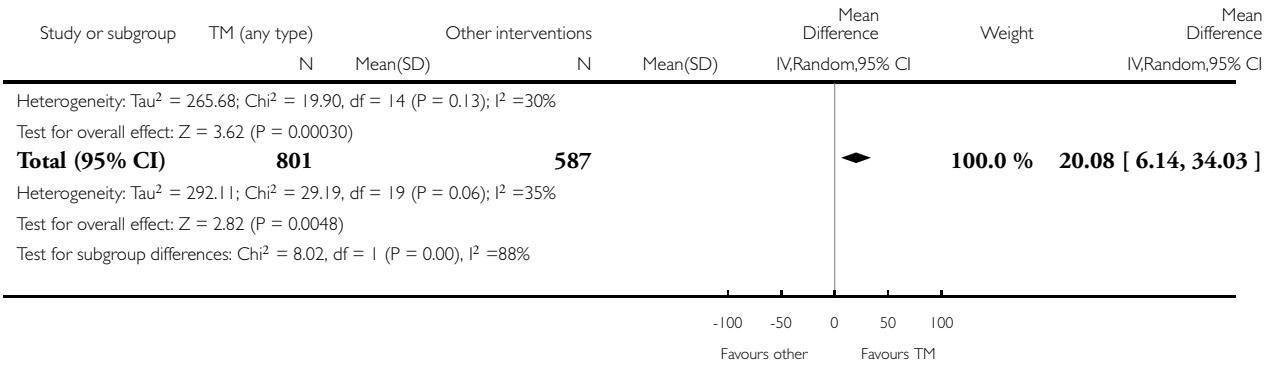
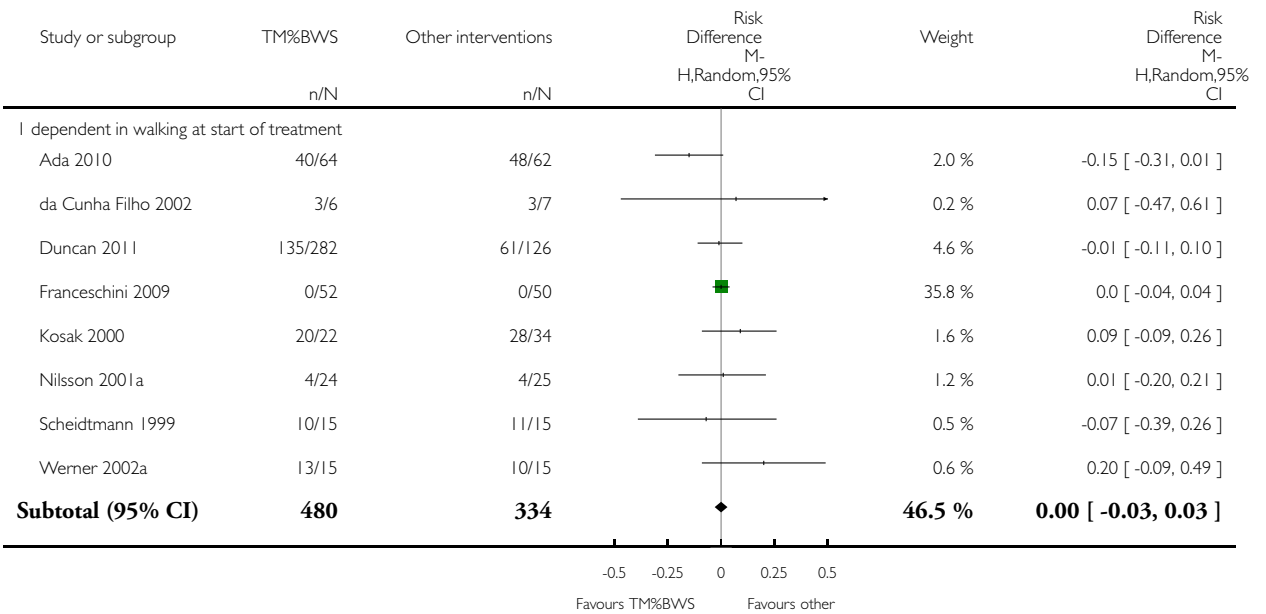


Analysis 2.1. Comparison 2 Treadmill and body weight support versus other interventions, Outcome 1 Dependence on personal assistance to walk at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 2 Treadmill and body weight support versus other interventions

Outcome: 1 Dependence on personal assistance to walk at end of treatment phase



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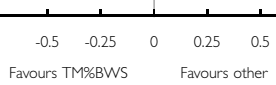
Study or subgroup	TM%BWS n/N	Other interventions n/N	Risk Difference M-H,Random,95% CI	Weight	Risk Difference M-H,Random,95% CI
Total events: 225 (TM%BWS), 165 (Other interventions)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 6.92$, df = 7 (P = 0.44); $I^2 = 0.0\%$					
Test for overall effect: Z = 0.10 (P = 0.92)					
2 independent in walking at start of treatment					
Ada 2003	0/11	0/14		2.4 %	0.0 [-0.15, 0.15]
Eich 2004	0/25	0/25		9.1 %	0.0 [-0.07, 0.07]
Globas 2011	0/20	0/18		5.3 %	0.0 [-0.10, 0.10]
Jaffe 2004	0/10	0/10		1.7 %	0.0 [-0.17, 0.17]
MacKay-Lyons 2013	0/24	0/26		9.0 %	0.0 [-0.07, 0.07]
Nilsson 2001b	0/8	0/9		1.2 %	0.0 [-0.20, 0.20]
Sullivan 2007	0/60	0/20		10.6 %	0.0 [-0.07, 0.07]
Suputtitada 2004	0/24	0/24		8.4 %	0.0 [-0.08, 0.08]
Takami 2010	0/24	0/12		3.6 %	0.0 [-0.12, 0.12]
Yang 2010	0/10	0/8		1.3 %	0.0 [-0.19, 0.19]
Yen 2008	0/7	0/7		0.9 %	0.0 [-0.24, 0.24]
Subtotal (95% CI)	**223**	**173**		**53.5 %**	**0.0 [-0.03, 0.03]**
Total events: 0 (TM%BWS), 0 (Other interventions)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 0.0$, df = 10 (P = 1.00); $I^2 = 0.0\%$					
Test for overall effect: Z = 0.0 (P = 1.0)					
Total (95% CI)	**703**	**507**		**100.0 %**	**0.00 [-0.02, 0.02]**
Total events: 225 (TM%BWS), 165 (Other interventions)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 6.95$, df = 18 (P = 0.99); $I^2 = 0.0\%$					
Test for overall effect: Z = 0.07 (P = 0.94)					
Test for subgroup differences: $Chi^2 = 0.01$, df = 1 (P = 0.94), $I^2 = 0.0\%$					

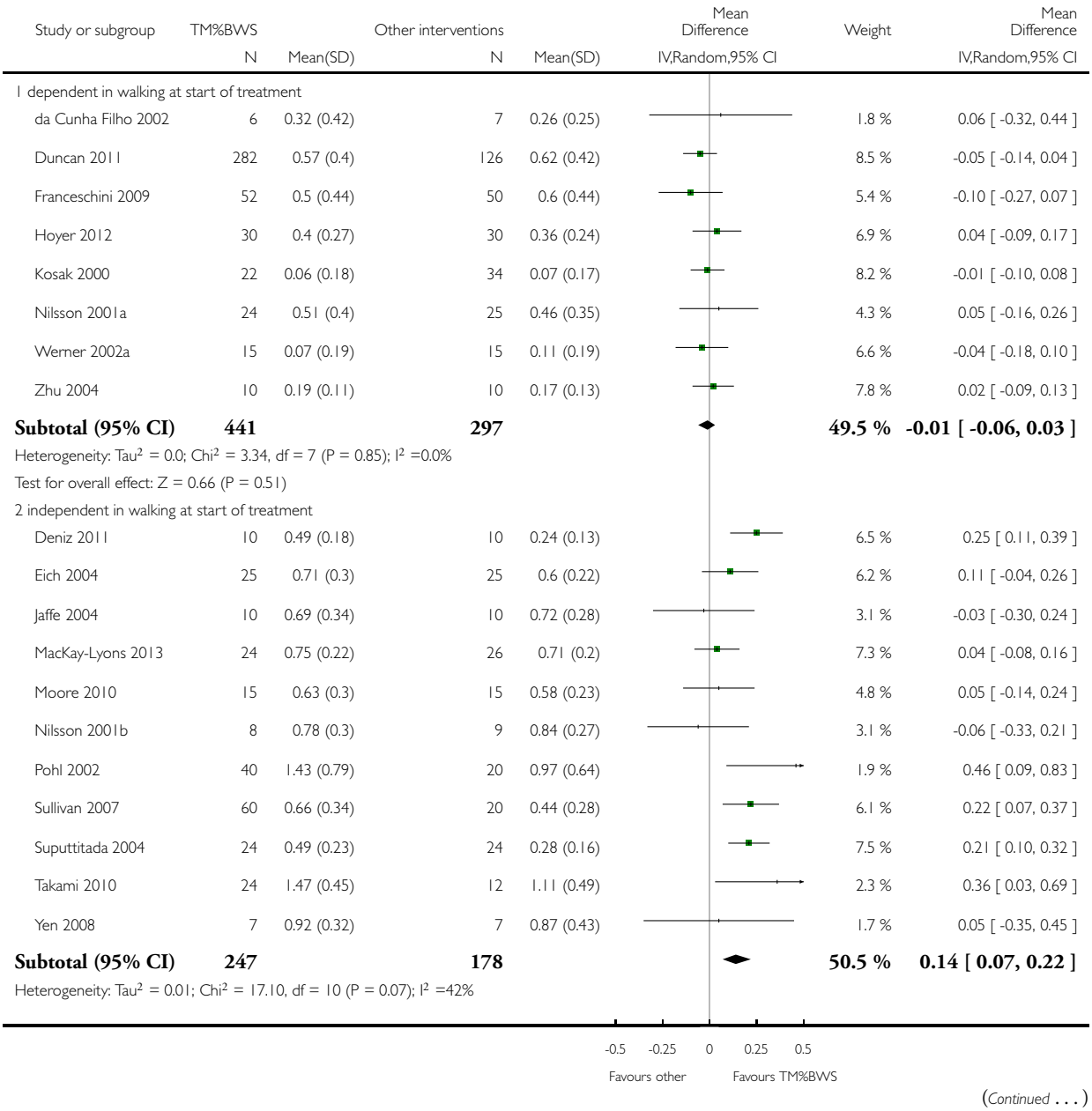


Analysis 2.2. Comparison 2 Treadmill and body weight support versus other interventions, Outcome 2 Walking speed (m/s) at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 2 Treadmill and body weight support versus other interventions

Outcome: 2 Walking speed (m/s) at end of treatment phase



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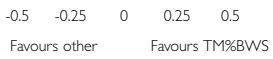
Study or subgroup	TM%BWS N	Mean(SD)	Other interventions N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Test for overall effect: Z = 3.84 (P = 0.00013)							
Total (95% CI)	**688**		**475**			**100.0 %**	**0.07 [0.01, 0.12]**
Heterogeneity: Tau² = 0.01; Chi² = 42.13, df = 18 (P = 0.001); I² =57%							
Test for overall effect: Z = 2.33 (P = 0.020)							
Test for subgroup differences: Chi² = 13.17, df = 1 (P = 0.00), I² =92%							



Analysis 2.3. Comparison 2 Treadmill and body weight support versus other interventions, Outcome 3 Walking endurance (m) at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 2 Treadmill and body weight support versus other interventions

Outcome: 3 Walking endurance (m) at end of treatment phase

Study or subgroup	TM%BWS N	Mean(SD)	Other interventions N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
1 dependent in walking at start of treatment							
da Cunha Filho 2002	6	86.83 (111.16)	7	56.86 (58.7)		4.4 %	29.97 [-69.04, 128.98]
Duncan 2011	282	186.3 (134.75)	126	202.2 (144.3)		14.0 %	-15.90 [-45.60, 13.80]
Franceschini 2009	52	160 (83.7)	50	170 (118.5)		11.9 %	-10.00 [-49.95, 29.95]
Hoyer 2012	30	137.51 (94.6)	30	115.28 (83.54)		10.9 %	22.23 [-22.93, 67.39]
Kosak 2000	22	22.86 (75.8)	34	30.57 (71.99)		11.9 %	-7.71 [-47.57, 32.15]
Subtotal (95% CI)	**392**		**247**			**53.2 %**	**-5.09 [-23.41, 13.22]**
Heterogeneity: Tau² = 0.0; Chi² = 2.47, df = 4 (P = 0.65); I² =0.0%							
Test for overall effect: Z = 0.54 (P = 0.59)							
2 independent in walking at start of treatment							
Deniz 2011	10	148 (22.22)	10	70 (60.7)		11.9 %	78.00 [37.94, 118.06]
Eich 2004	25	198.8 (81.1)	25	164.4 (69.3)		11.6 %	34.40 [-7.42, 76.22]

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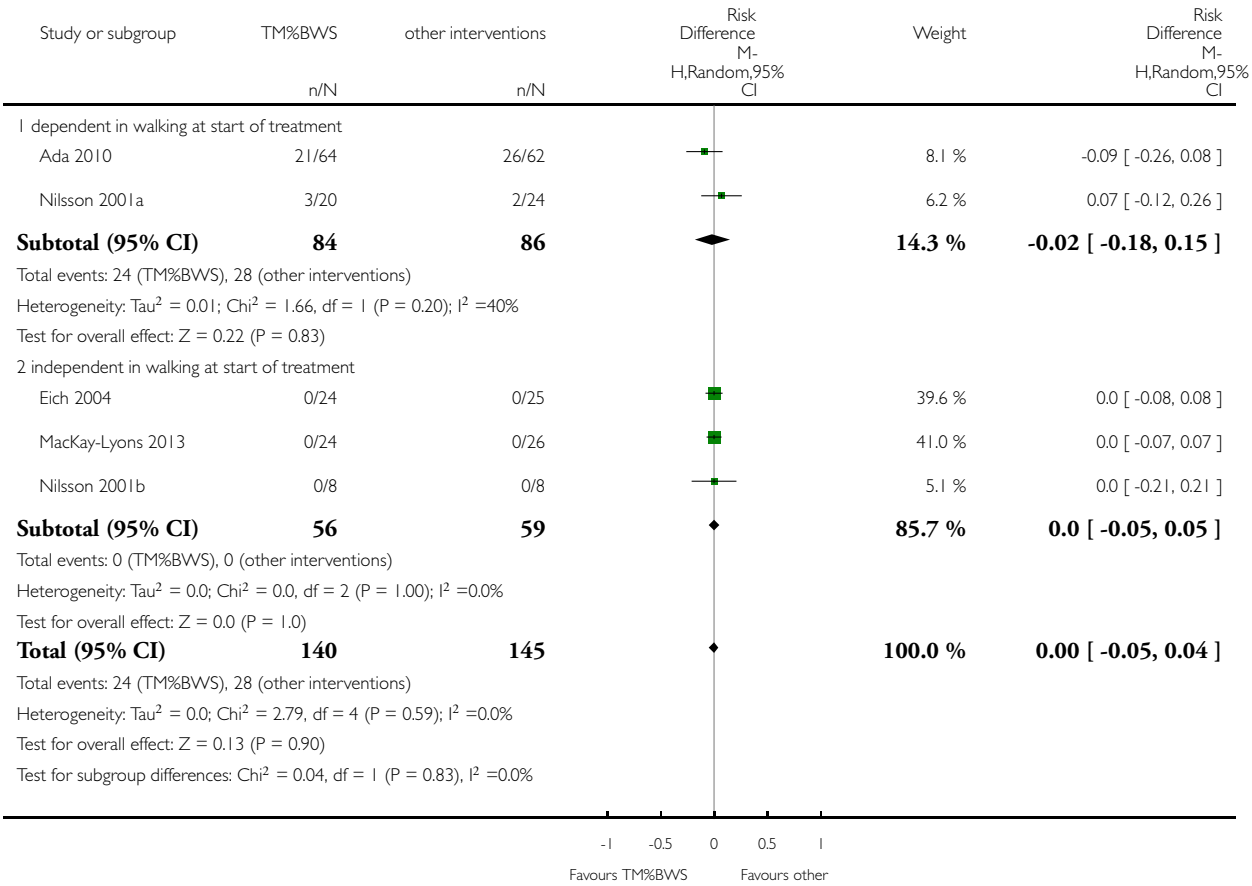
Study or subgroup	TM%BWS N	Mean(SD)	Other interventions N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
MacKay-Lyons 2013	24	278.6 (88.6)	26	232 (80.1)		10.6 %	46.60 [-0.35, 93.55]
Moore 2010	15	276 (130)	15	201 (134)		4.7 %	75.00 [-19.48, 169.48]
Sullivan 2007	60	235.6 (125.5)	20	170.5 (122.8)		8.0 %	65.10 [2.61, 127.59]
Subtotal (95% CI)	**134**		**96**			**46.8 %**	**56.77 [34.50, 79.04]**
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 2.57$, df = 4 (P = 0.63); $I^2 = 0.0\%$							
Test for overall effect: Z = 5.00 (P < 0.00001)							
Total (95% CI)	**526**		**343**			**100.0 %**	**26.35 [2.51, 50.19]**
Heterogeneity: $Tau^2 = 824.48$; $Chi^2 = 22.72$, df = 9 (P = 0.01); $I^2 = 60\%$							
Test for overall effect: Z = 2.17 (P = 0.030)							
Test for subgroup differences: $Chi^2 = 17.68$, df = 1 (P = 0.00), $I^2 = 94\%$							

Analysis 2.4. Comparison 2 Treadmill and body weight support versus other interventions, Outcome 4 Dependence on personal assistance to walk at end of scheduled follow-up.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 2 Treadmill and body weight support versus other interventions

Outcome: 4 Dependence on personal assistance to walk at end of scheduled follow-up

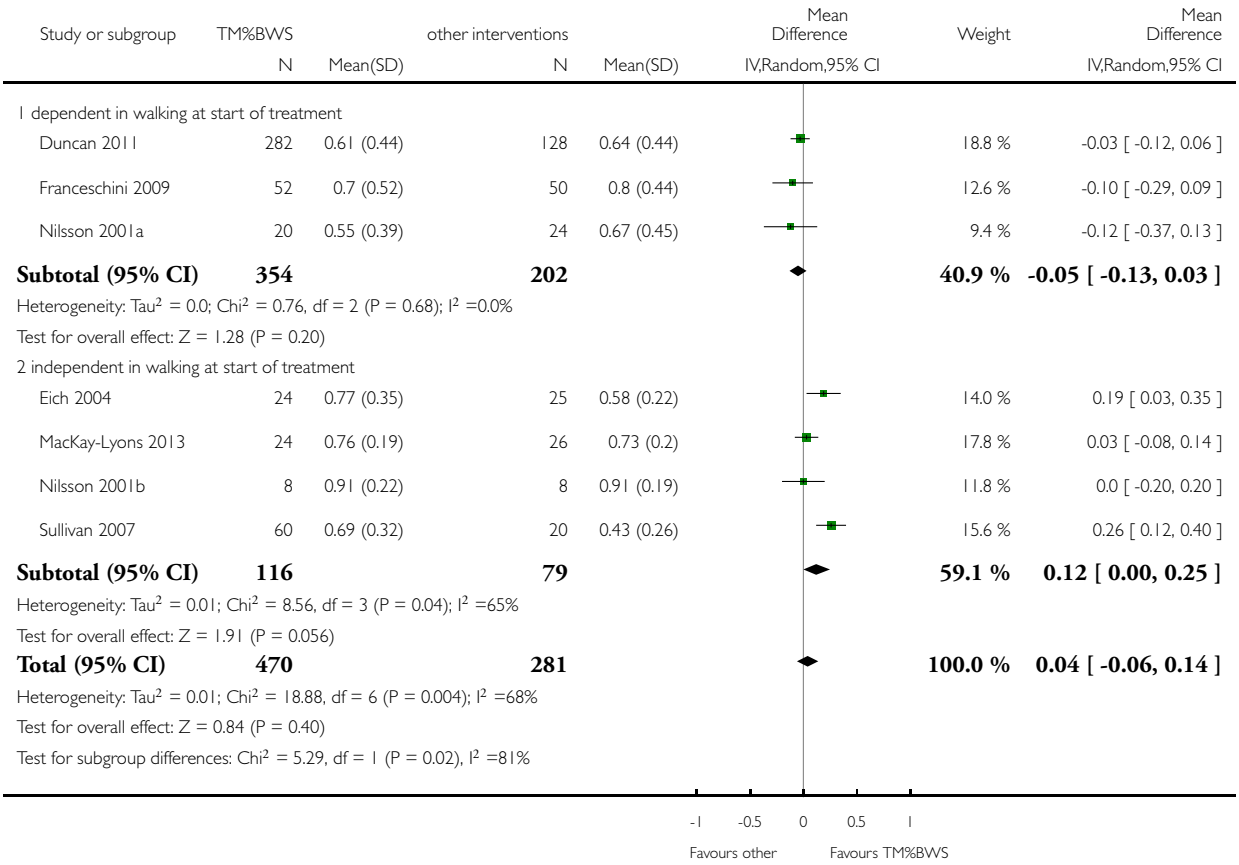


Analysis 2.5. Comparison 2 Treadmill and body weight support versus other interventions, Outcome 5 Walking speed (m/s) at end of scheduled follow-up.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 2 Treadmill and body weight support versus other interventions

Outcome: 5 Walking speed (m/s) at end of scheduled follow-up

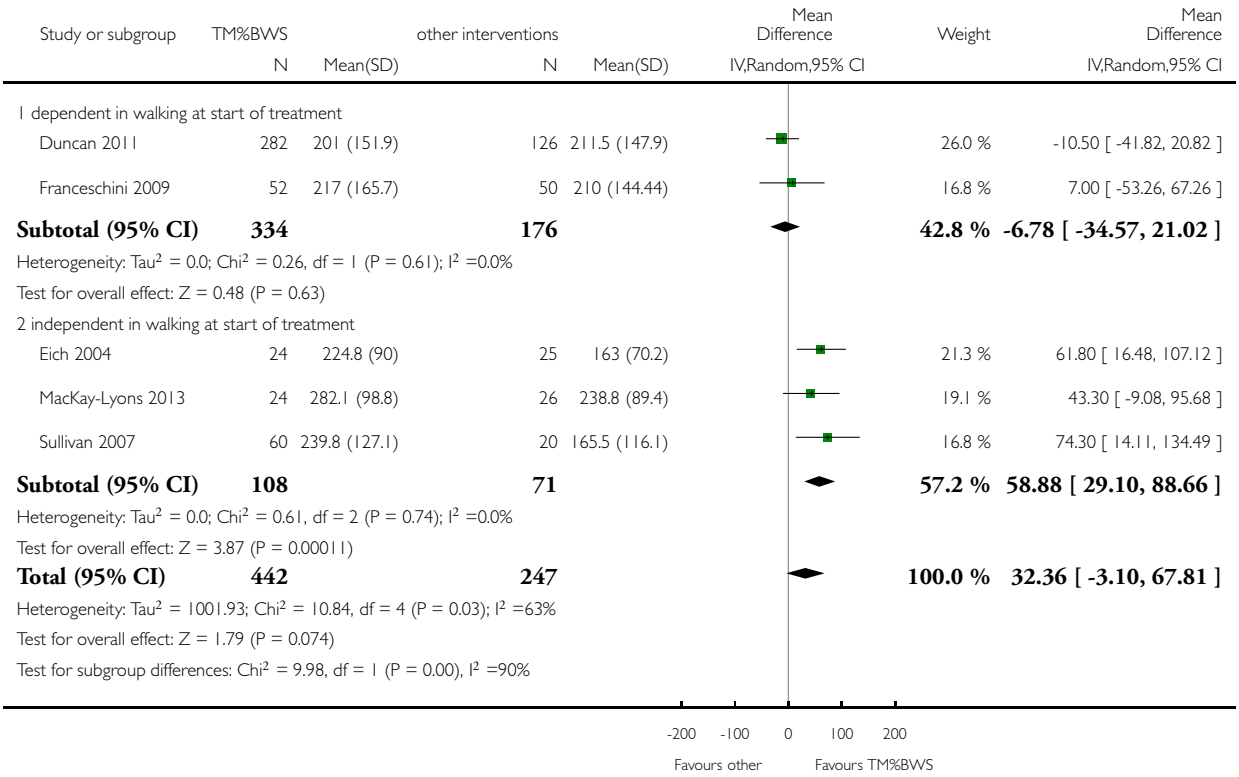


Analysis 2.6. Comparison 2 Treadmill and body weight support versus other interventions, Outcome 6 Walking endurance (m) at end of scheduled follow-up.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 2 Treadmill and body weight support versus other interventions

Outcome: 6 Walking endurance (m) at end of scheduled follow-up



Analysis 3.1. Comparison 3 Treadmill training versus other interventions, Outcome 1 Walking speed (m/s) at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 3 Treadmill training versus other interventions

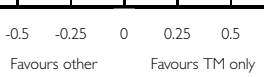
Outcome: 1 Walking speed (m/s) at end of treatment phase

Study or subgroup	TM only N	Mean(SD)	Other interventions N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
1 independent in walking at start of treatment							
Ada 2003	11	0.75 (0.26)	14	0.56 (0.3)		5.4 %	0.19 [-0.03, 0.41]
Ada 2013	68	0.64 (0.3498)	34	0.55 (0.28)		12.2 %	0.09 [-0.04, 0.22]
Globas 2011	20	0.79 (0.29)	18	0.7 (0.46)		4.4 %	0.09 [-0.16, 0.34]
Kang 2012	22	0.6 (0.2)	10	0.5 (0.1)		15.2 %	0.10 [0.00, 0.20]
Kim 2011	20	0.58 (0.42)	24	0.59 (0.47)		4.0 %	-0.01 [-0.27, 0.25]
Kuys 2011	15	0.63 (0.3)	15	0.68 (0.37)		4.6 %	-0.05 [-0.29, 0.19]
Langhammer 2010	21	1 (0.4)	18	0.9 (0.4)		4.3 %	0.10 [-0.15, 0.35]
Laufer 2001	13	0.47 (0.4)	12	0.33 (0.24)		4.2 %	0.14 [-0.12, 0.40]
Liston 2000	7	0.67 (0.33)	8	0.66 (0.39)		2.2 %	0.01 [-0.35, 0.37]
Luft 2008	57	0.82 (0.5)	56	0.71 (0.5)		7.2 %	0.11 [-0.07, 0.29]
Macko 2005	25	0.95 (0.45)	20	1 (0.49)		3.6 %	-0.05 [-0.33, 0.23]
Olawale 2009	22	0.42 (0.2)	45	0.45 (0.19)		15.8 %	-0.03 [-0.13, 0.07]
Richards 2004	32	0.6 (0.38)	31	0.57 (0.35)		7.4 %	0.03 [-0.15, 0.21]
Weng 2004	25	1.31 (0.57)	25	0.86 (0.38)		3.8 %	0.45 [0.18, 0.72]
Weng 2006	13	0.95 (0.28)	13	0.72 (0.27)		5.8 %	0.23 [0.02, 0.44]
Subtotal (95% CI)	**371**		**343**			**100.0 %**	**0.08 [0.03, 0.14]**

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 18.10$, df = 14 (P = 0.20); $I^2 = 23\%$

Test for overall effect: Z = 2.87 (P = 0.0041)

Test for subgroup differences: Not applicable

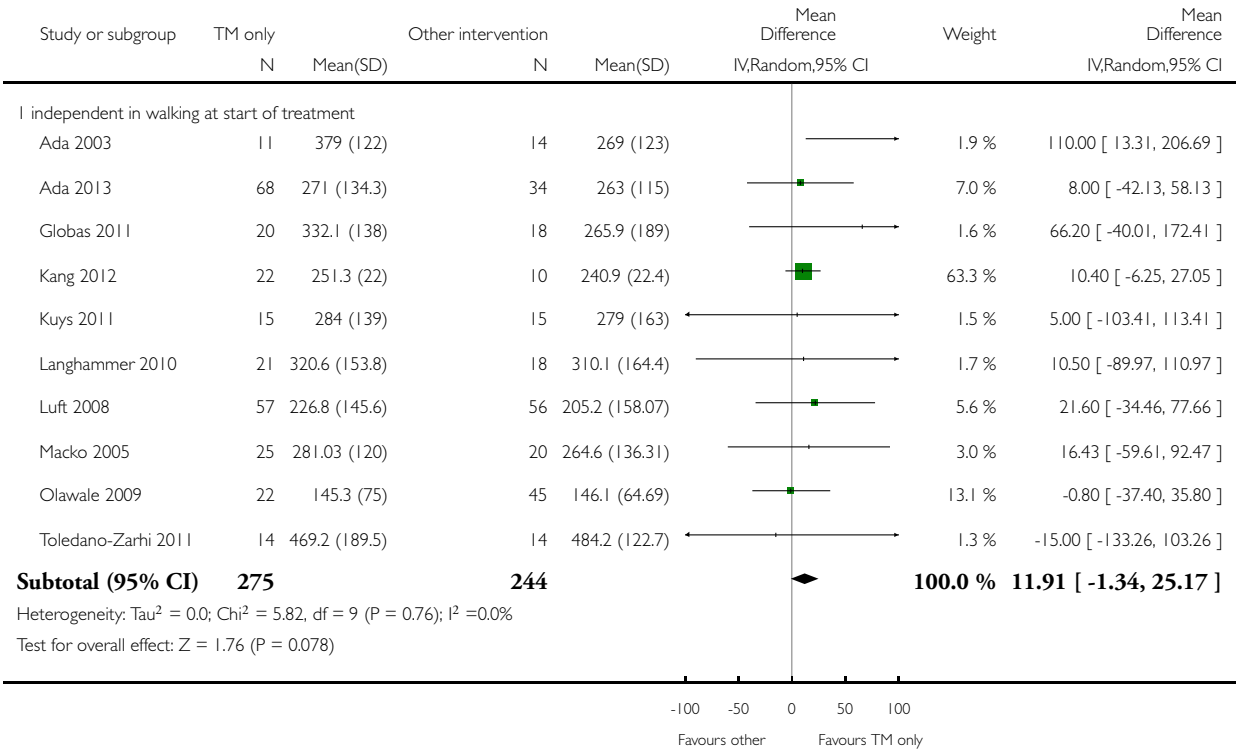


Analysis 3.2. Comparison 3 Treadmill training versus other interventions, Outcome 2 Walking endurance (m) at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 3 Treadmill training versus other interventions

Outcome: 2 Walking endurance (m) at end of treatment phase



Analysis 4.1. Comparison 4 Treadmill and body weight support versus treadmill only, Outcome 1 Dependence on personal assistance to walk at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 4 Treadmill and body weight support versus treadmill only

Outcome: 1 Dependence on personal assistance to walk at end of treatment phase

Study or subgroup	TM%BWS n/N	TM only n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
1 dependent in walking at start of treatment				
Visintin 1998a	11/33	16/26		0.54 [0.31, 0.96]
2 independent in walking at start of treatment				
Visintin 1998b	0/10	0/10		Not estimable

Analysis 4.2. Comparison 4 Treadmill and body weight support versus treadmill only, Outcome 2 Walking speed (m/s) at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 4 Treadmill and body weight support versus treadmill only

Outcome: 2 Walking speed (m/s) at end of treatment phase

Study or subgroup	TM%BWS N	Mean(SD)	TM only N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 dependent in walking at start of treatment						
Visintin 1998a	33	0.25 (0.22)	26	0.1 (0.18)		0.15 [0.05, 0.25]
2 independent in walking at start of treatment						
Visintin 1998b	10	0.61 (0.34)	10	0.51 (0.17)		0.10 [-0.14, 0.34]

Analysis 4.3. Comparison 4 Treadmill and body weight support versus treadmill only, Outcome 3 Walking endurance (m) at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 4 Treadmill and body weight support versus treadmill only

Outcome: 3 Walking endurance (m) at end of treatment phase

Study or subgroup	TM%BWS N	Mean(SD)	TM only N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 dependent in walking at start of treatment						
Visintin 1998a	33	107.64 (119.36)	26	32 (67.54)		75.64 [27.34, 123.94]
2 independent in walking at start of treatment						
Visintin 1998b	10	234 (114.76)	10	241.6 (89.43)		-7.60 [-97.77, 82.57]

Analysis 4.4. Comparison 4 Treadmill and body weight support versus treadmill only, Outcome 4 Dependence on personal assistance to walk at end of scheduled follow-up.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 4 Treadmill and body weight support versus treadmill only

Outcome: 4 Dependence on personal assistance to walk at end of scheduled follow-up

Study or subgroup	TM%BWS n/N	TM only n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
1 dependent in walking at start of treatment				
Visintin 1998a	2/21	6/17		0.27 [0.06, 1.17]
2 independent in walking at start of treatment				
Visintin 1998b	0/8	0/6		Not estimable

Analysis 4.5. Comparison 4 Treadmill and body weight support versus treadmill only, Outcome 5 Walking speed (m/s) at end of scheduled follow-up.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 4 Treadmill and body weight support versus treadmill only

Outcome: 5 Walking speed (m/s) at end of scheduled follow-up

Study or subgroup	TM%BWS N	Mean(SD)	TM only N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 dependent in walking at start of treatment						
Visintin 1998a	20	0.4 (0.3)	15	0.16 (0.21)		0.24 [0.07, 0.41]
2 independent in walking at start of treatment						
Visintin 1998b	8	0.72 (0.35)	6	0.6 (0.22)		0.12 [-0.18, 0.42]

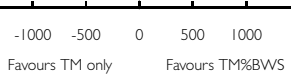
Analysis 4.6. Comparison 4 Treadmill and body weight support versus treadmill only, Outcome 6 Walking endurance (m) at end of scheduled follow-up.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 4 Treadmill and body weight support versus treadmill only

Outcome: 6 Walking endurance (m) at end of scheduled follow-up

Study or subgroup	TM%BWS N	Mean(SD)	TM only N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 dependent in walking at start of treatment						
Visintin 1998a	20	164.8 (122.63)	15	73.87 (110.59)		90.93 [13.34, 168.52]
2 independent in walking at start of treatment						
Visintin 1998b	8	266.25 (74.25)	6	275.33 (109.41)		-9.08 [-110.62, 92.46]



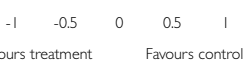
Analysis 5.1. Comparison 5 Adverse events for all included trials, Outcome 1 Adverse events during the treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 5 Adverse events for all included trials

Outcome: 1 Adverse events during the treatment phase

Study or subgroup	Treatment n/N	Control n/N	Risk Difference M-H,Random,95% CI	Weight	Risk Difference M-H,Random,95% CI
Ada 2003	3/14	0/15		1.3 %	0.21 [-0.02, 0.44]
Ada 2010	0/64	0/62		9.4 %	0.0 [-0.03, 0.03]
da Cunha Filho 2002	0/7	0/8		1.3 %	0.0 [-0.22, 0.22]
Duncan 2011	104/282	35/126		4.6 %	0.09 [-0.01, 0.19]
Eich 2004	0/25	0/25		6.0 %	0.0 [-0.07, 0.07]
Franceschini 2009	2/52	0/50		6.8 %	0.04 [-0.02, 0.10]
Jaffe 2004	0/11	0/12		2.5 %	0.0 [-0.15, 0.15]
Kim 2011	0/20	0/24		5.3 %	0.0 [-0.09, 0.09]
Kosak 2000	0/22	0/34		6.2 %	0.0 [-0.07, 0.07]
Kuys 2011	0/15	0/15		3.5 %	0.0 [-0.12, 0.12]
Laufer 2001	0/15	0/14		3.4 %	0.0 [-0.12, 0.12]
Liston 2000	2/10	0/8		0.8 %	0.20 [-0.09, 0.49]
MacKay-Lyons 2013	0/24	0/26		6.0 %	0.0 [-0.07, 0.07]
Macko 2005	11/32	0/29		2.1 %	0.34 [0.17, 0.51]
Nilsson 2001	0/36	0/37		7.7 %	0.0 [-0.05, 0.05]
Pohl 2002	1/44	0/25		6.0 %	0.02 [-0.05, 0.10]
Richards 1993	0/10	0/8		1.7 %	0.0 [-0.19, 0.19]
Richards 2004	2/32	1/31		4.2 %	0.03 [-0.07, 0.13]
Scheidtmann 1999	0/15	0/15		3.5 %	0.0 [-0.12, 0.12]
Smith 2008	0/10	0/10		2.0 %	0.0 [-0.17, 0.17]
Toledano-Zarhi 2011	0/14	0/14		3.2 %	0.0 [-0.13, 0.13]
Visintin 1998	0/50	0/50		8.8 %	0.0 [-0.04, 0.04]
Werner 2002a	0/15	0/15		3.5 %	0.0 [-0.12, 0.12]



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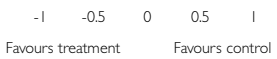
Study or subgroup	Treatment n/N	Control n/N	Risk Difference M-H,Random,95% CI	Weight	Risk Difference M-H,Random,95% CI
Total (95% CI)	**819**	**653**		**100.0 %**	**0.02 [-0.01, 0.05]**
Total events: 125 (Treatment), 36 (Control)					
Heterogeneity: Tau^2 = 0.00; Chi^2 = 47.10, df = 22 (P = 0.001); I^2 =53%					
Test for overall effect: Z = 1.51 (P = 0.13)					
Test for subgroup differences: Not applicable					



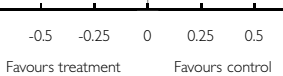
Analysis 6.1. Comparison 6 Drop outs for all included trials, Outcome 1 Drop outs.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 6 Drop outs for all included trials

Outcome: 1 Drop outs

Study or subgroup	Treatment n/N	Control n/N	Risk Difference M-H,Random,95% CI	Weight	Risk Difference M-H,Random,95% CI
1 by end of treatment phase					
Ada 2003	3/14	1/15		0.2 %	0.15 [-0.10, 0.40]
Ada 2010	4/64	2/62		2.8 %	0.03 [-0.04, 0.10]
Ada 2013	1/68	3/34		1.6 %	-0.07 [-0.17, 0.03]
da Cunha Filho 2002	1/7	1/8		0.1 %	0.02 [-0.33, 0.36]
Deniz 2011	0/10	0/10		0.5 %	0.0 [-0.17, 0.17]
Du 2006	0/67	0/61		17.0 %	0.0 [-0.03, 0.03]
Duncan 2011	35/282	11/126		4.0 %	0.04 [-0.03, 0.10]
Eich 2004	0/25	0/25		2.8 %	0.0 [-0.07, 0.07]
Franceschini 2009	10/52	10/50		0.7 %	-0.01 [-0.16, 0.15]
Gan 2012	0/102	0/103		43.3 %	0.0 [-0.02, 0.02]



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Study or subgroup	Treatment n/N	Control n/N	Risk Difference M-H,Random,95% CI	Weight	Risk Difference M-H,Random,95% CI
Globas 2011	2/20	0/18		0.6 %	0.10 [-0.06, 0.26]
Hoyer 2012	0/30	0/30		3.9 %	0.0 [-0.06, 0.06]
Jaffe 2004	1/11	2/12		0.2 %	-0.08 [-0.35, 0.20]
Kang 2012	2/22	0/10		0.5 %	0.09 [-0.09, 0.27]
Kim 2011	0/20	0/24		2.1 %	0.0 [-0.09, 0.09]
Kosak 2000	2/22	1/34		0.9 %	0.06 [-0.07, 0.19]
Kuys 2011	2/15	0/15		0.4 %	0.13 [-0.06, 0.33]
Langhammer 2010	3/21	2/18		0.4 %	0.03 [-0.18, 0.24]
Laufer 2001	2/15	2/14		0.2 %	-0.01 [-0.26, 0.24]
Liston 2000	3/10	0/8		0.2 %	0.30 [-0.01, 0.61]
Luft 2008	20/57	22/56		0.5 %	-0.04 [-0.22, 0.14]
MacKay-Lyons 2013	2/24	3/26		0.6 %	-0.03 [-0.20, 0.13]
Macko 2005	7/32	9/29		0.3 %	-0.09 [-0.31, 0.13]
Mehrberg 2001	1/10	0/11		0.3 %	0.10 [-0.13, 0.33]
Moore 2010	5/15	5/15		0.1 %	0.0 [-0.34, 0.34]
Nilsson 2001	4/36	3/37		0.8 %	0.03 [-0.11, 0.17]
Olawale 2009	2/22	5/45		0.7 %	-0.02 [-0.17, 0.13]
Pohl 2002	4/44	5/25		0.5 %	-0.11 [-0.29, 0.07]
Richards 1993	1/10	2/8		0.1 %	-0.15 [-0.50, 0.20]
Richards 2004	2/32	1/31		1.4 %	0.03 [-0.07, 0.13]
Scheidtmann 1999	0/15	0/15		1.1 %	0.0 [-0.12, 0.12]
Smith 2008	0/10	0/10		0.5 %	0.0 [-0.17, 0.17]
Sullivan 2007	7/60	2/20		0.6 %	0.02 [-0.14, 0.17]
Suputtitada 2004	0/24	0/24		2.6 %	0.0 [-0.08, 0.08]
Takami 2010	3/24	0/12		0.5 %	0.13 [-0.05, 0.30]
Toledano-Zarhi 2011	0/14	0/14		0.9 %	0.0 [-0.13, 0.13]
Visintin 1998	7/50	14/50		0.6 %	-0.14 [-0.30, 0.02]
Weng 2004	2/25	3/25		0.6 %	-0.04 [-0.21, 0.13]
Weng 2006	0/13	0/13		0.8 %	0.0 [-0.14, 0.14]
Werner 2002a	0/15	0/15		1.1 %	0.0 [-0.12, 0.12]

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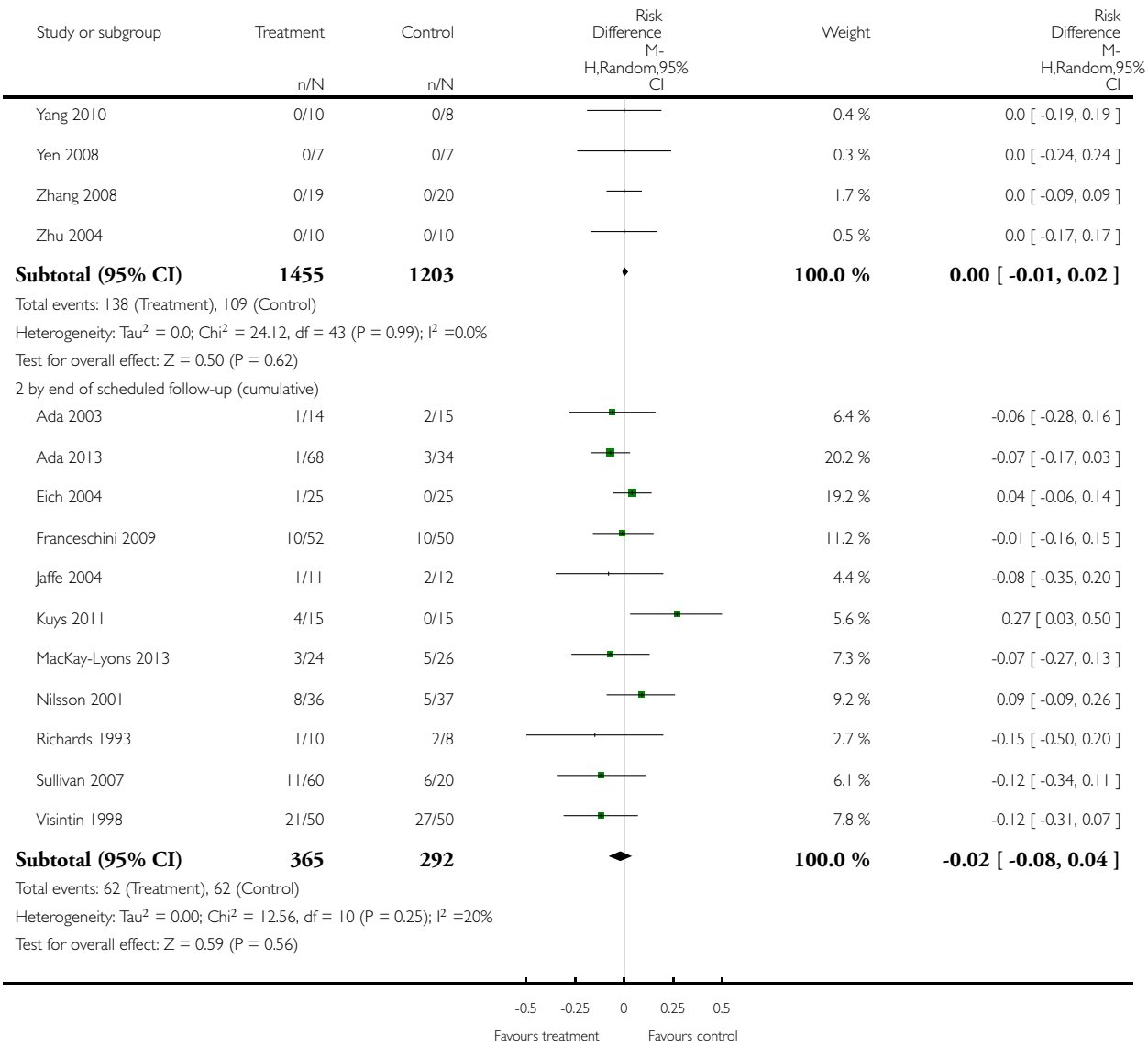

Analysis 7.1. Comparison 7 Sensitivity analysis: by trial methodology (all trials involving treadmill training), Outcome 1 Walking speed.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 7 Sensitivity analysis: by trial methodology (all trials involving treadmill training)

Outcome: 1 Walking speed

Study or subgroup	Experimental N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
1 trials with adequate random sequence generation							
Ada 2003	11	0.75 (0.26)	14	0.56 (0.3)		2.3 %	0.19 [-0.03, 0.41]
Ada 2013	68	0.64 (0.3498)	34	0.55 (0.28)		7.1 %	0.09 [-0.04, 0.22]
da Cunha Filho 2002	6	0.32 (0.42)	7	0.26 (0.25)		0.8 %	0.06 [-0.32, 0.44]
Eich 2004	25	0.71 (0.3)	25	0.6 (0.22)		5.3 %	0.11 [-0.04, 0.26]
Franceschini 2009	52	0.5 (0.44)	50	0.6 (0.44)		3.8 %	-0.10 [-0.27, 0.07]
Globas 2011	20	0.79 (0.29)	18	0.7 (0.46)		1.8 %	0.09 [-0.16, 0.34]
Hoyer 2012	30	0.4 (0.27)	30	0.36 (0.24)		6.7 %	0.04 [-0.09, 0.17]
Kang 2012	22	0.6 (0.2)	10	0.5 (0.1)		10.3 %	0.10 [0.00, 0.20]
Kosak 2000	22	0.06 (0.18)	34	0.07 (0.17)		12.6 %	-0.01 [-0.10, 0.08]
Kuys 2011	15	0.63 (0.3)	15	0.68 (0.37)		1.9 %	-0.05 [-0.29, 0.19]
Langhammer 2010	21	1 (0.4)	18	0.9 (0.4)		1.8 %	0.10 [-0.15, 0.35]
Liston 2000	7	0.67 (0.33)	8	0.66 (0.39)		0.8 %	0.01 [-0.35, 0.37]
Luft 2008	57	0.82 (0.5)	56	0.71 (0.5)		3.3 %	0.11 [-0.07, 0.29]
MacKay-Lyons 2013	24	0.75 (0.22)	26	0.71 (0.2)		8.2 %	0.04 [-0.08, 0.16]
Macko 2005	25	0.95 (0.45)	20	1 (0.49)		1.5 %	-0.05 [-0.33, 0.23]
Nilsson 2001a	24	0.51 (0.4)	25	0.46 (0.35)		2.5 %	0.05 [-0.16, 0.26]
Nilsson 2001b	8	0.78 (0.3)	9	0.84 (0.27)		1.5 %	-0.06 [-0.33, 0.21]
Richards 2004	32	0.6 (0.38)	31	0.57 (0.35)		3.4 %	0.03 [-0.15, 0.21]
Sullivan 2007	60	0.66 (0.34)	20	0.44 (0.28)		5.0 %	0.22 [0.07, 0.37]
Weng 2006	13	0.95 (0.28)	13	0.72 (0.27)		2.5 %	0.23 [0.02, 0.44]
Werner 2002a	15	0.07 (0.19)	15	0.11 (0.19)		6.1 %	-0.04 [-0.18, 0.10]
Yen 2008	7	0.92 (0.32)	7	0.87 (0.43)		0.7 %	0.05 [-0.35, 0.45]
Zhu 2004	10	0.19 (0.11)	10	0.17 (0.13)		10.1 %	0.02 [-0.09, 0.13]

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Study or subgroup	Experimental N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Subtotal (95% CI)	**574**		**495**			**100.0 %**	**0.05 [0.02, 0.09]**
Heterogeneity: Tau² = 0.0; Chi² = 20.30, df = 22 (P = 0.56); I² =0.0%							
Test for overall effect: Z = 3.03 (P = 0.0024)							
2 trials with adequate concealed allocation							
Ada 2003	11	0.75 (0.26)	14	0.56 (0.3)		3.6 %	0.19 [-0.03, 0.41]
Ada 2013	68	0.64 (0.3498)	34	0.55 (0.28)		8.0 %	0.09 [-0.04, 0.22]
Duncan 2011	282	0.57 (0.4)	126	0.62 (0.42)		11.7 %	-0.05 [-0.14, 0.04]
Eich 2004	25	0.71 (0.3)	25	0.6 (0.22)		6.6 %	0.11 [-0.04, 0.26]
Globas 2011	20	0.79 (0.29)	18	0.7 (0.46)		2.9 %	0.09 [-0.16, 0.34]
Kang 2012	22	0.6 (0.2)	10	0.5 (0.1)		9.9 %	0.10 [0.00, 0.20]
Kosak 2000	22	0.06 (0.18)	34	0.07 (0.17)		10.9 %	-0.01 [-0.10, 0.08]
Kuys 2011	15	0.63 (0.3)	15	0.68 (0.37)		3.1 %	-0.05 [-0.29, 0.19]
Langhammer 2010	21	1 (0.4)	18	0.9 (0.4)		2.8 %	0.10 [-0.15, 0.35]
MacKay-Lyons 2013	24	0.75 (0.22)	26	0.71 (0.2)		8.7 %	0.04 [-0.08, 0.16]
Nilsson 2001a	24	0.51 (0.4)	25	0.46 (0.35)		3.8 %	0.05 [-0.16, 0.26]
Nilsson 2001b	8	0.78 (0.3)	9	0.84 (0.27)		2.5 %	-0.06 [-0.33, 0.21]
Richards 2004	32	0.6 (0.38)	31	0.57 (0.35)		4.9 %	0.03 [-0.15, 0.21]
Sullivan 2007	60	0.66 (0.34)	20	0.44 (0.28)		6.4 %	0.22 [0.07, 0.37]
Takami 2010	24	1.47 (0.45)	12	1.11 (0.49)		1.8 %	0.36 [0.03, 0.69]
Weng 2006	13	0.95 (0.28)	13	0.72 (0.27)		3.8 %	0.23 [0.02, 0.44]
Werner 2002a	15	0.07 (0.19)	15	0.11 (0.19)		7.3 %	-0.04 [-0.18, 0.10]
Yen 2008	7	0.92 (0.32)	7	0.87 (0.43)		1.3 %	0.05 [-0.35, 0.45]
Subtotal (95% CI)	**693**		**452**			**100.0 %**	**0.06 [0.01, 0.11]**
Heterogeneity: Tau² = 0.00; Chi² = 24.52, df = 17 (P = 0.11); I² =31%							
Test for overall effect: Z = 2.59 (P = 0.0097)							
3 trials with adequate blinding of assessors							
Ada 2003	11	0.75 (0.26)	14	0.56 (0.3)		3.8 %	0.19 [-0.03, 0.41]
Ada 2013	68	0.64 (0.3498)	34	0.55 (0.28)		7.5 %	0.09 [-0.04, 0.22]
Duncan 2011	282	0.57 (0.4)	126	0.62 (0.42)		10.1 %	-0.05 [-0.14, 0.04]
Franceschini 2009	52	0.5 (0.44)	50	0.6 (0.44)		5.3 %	-0.10 [-0.27, 0.07]
Hoyer 2012	30	0.4 (0.27)	30	0.36 (0.24)		7.3 %	0.04 [-0.09, 0.17]
Jaffe 2004	10	0.69 (0.34)	10	0.72 (0.28)		2.7 %	-0.03 [-0.30, 0.24]
Kang 2012	22	0.6 (0.2)	10	0.5 (0.1)		8.9 %	0.10 [0.00, 0.20]

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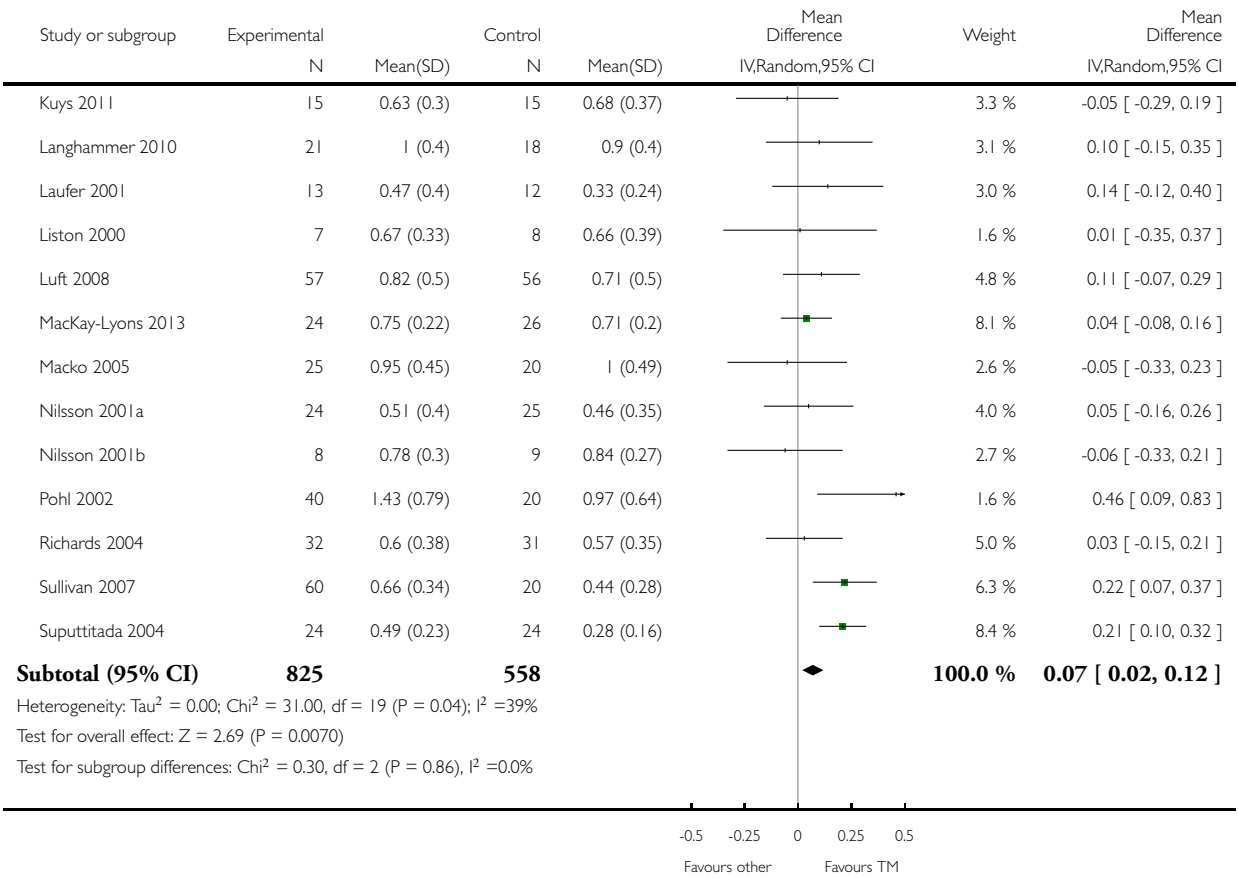


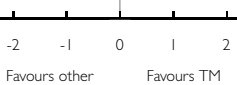
Analysis 8.1. Comparison 8 Subgroup analysis: treadmill (with or without body weight support) versus other, by duration of illness (independent in walking only), Outcome 1 Walking speed (m/s) at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 8 Subgroup analysis: treadmill (with or without body weight support) versus other, by duration of illness (independent in walking only)

Outcome: 1 Walking speed (m/s) at end of treatment phase

Study or subgroup	Experimental N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
1 Acute phase: less then or equal to 3 months after stroke independent in walking							
Deniz 2011	10	0.49 (0.18)	10	0.24 (0.13)		15.2 %	0.25 [0.11, 0.39]
Eich 2004	25	0.71 (0.3)	25	0.6 (0.22)		14.6 %	0.11 [-0.04, 0.26]
Kuys 2011	15	0.63 (0.3)	15	0.68 (0.37)		9.0 %	-0.05 [-0.29, 0.19]
Laufer 2001	13	0.47 (0.4)	12	0.33 (0.24)		8.3 %	0.14 [-0.12, 0.40]
MacKay-Lyons 2013	24	0.75 (0.22)	26	0.71 (0.2)		16.7 %	0.04 [-0.08, 0.16]
Nilsson 2001b	8	0.78 (0.3)	9	0.84 (0.27)		7.7 %	-0.06 [-0.33, 0.21]
Takami 2010	24	1.47 (0.45)	12	1.11 (0.49)		5.9 %	0.36 [0.03, 0.69]
Weng 2004	25	1.31 (0.57)	25	0.86 (0.38)		7.8 %	0.45 [0.18, 0.72]
Weng 2006	13	0.95 (0.28)	13	0.72 (0.27)		10.4 %	0.23 [0.02, 0.44]
Yen 2008	7	0.92 (0.32)	7	0.87 (0.43)		4.4 %	0.05 [-0.35, 0.45]
Subtotal (95% CI)	**164**		**154**			**100.0 %**	**0.15 [0.05, 0.24]**
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 17.58$, df = 9 (P = 0.04); $I^2 = 49\%$							
Test for overall effect: Z = 3.08 (P = 0.0021)							
2 Chronic phase: more than 3 months after stroke independent in walking							
Ada 2003	11	0.75 (0.26)	14	0.56 (0.3)		4.8 %	0.19 [-0.03, 0.41]
Ada 2013	68	0.64 (0.3498)	34	0.55 (0.28)		10.4 %	0.09 [-0.04, 0.22]
Globas 2011	20	0.79 (0.29)	18	0.7 (0.46)		4.0 %	0.09 [-0.16, 0.34]
Jaffe 2004	10	0.69 (0.34)	10	0.72 (0.28)		3.4 %	-0.03 [-0.30, 0.24]
Kang 2012	22	0.6 (0.2)	10	0.5 (0.1)		12.6 %	0.10 [0.00, 0.20]
Kim 2011	20	0.58 (0.42)	24	0.59 (0.47)		3.6 %	-0.01 [-0.27, 0.25]
Langhammer 2010	21	1 (0.4)	18	0.9 (0.4)		3.9 %	0.10 [-0.15, 0.35]
Luft 2008	57	0.82 (0.5)	56	0.71 (0.5)		6.3 %	0.11 [-0.07, 0.29]
Macko 2005	25	0.95 (0.45)	20	1 (0.49)		3.3 %	-0.05 [-0.33, 0.23]
Moore 2010	15	0.63 (0.3)	15	0.58 (0.23)		6.0 %	0.05 [-0.14, 0.24]



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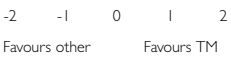
Study or subgroup	Experimental N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Olawale 2009	22	0.42 (0.2)	45	0.45 (0.19)		13.1 %	-0.03 [-0.13, 0.07]
Pohl 2002	40	1.43 (0.79)	20	0.97 (0.64)		1.9 %	0.46 [0.09, 0.83]
Richards 2004	32	0.6 (0.38)	31	0.57 (0.35)		6.5 %	0.03 [-0.15, 0.21]
Sullivan 2007	60	0.66 (0.34)	20	0.44 (0.28)		8.4 %	0.22 [0.07, 0.37]
Suputtitada 2004	24	0.49 (0.23)	24	0.28 (0.16)		11.7 %	0.21 [0.10, 0.32]
Subtotal (95% CI)	**447**		**359**			**100.0 %**	**0.10 [0.04, 0.15]**

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 20.30$, df = 14 (P = 0.12); $I^2 = 31\%$

Test for overall effect: Z = 3.46 (P = 0.00053)

Test for subgroup differences: $Chi^2 = 0.83$, df = 1 (P = 0.36), $I^2 = 0.0\%$

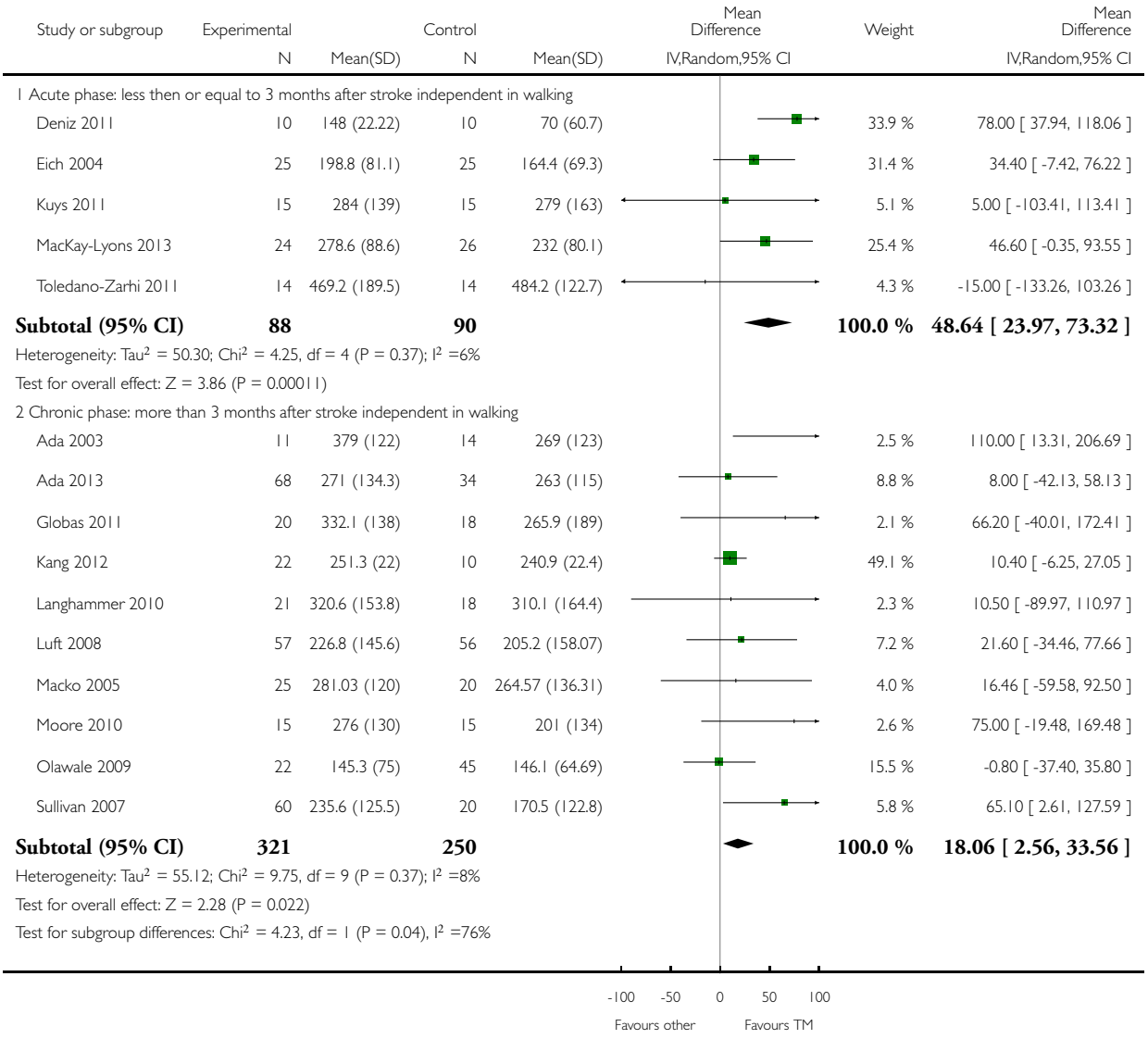


Analysis 8.2. Comparison 8 Subgroup analysis: treadmill (with or without body weight support) versus other, by duration of illness (independent in walking only), Outcome 2 Walking endurance (m) at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 8 Subgroup analysis: treadmill (with or without body weight support) versus other, by duration of illness (independent in walking only)

Outcome: 2 Walking endurance (m) at end of treatment phase

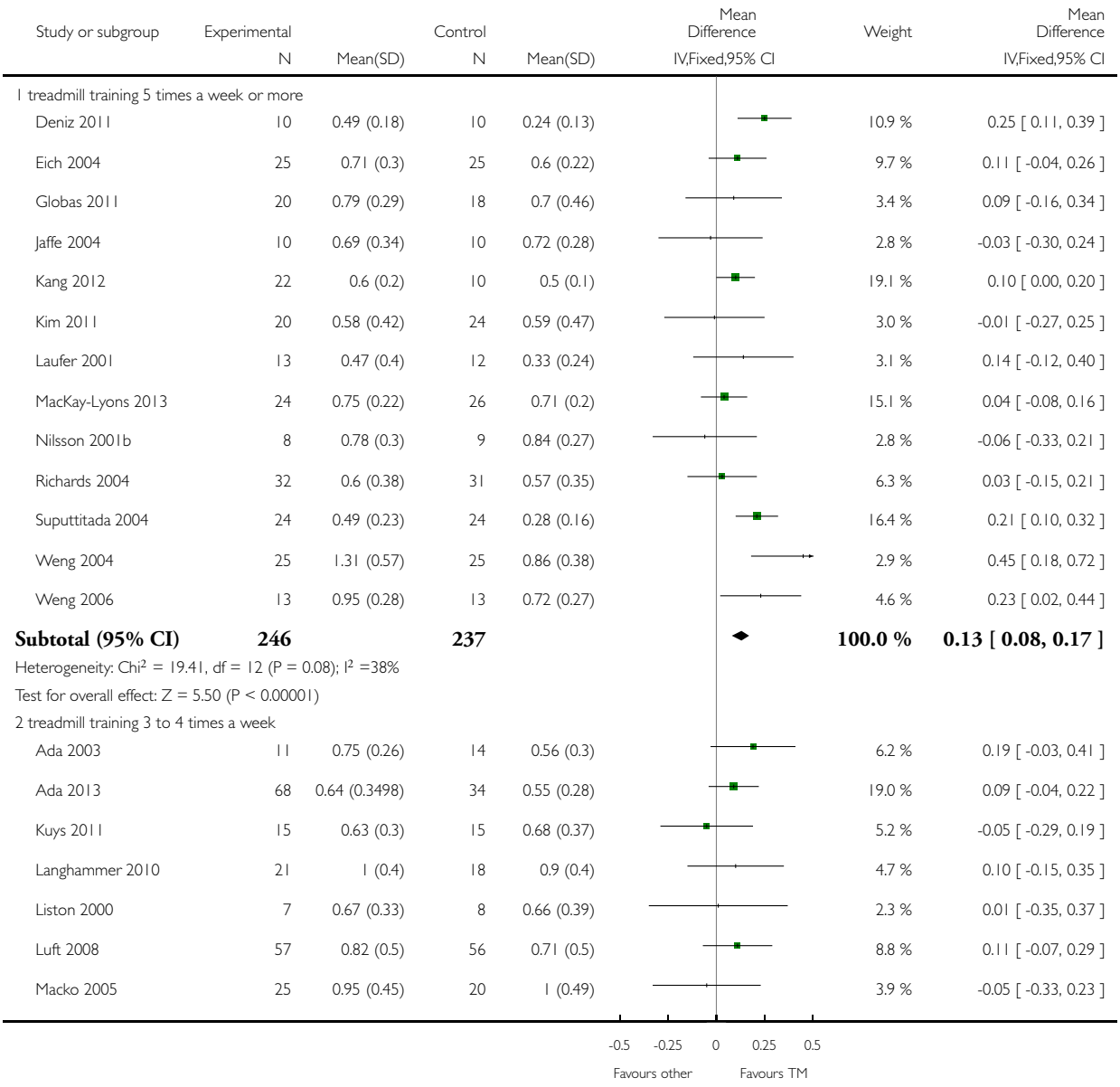


Analysis 9.1. Comparison 9 Subgroup analysis: treadmill (with or without body weight support) versus other, by intensity (frequency) of training (independent in walking only), Outcome 1 Walking speed (m/s) at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 9 Subgroup analysis: treadmill (with or without body weight support) versus other, by intensity (frequency) of training (independent in walking only)

Outcome: 1 Walking speed (m/s) at end of treatment phase



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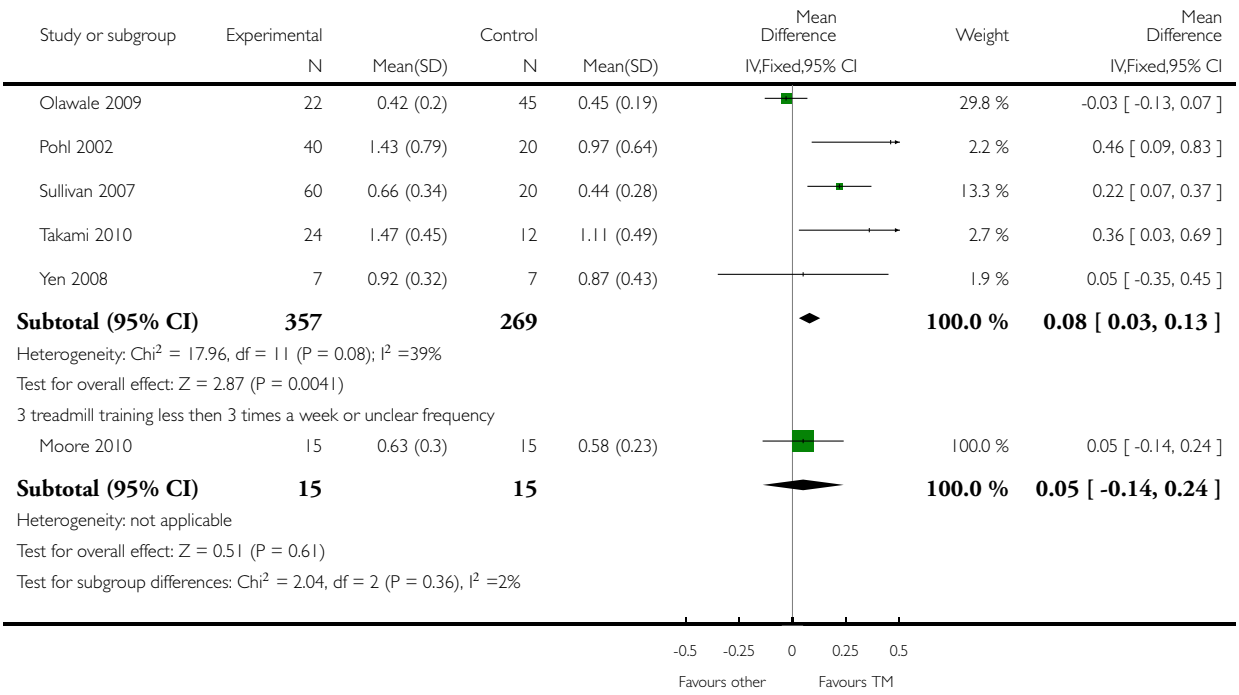
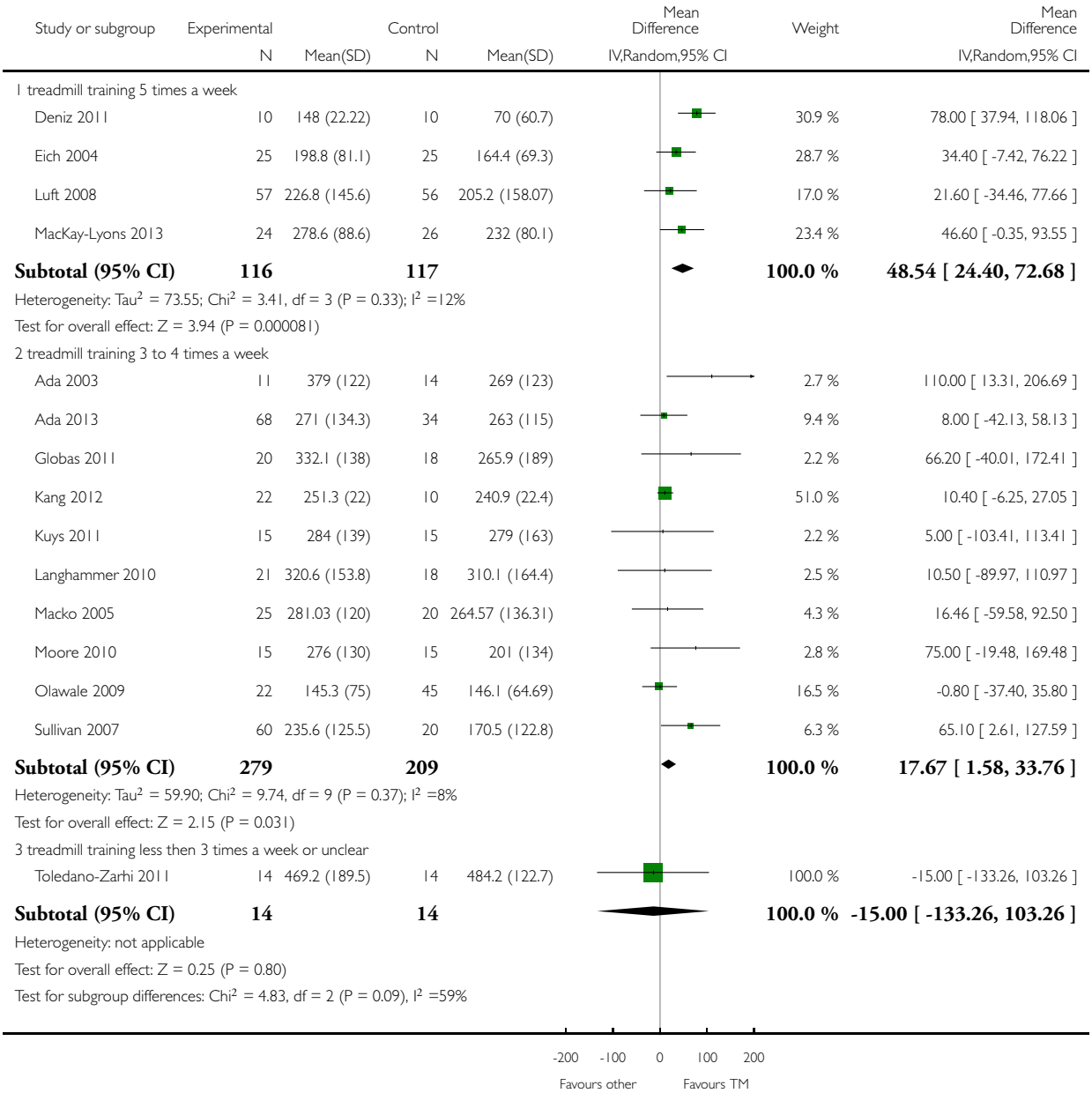


Analysis 9.2. Comparison 9 Subgroup analysis: treadmill (with or without body weight support) versus other, by intensity (frequency) of training (independent in walking only), Outcome 2 Walking endurance (m) at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 9 Subgroup analysis: treadmill (with or without body weight support) versus other, by intensity (frequency) of training (independent in walking only)

Outcome: 2 Walking endurance (m) at end of treatment phase



Analysis 10.1. Comparison 10 Subgroup analysis: treadmill (with or without body weight support) versus other, by duration of training period (independent in walking only), Outcome 1 Walking speed (m/s) at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 10 Subgroup analysis: treadmill (with or without body weight support) versus other, by duration of training period (independent in walking only)

Outcome: 1 Walking speed (m/s) at end of treatment phase

Study or subgroup	Experimental N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
1 treadmill training duration more than 4 weeks							
Ada 2013	68	0.64 (0.3498)	34	0.55 (0.28)		13.7 %	0.09 [-0.04, 0.22]
Eich 2004	25	0.71 (0.3)	25	0.6 (0.22)		10.2 %	0.11 [-0.04, 0.26]
Globas 2011	20	0.79 (0.29)	18	0.7 (0.46)		3.5 %	0.09 [-0.16, 0.34]
Kim 2011	20	0.58 (0.42)	24	0.59 (0.47)		3.1 %	-0.01 [-0.27, 0.25]
Kuys 2011	15	0.63 (0.3)	15	0.68 (0.37)		3.7 %	-0.05 [-0.29, 0.19]
Luft 2008	57	0.82 (0.5)	56	0.71 (0.5)		6.4 %	0.11 [-0.07, 0.29]
MacKay-Lyons 2013	24	0.75 (0.22)	26	0.71 (0.2)		15.8 %	0.04 [-0.08, 0.16]
Macko 2005	25	0.95 (0.45)	20	1 (0.49)		2.8 %	-0.05 [-0.33, 0.23]
Nilsson 2001b	8	0.78 (0.3)	9	0.84 (0.27)		2.9 %	-0.06 [-0.33, 0.21]
Olawale 2009	22	0.42 (0.2)	45	0.45 (0.19)		21.5 %	-0.03 [-0.13, 0.07]
Richards 2004	32	0.6 (0.38)	31	0.57 (0.35)		6.7 %	0.03 [-0.15, 0.21]
Sullivan 2007	60	0.66 (0.34)	20	0.44 (0.28)		9.6 %	0.22 [0.07, 0.37]
Subtotal (95% CI)	**376**		**323**			**100.0 %**	**0.05 [0.00, 0.10]**
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 10.99$, df = 11 (P = 0.44); $I^2 = 0.0\%$							
Test for overall effect: Z = 2.17 (P = 0.030)							
2 treadmill training duration 4 weeks							
Ada 2003	11	0.75 (0.26)	14	0.56 (0.3)		7.4 %	0.19 [-0.03, 0.41]
Deniz 2011	10	0.49 (0.18)	10	0.24 (0.13)		16.8 %	0.25 [0.11, 0.39]
Kang 2012	22	0.6 (0.2)	10	0.5 (0.1)		26.0 %	0.10 [0.00, 0.20]
Langhammer 2010	21	1 (0.4)	18	0.9 (0.4)		5.7 %	0.10 [-0.15, 0.35]
Liston 2000	7	0.67 (0.33)	8	0.66 (0.39)		2.8 %	0.01 [-0.35, 0.37]
Moore 2010	15	0.63 (0.3)	15	0.58 (0.23)		9.5 %	0.05 [-0.14, 0.24]

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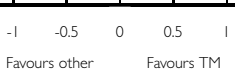
Study or subgroup	Experimental N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Pohl 2002	40	1.43 (0.79)	20	0.97 (0.64)		2.7 %	0.46 [0.09, 0.83]
Suputtitada 2004	24	0.49 (0.23)	24	0.28 (0.16)		23.3 %	0.21 [0.10, 0.32]
Takami 2010	24	1.47 (0.45)	12	1.11 (0.49)		3.4 %	0.36 [0.03, 0.69]
Yen 2008	7	0.92 (0.32)	7	0.87 (0.43)		2.4 %	0.05 [-0.35, 0.45]
Subtotal (95% CI)	**181**		**138**			**100.0 %**	**0.17 [0.11, 0.23]**
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 10.04$, df = 9 (P = 0.35); $I^2 = 10\%$							
Test for overall effect: Z = 5.29 (P < 0.00001)							
3 treadmill training duration less then 4 weeks							
Jaffe 2004	10	0.69 (0.34)	10	0.72 (0.28)		23.0 %	-0.03 [-0.30, 0.24]
Laufer 2001	13	0.47 (0.4)	12	0.33 (0.24)		24.5 %	0.14 [-0.12, 0.40]
Weng 2004	25	1.31 (0.57)	25	0.86 (0.38)		23.4 %	0.45 [0.18, 0.72]
Weng 2006	13	0.95 (0.28)	13	0.72 (0.27)		29.0 %	0.23 [0.02, 0.44]
Subtotal (95% CI)	**61**		**60**			**100.0 %**	**0.20 [0.02, 0.38]**
Heterogeneity: $Tau^2 = 0.02$; $Chi^2 = 6.34$, df = 3 (P = 0.10); $I^2 = 53\%$							
Test for overall effect: Z = 2.15 (P = 0.032)							
Test for subgroup differences: $Chi^2 = 9.85$, df = 2 (P = 0.01), $I^2 = 80\%$							

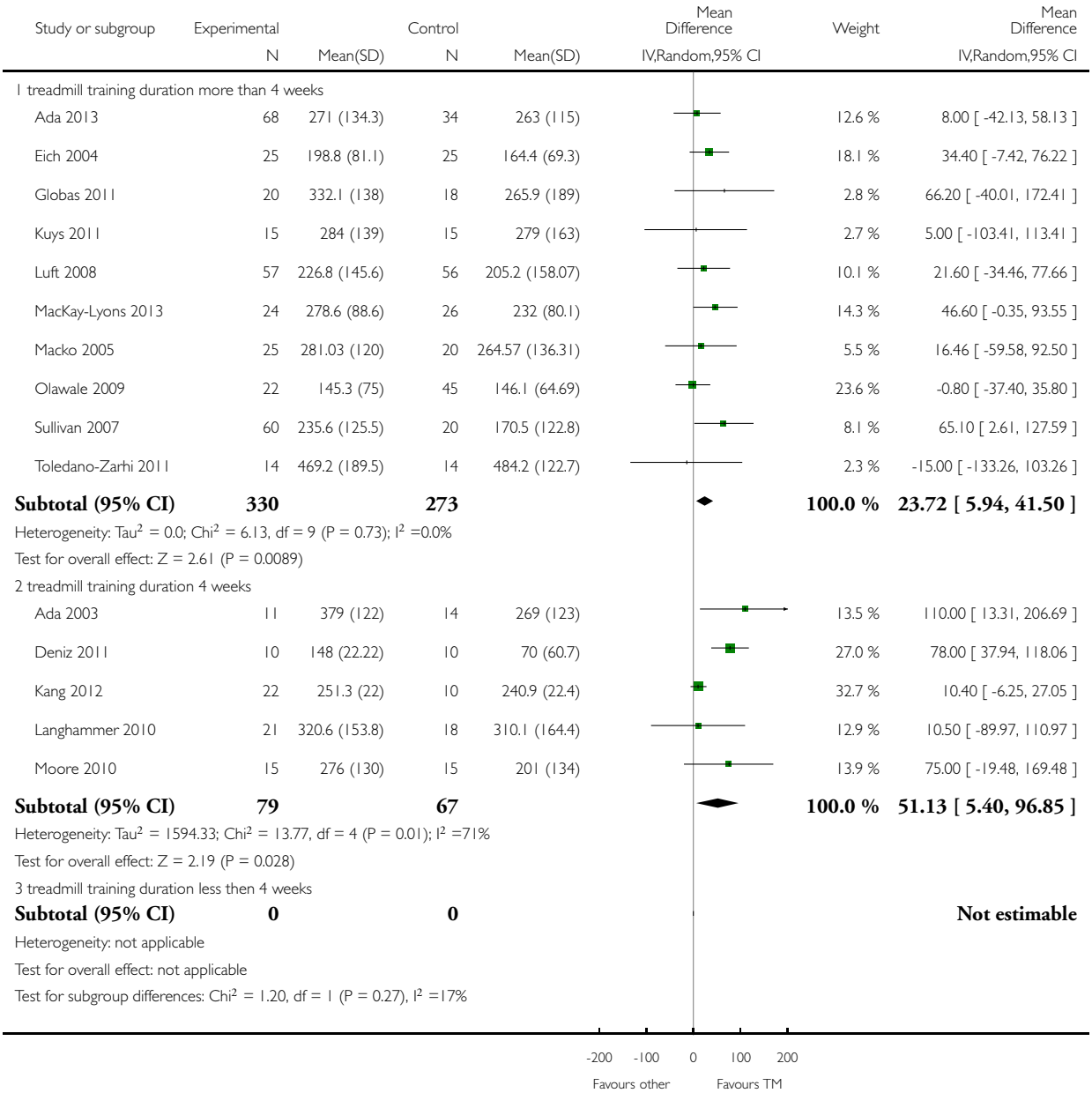


Analysis 10.2. Comparison 10 Subgroup analysis: treadmill (with or without body weight support) versus other, by duration of training period (independent in walking only), Outcome 2 Walking endurance (m) at end of treatment phase.

Review: Treadmill training and body weight support for walking after stroke

Comparison: 10 Subgroup analysis: treadmill (with or without body weight support) versus other, by duration of training period (independent in walking only)

Outcome: 2 Walking endurance (m) at end of treatment phase



ADDITIONAL TABLES

Table 1. Participant characteristics

Study ID	EXP age	CTL age	EXP gender	CTL gender	EXP time post stroke	CTL time post stroke	EXP paresis side	CTL paresis side
Ada 2003	Mean 66 (SD 11) years (excluding 1 drop out)	Mean 66 (SD 11) years (excluding 1 drop out)	Male/female 9/4	Male/female 10/4	Mean 28 (SD 17) months	Mean 26 (SD 20) months	Left/right 5/8	Left/right 8/6
Ada 2010	Mean 70 (SD 9) years	Mean 71 (SD 9) years	Male/female 38/26	Male/female 33/29	Mean 18 (SD 8) days	Mean 18 (SD 7) days	Left/right 34/30	Left/right 36/26
Ada 2013	Mean 67 (SD 12) years	Mean 63 (SD 13) years	Male/female 52/16	Male/female 19/15	Mean 21 (SD 16) months	Mean 19 (SD 13) months	Left/right 32/34	Left/right 13/21
Kim 2011	Mean 51 (SD 4) years	Mean 50 (SD 8) years	Male/female 11/9	Male/female 14/10	Mean 15 (SD 6) months	Mean 14 (SD 3) months	Left/right 8/12	Left/right 8/16
da Cunha Filho 2002	Mean 57.8 (SD 5.5) years (excluding drop outs)	Mean 58.9 (SD 12.9) years (excluding drop outs)	Male/female 6/0	Male/female 7/0	Mean 15.7 (SD 7.7) days	Mean 19.0 (SD 12.7) days	Left/right/bilateral 1/4/1	Left/right 4/3
Deniz 2011	Mean 61.5 (SD 4.7) years	Mean 61.5 (SD 12.5) years	Male/female 8/2	Male/female 3/7	Mean 71 (SD 40) days	Mean 81 (SD 47) months	Left/right 6/4	Left/right 3/7
Du 2006	56 (6) years	58 (6) years	Male/female 35/32	Male/female 30/31	< 3 months	< 3 months	Left/right 31/36	Left/right 29/32
Duncan 2011	Mean 62 (SD 12) years	Mean 63 (SD 13) years	Male/female 159/123	Male/female 65/61	Mean 64 (SD 9) days	Mean 63 (SD 8) days	Left/right 121/161	Left/right 61/65
Eich 2004	Mean 62.4 (SD 4.8) years (all participants)	Mean 64.0 (SD 6.0) years (all participants)	Male/female 17/8	Male/female 16/9	Mean 6.1 (SD 2.2) weeks	Mean 6.3 (SD 2.5) weeks	Left/right 14/11	Left/right 14/11
Franceschini 2009	Mean 66 (SD 12) years	Mean 71 (SD 12) years	Male/female 28/24	Male/female 22/23 (only 45 described)	Mean 17 (SD 10) days	Mean 14 (SD 7) days	Left/right 29/23	Left/right 15/30 (only 45 described)

Table 1. Participant characteristics (*Continued*)

Gan 2012	Not described	Not described	Not described	Not described	Not described	Not described	Not described	Not described
Globas 2011	Mean 69 (SD 7) years	Mean 69 (SD 6) years	Male/female 14/4 (only 18 described)	Male/female 15/3 (only 18 described)	Mean 60 (SD 47) months	Mean 70 (SD 67) months	Left/right 4/14 (only 18 described)	Left/right 9/9 (only 18 described)
Hoyer 2012	Mean 52 (SD 13) years	Mean 52 (SD 6) years	Male/female 20/10	Male/female 18/12	Mean 99 (SD 39) days	Mean 96 (SD 42) days	Left/right 17/13	Left/right 17/13
Jaffe 2004	Mean 58.2 (SD 11.2) years (excluding drop outs)	Mean 63.2 (SD 8.3) years (excluding drop outs)	Male/female 5/5 (excluding drop outs)	Male/female 7/3 (excluding drop outs)	Mean 3.9 (SD 2.3) years (excluding drop outs)	Mean 3.6 (SD 2.6) years (excluding drop outs)	Left/right 6/4 (excluding drop outs)	Left/right 4/6 (excluding drop outs)
Kang 2012	Mean 56 (SD 7) years	Mean 56 (SD 8) years	Male/female 10/10 (excluding drop outs)	Male/female 6/4 (excluding drop outs)	Mean 14 (SD 4) months	Mean 15 (SD 7) months	Left/right 8/12 (excluding drop outs)	Left/right 5/5 (excluding drop outs)
Kosak 2000	Mean 74 (SEM 2) years (all participants)	Mean 70 (SEM 2) years	Male/female 13/9	Male/female 18/16	Mean 39 (SEM 3) days	Mean 40 (SEM 4) days	Left/right/bilateral 8/12/2	Left/right/bilateral 12/16/6
Kuys 2011	Mean 63 (SD 14) years	Mean 72 (SD 17) years	Male/female 8/7	Male/female 6/9	Mean 52 (SD 32) days (excluding drop outs)	Mean 49 (SD 30) days (excluding drop outs)	Left/right 6/9	Left/right 11/4
Langhammer 2010	Mean 74 (SD 13) years	Mean 75 (SD 10) years	Male/female 10/11	Male/female 6/12	Mean 419 (SD 1034) days	Mean 349 (SD 820) days	Left/right 15/6	Left/right 13/5
Laufer 2001	Mean 66.6 (SD 7.2) years (excluding drop outs)	Mean 69.3 (SD 8.1) years (excluding drop outs)	Male/female 7/6	Male/female 7/5	Mean 32.6 (SD 21.2) days	Mean 35.8 (SD 17.3) days	Left/right 5/8	Left/right 5/7
Liston 2000	Mean 79.1 (SD 6.8) years (all EXP and CTL participants)		Male/female 12/6		Not reported	Not reported	Not reported	Not reported

Table 1. Participant characteristics (*Continued*)

Luft 2008	Mean 64 (SD 10) years	Mean 63 (SD 9) years	Male/female 14/20 (excluding drop outs)	Male/female 19/18 (excluding drop outs)	Mean 55 months (excluding drop outs)	Mean 63 months (excluding drop outs)	Left/right 21/12 (excluding drop outs)	Left/right 13/21 (excluding drop outs)
MacKay-Lyons 2013	Mean 62 (SD 15) years	Mean 59 (SD 13) years	Male/female 15/9	Male/female 14/12	Mean 23 (SD 6) days	Mean 23 (SD 4) days	Left/right 16/8	Left/right 13/13
Macko 2005	Mean 63 (SD 10) years	Mean 64 (SD 8) years	Male/female 22/10	Male/female 21/8	Mean 35 (SD 29) months	Mean 39 (SD 59) months	Left/right 18/14	Left/right 13/16
Mehrberg 2001	Not described	Not described	Not described	Not described	Not described	Not described	Not described	Not described
Moore 2010	Mean 50 (SD 15) years (EXP and CTL participants)		Male/female and CTL)	14/6 (EXP	Mean 13 (SD 8) months (EXP and CTL)		Left/right 16/4 (EXP and CTL)	
Nilsson 2001	Median 54 (range 24 to 67) years (all participants)	Median 56 (range 24 to 66) years	Male/female 20/16	Male/female 20/17	Median 22 (range 10 to 56) days	Median 17 (range 8 to 53) days	Left/right/ bilateral 21/ 11/4	Left/right/ bilateral 18/ 14/5
Olawale 2009	Mean 56.8 (SD 6. 4) years	Mean 57.0 (SD 7. 1) years	Male/female 12/8	Male/female 22/18	Mean 10.2 (SD 6. 9) months	Mean 10.5 (SD 6. 3) months	Left/right 12/8	Left/right 19/21
Pohl 2002	Mean 58. 2 (SD 10. 5) years for EXP 1 (excluding drop outs) Mean 57. 1 (SD 13. 9) years for EXP 2 (excluding drop outs)	Mean 61. 6 (SD 10. 6) years (excluding drop outs)	Male/ female 16/4 for EXP 1 male/ female 14/6 for EXP 2	Male/female 13/7	Mean 16. 2 (SD 16. 4) weeks for EXP 1 Mean 16. 8 (SD 20. 5) weeks for EXP 2	Mean 16. 1 (SD 18.5) weeks	Left/right 15/5 for EXP 1 Left/right 16/4 for EXP 2	Left/right 16/4
Richards 1993	Mean 69.6 (SD 7. 4) years (all participants)	Mean 67. 3 (SD 11.2) years (CTL 1)	Male/female 5/5	Male/female 2/6	Mean 8.3 (SD 1.4) days	Mean 8.8 (SD 1.5) days	Left/right 8/ 2	Left/right 2/ 6

Table 1. Participant characteristics (*Continued*)

Richards 2004	Mean 62.9 (SD 12) years	Mean 60.7 (SD 12) years	Male/female 22/10	Male/female 21/10	Mean 52.0 (SD 22) months	Mean 52.6 (SD 18) months	Left/right 15/17	Left/right 20/11
Scheidtmann 1999	Mean 57.7 (SD 11.0) years (all participants)		Male/female 16/14		Mean 52.2 (SD 29.6) days		Left/right 17/13	
Smith 2008	Mean 57.8 (SD 7.0) years	Mean 56.0 (SD 8.3) years	Male/female 8/2	Male/female 4/6	< 1 year: 8 > 1 < 2 years: 2	< 1 year: 8 > 1< 2 years: 2	Left/right 4/16	
Sullivan 2007	Mean 60.0 (SD 13.3) years	Mean 63.4 (SD 8.4) years	Male/female 34/26	Male/female 11/9	Mean 23.8 (SD 15.2) months	Mean 28.4 (SD 19.0) months	Left/right 28/32	Left/right 10/10
Suputtitada 2004	Mean 61.1 (SD 10.2) years	Mean 64.9 (SD 10.7) years	Male/female 20/4	Male/female 15/9	Mean 27.3 (SD 26.6) months	Mean 21.6 (SD 27.7) months	Left/right 9/15	Left/right 8/16
Takami 2010	Mean 68.6 (SD 8.9) years	Mean 66.9 (SD 10.6) years	Male/female 15/9	Male/female 7/7	Mean 14.0 (SD 8.1) days	Mean 13.7 (SD 8.9) days	Left/right 12/12	Left/right 4/10
Toledano-Zarhi 2011	Mean 65 (SD 10) years	Mean 65 (SD 12) years	Male/female 11/3	Male/female 10/4	Mean 11 (SD 5) days	Mean 11 (SD 4) days	Not described	Not described
Visintin 1998	Mean 66.5 (SD 12.8) years (all participants)	Mean 66.7 (SD 10.1) years	Male/female 31/19	Male/female 28/22	Mean 68.1 (SD 26.5) days	Mean 78.4 (SD 30.0) days	Left/right 30/20	Left/right 21/29
Weng 2004	55.2 (15.4) years	54.6 (15.2) years	Male/female 17/6	Male/female 17/5	Mean 36.1 (SD 11.3) days	Mean 35.6 (SD 14.5) days	Left/right 10/13	Left/right 8/14
Weng 2006	51 (12) years	50 (14) years	Male/female 8/5	Male/female 9/4	Mean 62 (SD 24) days	Mean 63 (SD 34) days	Left/right 6/7	Left/right 7/6
Werner 2002a	Mean 59.7 (SD 10.2) years (all partici-	Mean 60.3 (SD 8.6) years (all partici-	Male/female 8/7	Male/female 5/10	Mean 7.4 (SD 2.0) weeks	Mean 6.9 (SD 2.1) weeks	Left/right 7/8	Left/right 7/8

Table 1. Participant characteristics (*Continued*)

	pants)	pants)						
Yang 2010	Mean 57.2 (SD 9.3) years	Mean 55.0 (SD 10.1) years	Male/female 5/5	Male/female 5/3	Mean 1.2 (SD 1.1) years	Mean 1.6 (SD 1.5) years	Left/right 5/5	Left/right 4/4
Yen 2008	Mean 57.3 (SD 16.4) years	Mean 56.1 (SD 12.7) years	Male/female 3/4	Male/female 6/1	Mean 2.0 (SD 0.6) months	Mean 2.0 (SD 2.4) months	Left/right 5/2	Left/right 3/4
Zhang 2008	63.3 (13.4) years	62.8 (15.4) years	Male/female 12/7	Male/female 13/7	68.7 (25.6) days	66.3 (23.3) days	Left/right 7/12	Left/right 8/12
Zhu 2004	56.9 (12.9) years	57.8 (12.16) years	Male/female 6/4	Male/female 7/3	Mean 4.1 (SD 4.8) months	Mean 3.1 (SD 4.2) months	Not stated by the authors	Not stated by the authors

CTL: control
EXP: experimental
SD: standard deviation
SEM: standard error of the mean

Table 2. Dose of experimental interventions

Study ID	EXP - treadmill	EXP - support	EXP - duration	EXP - frequency	EXP - N weeks	CTL - interventions	CTL - duration	CTL - frequency	CTL - N weeks
Ada 2003	Gradually increased on an individual basis starting from 0.7 m/s at the start of the first session and finishing at 1.1 m/s at the end of the last session, on average	BWS - no Hand support - yes, use of hand rails if required Assistance from therapist - only if required, 2 participants needed slight help with stepping through for the first 2 weeks	30 minutes (24, 21, 18 and 15 minutes in treadmill training in the first, second, third and fourth training weeks, respectively)	3 times per week	4 weeks	Sham (task-orientated home programme with an intensity insufficient to produce an effect, plus telephone follow-up once each week)	30 minutes	3 times per week (plus encouraged to walk every day)	4 weeks

Table 2. Dose of experimental interventions (*Continued*)

Ada 2010	Initial speed of the treadmill was set so that the therapist had time to assist the leg to swing through while maintaining a reasonable step length. If a participant was too disabled to walk on a moving treadmill with the assistance of a therapist, then the participant walked on the spot. Once they attained a speed of 0.4 m/s without body weight support, they commenced 10 minutes of overground walking	BWS - yes Hand support - no Assistance from therapist - yes if required	30 minutes	5 times per week	Until they achieved independent walking or were discharged The experimental group participated in a total of 1336 sessions	Assisted overground walking. Aids such as knee splints, ankle-foot orthoses, parallel bars, forearm support frames and walking sticks could be used as part of the intervention. If a participant was too disabled to walk with the help of a therapist, then the participant practiced shifting weight and stepping forwards and backwards. Once participants could walk with assistance, they were instructed	30 minutes	5 times per week	Until they achieved independent walking or were discharged. The experimental group participated in a total of 1490 sessions

Table 2. Dose of experimental interventions (*Continued*)

						to increase their speed and assistance from both the therapist and aids was reduced			
Ada 2013	Treadmill was run at a comfortable speed and participants were instructed to "walk as slowly as possible" and/or a metronome was used to decrease cadence thereby encouraging larger steps. When necessary, marching-type steps were included to encourage hip and knee flexion during swing phase to improve toe clearance. When a normal step length was ob-	BWS - no Hand support - no Assistance from therapist - no	30 minutes	3 times per week	Group 1: 16 weeks Group 2: eight weeks	Control group received no intervention.	-	-	-

Table 2. Dose of experimental interventions (*Continued*)

	served, the therapist increased the speed of the treadmill until step length was compromised. Workload was then progressed by increasing the incline of the treadmill Over-ground walking was used each session and comprised 20% of intervention time in week 1 and was progressively increased each week so that it comprised 50% of the 30 minutes intervention time in week 8 of training. In week 9, the 4-month training group returned to								

Table 2. Dose of experimental interventions (*Continued*)

	20% over-ground walking, which was again increased to 50% by week 16								
Kim 2011	Gradually increased start-ing from 0. 3 m/s to 0. 7 m/s	BWS - no Hand sup-port - no Assistance from ther-apist - no	30 minutes	5 times per week	6 weeks	Con-trol group received muscle strength-ening (seated leg press, knee extension, leg abduc-tor)	30 minutes	5 times per week	6 weeks
da Cunha Filho 2002	Gradually in-creased in increments of 0.01 m/ s, starting at 0.01 m/s	BWS - yes, starting at 30% body weight and progres-sively de-creased to 0% Hand sup-port - not reported Assistance from ther-apist - not reported	20 minutes	5 times per week	2 to 3 weeks	Task-orientated gait train-ing	20 minutes	5 times per week	2 to 3 weeks
Deniz 2011	10-minute sessions, if neces-sary sepa-rated by 5-minute resting pe-riod, train-ing at com-fort-able walk-ing speed	BWS - yes Hand sup-port - not reported Assistance from ther-apist - not reported	60 minutes	5 times per week	4 weeks	Range of motion, stretching, strength-ening, bal-ance, co-ordi-nation ex-ercises and conven-tional am-	60 minutes	5 times per week	4 weeks

Table 2. Dose of experimental interventions (*Continued*)

	every 3 to 5 minutes was increased by increments of 0.01 m/s					bulation training treatment programme with parallel bars			
Du 2006	Gradually increased starting from 0.1 m/s to 0.5 m/s; interval method, resting period gradually reduced	BWS - yes, initial BWS 30% to 40% weight, gradually reduction Hand support - not reported Assistance from therapist - not reported	40 minutes	2 times per day	4 weeks	Brunnstrom, Bobath, Rood therapy approaches as well as proprioceptive neuromuscular facilitation techniques and motor relearning programme, transfer training, trunk stabilisation	40 minutes	Unclear	4 weeks
Duncan 2011	At 0.89 m/s, followed by a progressive programme of walking over ground for 15 minutes. The treadmill speeds ranged from 0 to 1.6 km per hour, increasing by increments	BWS - yes Hand support - not reported Assistance from therapist - yes	90 minute sessions	3 times per week	12 to 16 weeks (30 and 36 exercise sessions within this period)	Home exercise as an active control, not as a high-intensity, task-specific walking programme. Progression through the programme was managed by a	90-minute sessions	3 times per week	12 to 16 weeks (30 and 36 exercise sessions within this period)

Table 2. Dose of experimental interventions (*Continued*)

	of 0.16 km per hour					physical therapist in the home, with the goals of enhancing flexibility, range of motion in joints, strength of arms and legs, co-ordination, and static and dynamic balance. Participants in this programme were encouraged to walk daily			
Eich 2004	Speed and inclination increased on an individual basis to achieve a training heart rate Mean speed increased from 0.35 m/s (SD 0.11) in week 1 to 0.64 m/s (SD 0.15) in week 6. In week 1 only 1/	BWS - yes, the harness was always secured and body weight was minimally supported (0 to 15%) according to participant need Hand support - not reported Assistance from therapist - yes, to set the paretic leg, weight	30 minutes	5 times per week	6 weeks	Non-task-orientated (neurophysiological)	30 minutes	5 times per week	6 weeks

Table 2. Dose of experimental interventions (*Continued*)

	25 participants had an inclination of 4 degrees, this increased to 25/25 participants in week 6 with a mean inclination of 6.2 degrees	shift and hip extension if required							
Francheschini 2009	Speed starting from 0.1 m/s and aiming at 1.2 m/s according to the patient's compliance and progress. Conventional treatment was performed for 40 minutes, not immediately after treadmill training	BWS - yes, limited to 40% of body weight, gradually reduced Hand support - not reported Assistance from therapist - 2 trained physical therapists for each patient to control the paretic lower extremity and pelvis, when pelvic and paretic lower extremity control was considered adequate, train-	20 minutes + 40 minutes	2 times per day	20 sessions within 5 weeks	20 sessions of over-ground gait training of 60 minutes each	60 minutes	5 times per week	20 sessions within 5 weeks

Table 2. Dose of experimental interventions (*Continued*)

		ing was administered by 1 physical therapist only							
Gan 2012	Body weight support treadmill (BWS-T) training; treadmill speed was initially started at 0.5 mph	BWS - yes, up to 40% of their body weight supported at the beginning of the training, gradually reduced Hand support - unclear Assistance from therapist - unclear	Not described	Not described	8 weeks	Body weight support overground (BWS-O) ambulation training	Not described	Not described	8 weeks
Globas 2011	Beginning with 10 to 20 minutes) at 60% to 80% of the maximum heart rate reserve (HRR) (starting with 40% to 50% HRR) . Duration was increased as tolerated by 1 to 5 minutes per week Treadmill speed was	BWS - no Hand support - allowed Assistance from therapist - unclear Treadmill inclination at 0°	30 to 50 minutes	3 times per week	3 months (39 sessions)	Passive, muscle tone-regulating exercises for the upper and lower extremities with elements of balance training conducted on an outpatient basis in physiotherapy practices or rehabilitation cen-	60 minutes	3 times per week	3 months (13 weeks)

Table 2. Dose of experimental interventions (*Continued*)

	progressed by 0.1 to 0.3 km/hour every 1 to 2 weeks Training was a group intervention (3 participants trained in parallel)					tres. No aerobic fitness training was performed			
Hoyer 2012	Treadmill therapy with BWS and on days without TTBWS conventional gait training was conducted	BWS - yes Hand support - not reported Assistance from therapist - not reported	30 minutes	Daily for the first 4 weeks (20 sessions), and then 1 to 2 times a week (10 sessions) for the remaining 6 weeks	30 sessions for a period of a minimum of 10 weeks	Intensive gait training (30 minutes) and functional training (30 minutes) daily for a minimum of 10 weeks	30 minutes	daily	For a minimum of 10 weeks
Jaffe 2004	Comfortable walking speed (speed not reported), speed was not progressed	BWS - no, harness used to prevent falls only Hand support - yes, use of hand rails if required Assistance from therapist - no	60 minutes	3 times per week	2 weeks	Task-orientated (over-ground obstacle training)	60 minutes	3 times per week	2 weeks
Kang 2012	Group 1: treadmill training with optic flow (optic flow was applied and	BWS - no Hand support - allowed but discouraged Assistance from ther-	30 minutes (2 times for 15 minutes with a rest between)	3 times per week	4 weeks	General stretching added range of motion exercises in the less and more	30 minutes	3 times per week	4 weeks

Table 2. Dose of experimental interventions (*Continued*)

	treadmill speed was increased by 0.1 km/hour each time once the patient could walk stably for more than 20 seconds) Group 2: treadmill training without optic flow (treadmill speed was increased by 0.1 km/hour each time once the participants could walk stably for more than 20 seconds)	apist - no				affected sides of the trunk, arms and legs for the same time. Exercise therapy was performed using the traditional motor development theory and neurodevelopmental treatment based on motor learning theory			
Kosak 2000	Gradually increased from 0.22 to 0.89 m/s, as tolerated	BWS - yes, starting at 30% body weight and progressively decreased to 0% or eliminated Hand support - yes, use of hand rails if required Assistance from therapist - yes,	45 minutes	5 times per week	2 to 3 weeks	Non-task-orientated (orthopaedic)	45 minutes	5 times per week	2 to 3 weeks

Table 2. Dose of experimental interventions (*Continued*)

		assisted with swing phase, foot placement and weight shift if required							
Kuys 2011	Walked on the treadmill at an intensity of 40% to 60% heart rate reserve or a Borg Rating of Perceived Exertion of 11 to 14. Participants commenced at an intensity level of 40% heart rate reserve for 30 minutes, progressing each week aiming for a 5% to 10% increase until 60% heart rate reserve was reached. For participants unable to reach 40% heart rate reserve	BWS - no Hand support - yes, were encouraged to hold the handrail Assistance from therapist - yes, a physiotherapist provided assistance as required to ensure foot clearance during swing phase	30 minutes	3 times per week	6 weeks	Received usual physiotherapy intervention only	Unclear (probably the same as the EXP group)	Unclear (probably the same as the EXP group)	Unclear (probably the same as the EXP group)

Table 2. Dose of experimental interventions (*Continued*)

	on commencement of treadmill walking, treadmill speeds were set as fast as tolerated and progressed as quickly as possible Also received task-oriented physiotherapy, approximately 1 hour per day								
Langhammer 2010	Walking speed was started on the lowest level and was increased within the first minutes to the working level. The working load was increased in co-operation with the participants to a level they felt comfortable with and they felt no insecurity	BWS - no Hand support - yes Assistance from therapist - no, and no inclination	30 minutes	(Up to) 5 times per week	Mean of 16 days of inpatient stay (mean 10 walking sessions)	Outdoor walking at a comfortable speed and with the use of ordinary assistive devices when necessary	30 minutes	(Up to) 5 times per week	Mean of 17 days of inpatient stay (mean 11 walking sessions)

Table 2. Dose of experimental interventions (*Continued*)

	in balance or discomfort otherwise								
Laufer 2001	Comfortable walking speed, speed used and progression not reported	BWS - no Hand support - yes, use of hand rails if required Assistance from therapist - yes, assisted with swing phase and trunk alignment	8 to 20 minutes	5 times per week	3 weeks	Task-orientated	8 to 20 minutes	5 times per week	3 weeks
Liston 2000	Speed used and progression not reported	BWS - no Hand support - not reported Assistance from therapist - not reported	60 minutes	3 times per week	4 weeks	Task-orientated	60 minutes	3 times per week	4 weeks
Luft 2008	Aerobic intensity of 60% of heart rate reserve. Duration and intensity started low (10 to 20 minutes, 40% to 50% heart rate reserve) and increased approximately 5 minutes and 5%	BWS - no Hand support - not reported Assistance from therapist - not reported	40 minutes	3 times per week	6 months	13 supervised traditional stretching movements on a raised mat table with a therapist's assistance. Each movement was performed actively if possible or passively with a	40 minutes	3 times per week	6 month

Table 2. Dose of experimental interventions (*Continued*)

	heart rate reserve every 2 weeks as tolerated. Treadmill velocity and incline were increased by 0.05 m/s and 1% increments, respectively					therapist's assistance. Movements included quadriceps, calf, hip and hamstring stretch, low back rotation and stretch, chest stretch, bridging, shoulder shrug, abduction, and flexion, heel slides and short arc of quadriceps			
MacKay-Lyons 2013	5 to 10 minutes of active/passive stretching exercises 10 to 15 minutes of upper extremity training (active exercises and strengthening) 10 to 15 minutes of lower extremity training (active exercises and strength-	BWS - yes 20% to 30% or 40% if necessary of their body weight Hand support - handrail support was discouraged Assistance from therapist - therapist emphasised trunk and limb alignment, loading of	40 minutes	5 times per week (after 6 weeks 3 times per week)	6 weeks (plus 6 weeks; total of 48 sessions)	5 to 10 minutes of active/passive stretching exercises 10 to 15 minutes of upper extremity training (active exercises and strengthening) 10 to 15 minutes of lower extremity training (active ex-	40 minutes	5 times per week (after 6 weeks 3 times per week)	6 weeks (plus 6 weeks; total of 48 sessions)

Table 2. Dose of experimental interventions (*Continued*)

	ening) 25 to 30 minutes of BWSTT including warm-up and cool-down BWSTT initiated in 5 to 10-minute bouts at the heart rate achieved at 40% to 50% of baseline VO_2 peak. The goal was to achieve a target exercise duration (at least 20 minutes, exclusive of warm-up and cool-down) and intensity (heart rates corresponding to 60% to 75% of baseline VO_2 peak 27) by the fourth or fifth week. Initially, ambulatory-indepen-	the stance limb, hip extension at terminal stance, and advancement of the swing limb				ercises and strengthening) 25 to 30 minutes of overground gait training			

Table 2. Dose of experimental interventions (*Continued*)

	dent participants walked at a treadmill speed of 80% to 90% of their self paced over-ground speed Ambulatory-dependent participants walked at a treadmill speed of 70% to 80% of their over-ground speed Treadmill speed and grade were gradually increased and percentage of manual and body weight support decreased, as tolerated								
Macko 2005	Increased from a mean of 0.48 (SE 0.30) m/s at baseline to 0.75 (SE 0.30) m/s at treatment end on	BWS - no Hand support - yes, use of handrails if required Assistance from therapist - not reported	40 minutes (including 5 minutes warm-up and 5 minutes cool-down) increased duration at	3 times per week	6 months	Task-orientated	40 minutes	3 times per week	6 months

Table 2. Dose of experimental interventions (*Continued*)

	an individual basis to achieve a target aerobic intensity of 60% to 70% heart rate reserve (treadmill slope increased from 0% at baseline to 2.2% (SE 2.2) at treatment end)		target intensity from a mean of 12 (SE 6) minutes at baseline to 31 (SE 10) minutes at treatment end						
Mehrberg 2001	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear
Moore 2010	Intensive locomotor training with walking velocity increased in 0.5 km/h increments until participants' heart rate reached 80% to 85% of age-predicted maximum or until the participants' Rating of Perceived Exertion increased to 17	BWS - up to 40% partial body weight support using a counterweight system attached to the safety harness was provided for those participants who walked 0.2 m/s overground Hand support - handrail use for balance only Assistance	Unclear	2 to 5 times per week	4 weeks	Did not receive locomotor training or any other interventions	Unclear	2 to 5 times per week	4 weeks

Table 2. Dose of experimental interventions (*Continued*)

	on the Borg scale, and was reduced in 10% increments as tolerated	from therapist - therapists did not provide manual assistance							
Nilsson 2001	Gradually increased from 0.0 to 2.0 m/s on an individual basis	BWS - yes, starting at 100% body weight and decreased to 0% Hand support - yes, use of a cross bar if required Assistance from therapist - yes, assisted with swing phase, hip and knee extension during stance phase, and weight shift if required	30 minutes	5 times per week	9 to 10 weeks	Task-orientated	30 minutes	5 times per week	9 to 10 weeks
Olawale 2009	Participants walked on a treadmill at a "predetermined natural safe walking speed"	BWS - not reported Hand support - not reported Assistance from therapist - not reported	60 minutes of therapy, including 25 minutes treadmill training	3 times per week	12 weeks	Conventional physiotherapy, CTL 2 received overground gait training included in the hourly therapy	60 minutes	3 times per week	12 weeks

Table 2. Dose of experimental interventions (*Continued*)

						sessions, whereas CTL 1 received conventional physiotherapy only (active and passive range of motion exercises, strength and balance training)			
Pohl 2002	Speed-dependent treadmill training (EXP 1) - aggressive increase in speed starting from the highest speed the participant could walk at without stumbling and increasing at 10% increments of this speed several times within a session. The average treadmill speed increased from 0.68	Speed-dependent treadmill training BWS - yes, no more than 10% body weight for the first 3 training sessions only (participants always wore an unweighted harness) Hand support - not reported Assistance from therapist - no Limited progres-	30 minutes	3 times per week	4 weeks	Non-task-orientated (neurophysiological)	45 minutes	3 times per week	4 weeks

Table 2. Dose of experimental interventions (*Continued*)

	m/s (SD 0.34) at the start of training to 2.05 m/s (SD 0.71) at the end of training; limited progressive treadmill training (EXP 2) - gradually increased in increments of 5% of the initial maximum walking speed each week. The average treadmill speed increased from 0.66 m/s (SD 0.39) at the start of training to 0.79 m/s (SD 0.47) at the end of training	sive treadmill training BWS - yes, no more than 10% body weight for the first 3 training sessions only Hand support - not reported Assistance from therapist - yes, assisted with the walking cycle							
Richards 1993	Speed used and progression not reported	BWS - no Hand support - not reported Assistance from therapist - not reported	105 minutes (about 35 minutes in treadmill training)	5 times per week	5 weeks	Non-task-orientated (neurophysiological)	105 minutes	5 times per week	5 weeks
Richards 2004	Specialised locomotor	BWS - no Hand sup-	60 minutes	5 times per week	8 weeks	Conventional	60 minutes	5 times per week	8 weeks

Table 2. Dose of experimental interventions (*Continued*)

	training including tilt table, reciprocal stepping on a Kinetron device	port - not described Assistance from therapist - not described				physiotherapy (traditional neurodevelopmental approach, task-oriented motor learning, overground gait training, stepping exercises)			
Scheidtmann 1999	Gradually increased from 0.0 to 1.3 m/s	BWS - yes, amount of body weight support and progression not reported Hand support - yes, use of hand rails if required Assistance from therapist - yes, assisted with swing phase, foot placement, hip and knee extension during stance phase, and weight shift if required	30 minutes	5 times per week	3 weeks	Non-task-orientated (neurophysiological)	30 minutes	5 times per week	3 weeks

Table 2. Dose of experimental interventions (*Continued*)

Smith 2008	Patients walked for 5 minutes with a "slightly hard" rate of perceived exertion (RPE), then the speed was increased by increments of 0.2 m/hour every 10 minutes of walking with a "slightly hard" RPE	BWS - not clearly stated Hand support - not reported Assistance from therapist - only if required, 2 participants needed slight help with stepping through for the first 2 weeks	20 minutes	12 times per month	4 weeks	Sham (weekly phone calls, recording of a daily life log)	Not reported	1 telephone call per week	4 weeks
Sullivan 2007	Initially 4 x 5-minute training bouts at individualised speeds, initially within the range of 0.7 to 1.1 m/s, followed by 15 m overground walking and either (1) sham or (2) progressive resistive leg cycling or (3) individualised progressive resistive	BWS - yes, initially between 30% and 40% of the participant's weight and being decreased as participants improved Hand support - not described Assistance from therapist - up to 3 therapists assisting in placing of both feet and the pelvis if	60 minutes	4 times per week	6 weeks	Sham (upper extremity cycle ergometry with minimal physical exertion)	60 minutes	4 times per week	6 weeks

Table 2. Dose of experimental interventions (*Continued*)

	strength training	necessary							
Suputtitada 2004	Speed was initiated from 0.044 m/s for 10 minutes, followed by a rest for 5 minutes and then increased by increments of 0.044 m/s 10 minutes	BWS - yes, 30% during the first week, 20% during the second week, I 0% during the third week and no BWS during the fourth week Hand support - unclear Assistance from therapist - initially 2 therapists assisted in placing the foot and the pelvis	25 minutes	7 times per week	4 weeks	Walking at a self adopted speed on a 15 m walkway for 10 minutes, rested 5 minutes, and walked again 10 minutes	25 minutes	7 times per week	4 weeks
Takami 2010	For 3 minutes twice (with 4 minute rest); week 1: 0.8 km/hour, week 2: 1.0 km/hour, week 3: 1.3 km/hour	BWS - yes 30% Hand support - yes, use of hand rails if required Assistance from therapist - not described	30 minutes control intervention followed by 10 minutes treadmill training either in forward or backward direction	3 times per week	4 weeks	Conventional training (stretching, strengthening), including overground walking < 200 m and ADL training	80 minutes	5.5 times per week	4 weeks
Toledano-Zarhi 2011	Intervention consisted of tread-	BWS - not stated Hand support - not	90 minutes exercise training, in-	2 times per week	6 weeks	Home exercise booklet with in-	NA	NA	6 weeks

Table 2. Dose of experimental interventions (*Continued*)

	mill training, training on a hand bike machine, and a stationary bicycle	stated Assistance from therapist - not stated	cluding 35 to 55 minutes treadmill training			cluded instructions for flexibility and muscle strength exercises, patients were encouraged to stick to their normal community routine			
Visintin 1998	Gradually increased in increments of 0.04 m/s, from 0.23 to 0.42 m/s, on average, on an individual basis	BWS - yes, starting at 40% body weight and progressively decreased to 0% Hand support - yes, use of hand rails if required Assistance from therapist - yes, assisted with stepping and limb control during stance and swing phases, and weight shift if required	20 minutes	4 times per week	6 weeks	Task-orientated (treadmill only) - gradually increased speed from 0.19 to 0.34 m/s, on average, on an individual basis	20 minutes	4 times per week	6 weeks
Weng 2004	Initial speed was half of the measured maximal	BWS - no Hand support - unclear	20 minutes	5 times per week	4 weeks	Neuromuscular facilitation tech-	20 minutes	5 times per week	4 weeks

Table 2. Dose of experimental interventions (*Continued*)

	walking speed prior to training session for 5 minutes as a warm-up, then intervals of higher speed for 10 s were delivered, returning back to warm-up speed for 2 minutes; in the next phase the speed would be increased or decreased by 10%, respectively	Assistance from therapist - yes, assisted with foot placing and pelvis rotation				niques			
Weng 2006	Patients walked backwards on a treadmill with increasing speed	BWS - no Hand support - unclear Assistance from therapist - yes; assisted with foot placing and pelvis rotation	30 minutes of control intervention and 30 minutes of treadmill training	5 times per week	3 weeks	Neuromuscular facilitation techniques including lower limb movements and over-ground gait exercises	60 minutes	5 times per week	3 weeks
Werner 2002a	Increased from a mean of 0.32 (SD 0.05) m/s at baseline on an individual basis	BWS - yes, starting at a mean of 8.93% (SD 1.84) body weight and progres-	15 to 20 minutes	5 times per week	2 weeks	Task-orientated	15 to 20 minutes	5 times per week	2 weeks

Table 2. Dose of experimental interventions (*Continued*)

		sively decreased Hand support - yes, use of handrails if required Assistance from therapist - yes, assisted with foot placement, swing phase, and hip and trunk extension during stance phase if required							
Yang 2010	Additional to the CTL intervention: Initial BWS of 40% was decreased to the maximum extent, if knee flexion of the paretic limb did not exceed 15°; speed was selected according to the patient's ability	BWS - yes Hand support - no, patients were encouraged to refrain from handrails Assistance from therapist - yes, 1 or 2 therapists assisted	30 minutes + 20 minutes control intervention	3 times per week	4 weeks	Stretching, muscle strengthening, balance, and overground walking training	50 minutes	3 times per week	4 weeks

Table 2. Dose of experimental interventions (*Continued*)

Yen 2008	Additional to the CTL intervention: Initial BWS of 40% was decreased to the maximum extent, if knee flexion of the paretic limb did not exceed 15°; speed was selected according to the patient's ability	BWS - yes Hand support - no, patients were encouraged to refrain from handrails Assistance from therapist - yes, 1 or 2 therapists assisted	30 minutes + 20 minutes of control intervention	3 times per week	4 weeks	Stretching, muscle strengthening, balance and overground walking training	50 minutes	2 to 3 times per week	4 weeks
Zhang 2008	Increased from 0.2 km/hour and 40% weight-bearing relief according to the patients capabilities	BWS - yes Hand support - unclear Assistance from therapist - yes, assisted with foot placing, knee extension and pelvis rotation	30 minutes	5 times per week	8 weeks	Not described	Not stated	Not stated	8 weeks
Zhu 2004	Walking speed and BWS were individualised to the patients' capabilities (with a mean	BWS - yes Hand support - unclear Assistance from therapist: unclear	Individualised	5 times a week	4 weeks	Individualised conventional motor rehabilitation aiming at improving	Not stated	5 times a week	4 weeks

Table 2. Dose of experimental interventions (*Continued*)

	walking speed of 0.13 m/s at baseline and 0.17 m/s at the end of the intervention phase)					strength and endurance			

BWS: body weight support
BWSTT: body weight support treadmill training
CTL: control
EXP: experimental
NA: not applicable
SE: standard error
SD: standard deviation

Table 3. Adverse events during the treatment phase

Study ID	Injurious falls	Other injuries	Cardiovascular event	Other adverse event
Ada 2003	EXP = 1 (hip fracture caused by a fall at home after the first week of training) CTL = 0	EXP = 1 (missed post-treatment measurement session due to low back pain) CTL = 0	EXP = 0 CTL = 0	EXP = 1 (fall during overground component of training but no injuries sustained) CTL = 0
Ada 2010	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 47 reports CTL = 27 reports All reports included musculoskeletal problems (back, hip, knee, calf, foot pain and gout), headaches, dizziness or chest pain. There were 6 reports of falling, 1 of which resulted in a fracture and none of which occurred during the delivery of intervention 2 participants in the experimental group experienced anxiety attributable to being on a treadmill that was severe

Table 3. Adverse events during the treatment phase (*Continued*)

				enough for them to withdraw from the study
Ada 2013	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Kim 2011	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
da Cunha Filho 2002	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0
Deniz 2011	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Du 2006	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Duncan 2011	EXP = 0 CTL = 0	EXP = 16 (fracture) CTL = not reported	EXP = 1 (myocardial infarction) CTL = 1 (myocardial infarction)	EXP = 139 + 143 (ALL reported events) CTL = 126 (ALL reported events)
Eich 2004	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0
Franceschini 2009	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Gan 2012	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Globas 2011	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 1 recurrent stroke, 1 transportation problem CTL = 0
Hoyer 2012	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Jaffe 2004	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0
Kang 2012	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Kosak 2000	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 1 (acute myocardial infarction 2 days after last treatment session) CTL = 1 (stroke progres-	EXP = 0 CTL = 0

Table 3. Adverse events during the treatment phase (*Continued*)

			sion)	
Kuys 2011	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0
Langhammer 2010	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Laufer 2001	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0
Liston 2000	EXP = 0 CTL = not reported	EXP = 1 (knee pain after first 4 treadmill sessions) CTL = not reported	EXP = 0 CTL = not reported	EXP = 1 (hospitalised after first training session and subsequently died, reason for hospitalisation not reported) CTL = not reported
Luft 2008	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
MacKay-Lyons 2013	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0
Macko 2005	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 11 (5 falls during treadmill training but no injuries sustained; 6 minor medical complications) CTL = 0
Mehrberg 2001	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Moore 2010	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0
Nilsson 2001	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0
Olawale 2009	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Pohl 2002	EXP 1 = 0 EXP 2 = 0 CTL = 0	EXP 1 = 0 EXP 2 = 0 CTL = 0	EXP 1 = 0 EXP 2 = 0 CTL = 0	EXP 1 = 0 EXP 2 = 1 (vertigo, but did not have to terminate training) CTL = 0

Table 3. Adverse events during the treatment phase (*Continued*)

Richards 1993	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Richards 2004	EXP = not reported CTL = not reported	EXP = 1 (hip fracture) CTL = not reported	EXP = 1 - (cardiac problems) CTL = not reported	EXP = not reported CTL = not reported
Scheidtmann 1999	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0
Smith 2008	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Sullivan 2007	EXP = 7 CTL = 2			
Suputtitada 2004	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Takami 2010	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Toledano-Zarhi 2011	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0
Visintin 1998	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Weng 2004	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0
Weng 2006	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Werner 2002a	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0	EXP = 0 CTL = 0
Yang 2010	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Yen 2008	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Zhang 2008	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported
Zhu 2004	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported	EXP = not reported CTL = not reported

CTL: control
EXP: experimental

Table 4. Drop outs

Study ID	EXP - treatment phase	EXP - follow-up	CTL - treatment phase	CTL - follow-up
Ada 2003	1 - hip fracture caused by a fall at home after the first week of training 2 - not measured at post-test for medical reasons, 1 due to low back pain (these participants completed the follow-up assessment)	No drop outs	1 - moved out of area	1 - moved out of area
Ada 2010	2 - died 2 - withdrew	No follow-up period	2 - died	No follow-up period
Ada 2013	1 - withdrew	No drop outs	3 - withdrew	No drop outs
Kim 2011	Drop outs not stated	Drop outs not stated	Drop outs not stated	Drop outs not stated
da Cunha Filho 2002	1 - completed fewer than 9 treadmill and body weight support sessions	No follow-up period	1 - pulmonary complications (not related to the protocol)	No follow-up period
Deniz 2011	Drop outs not stated	Drop outs not stated	Drop outs not stated	Drop outs not stated
Du 2006	No drop outs	No follow-up period	No drop outs	No follow-up period
Duncan 2011	35 (12 withdrew, 7 died, 13 moved, 3 other)	Unclear	11 (2 withdrew, 6 died, 3 moved)	
Eich 2004	No drop outs	1 - refusal	No drop outs	No drop outs
Franceschini 2009	10 - drop outs	No follow-up period	10 - drop outs	No follow-up period
Gan 2012	No drop outs	No follow-up period	No drop outs	No follow-up period
Globas 2011	1 - recurrent stroke 1 - transportation problem	2 drop outs (but unclear which group)	No drop outs	2 drop outs (but unclear which group)
Hoyer 2012	No drop outs	No follow-up period	No drop outs	No follow-up period
Jaffe 2004	1 - endurance level too low to continue treat-	No drop outs	2 - medical conditions unrelated to the study (1	No drop outs

Table 4. Drop outs (*Continued*)

	ment		participant with arthritis and 1 participant with a heart condition)	
Kang 2012	1 - drop out - another treatment 1 - lack of participation	No drop outs	No drop outs	No drop outs
Kosak 2000	1 - chose to discontinue treatment (did not want to walk on the treadmill) 1 - acute myocardial infarction requiring readmission to acute care	No follow-up period	1 - Stroke progression requiring readmission to acute care	No follow-up period
Kuys 2011	1 - withdrew 1 - fall	1 - moved 1 - medical condition	No drop outs	No drop outs
Langhammer 2010	3 - drop outs (unclear reasons)	No follow-up period	2 - drop outs (unclear reasons)	No follow-up period
Laufer 2001	2 - discharged prior to completion of data collection	No follow-up period	1 - discharged prior to completion of data collection 1 - readmitted to an acute hospital (not related to the protocol)	No follow-up period
Liston 2000	1 - hospitalised after first treatment and subsequently died (reason for hospitalisation not reported) 1 - chose to discontinue treatment due to knee pain 1 - chose to discontinue treatment (felt unsafe and frightened on the treadmill)	No follow-up period	No drop outs	No follow-up period
Luft 2008	12 - unrelated medical condition 2 - recurrent stroke 6 - non-compliance	No follow-up period	11 - unrelated medical condition 11 - non-compliance	No follow-up period
MacKay-Lyons 2013	1 - seizure activity 1 - moved	1 - refused	2 - medical reasons 1 - disinterest	1 - refused 1 - lost to follow-up

Table 4. Drop outs (*Continued*)

Macko 2005	3 - medical conditions (1 participant had sinus surgery, 1 participant had pre-existing shoulder pain, 1 participant had a gastrointestinal bleed and recurrent stroke) 1 - fall at home 3 - chose to discontinue treatment (1 participant had transportation problems, 1 participant had poor adherence and 1 participant decided to train at home)	No follow-up period	4 - medical conditions (1 participant had a hernia repair, 1 participant had elective cardiac surgery, 1 participant had a radiculopathy and 1 participant had a foot infection and poor control of hypertension) 2 - fracture caused by a fall at home 3 - chose to discontinue treatment (1 participant moved out of area, 1 participant returned to work and 1 participant was disinterested in stretching)	No follow-up period
Mehrberg 2001	Missing information	Missing information	Missing information	Missing information
Moore 2010				
Nilsson 2001	2 - chose to discontinue treatment (did not want to walk on the treadmill) 2 - medical reasons	2 - medical reasons 1 - death 1 - moved out of area	1 - chose to discontinue treatment (wanted to walk on the treadmill) 1 - medical reasons 1 - death	1 - moved out of area 1 - did not want to attend the follow-up tests
Olawale 2009	2 - did not attend all training sessions	No follow-up period	5 - Did not attend all training sessions	No follow-up period
Pohl 2002	2 - medical conditions (1 participant with bladder infection and fever, and 1 participant with viral infection and fever) from EXP 1 2 - medical conditions (1 participant with bladder infection and fever, and 1 participant with pneumonia) from EXP 2	No follow-up period	5 - medical conditions (3 participants with pneumonia and 2 with viral infection and fever)	No follow-up period
Richards 1993	1 - reason not reported	No follow-up data reported	2 - reason not reported	No follow-up data reported
Richards 2004	1 - medical conditions (hip fracture) 1 - medical conditions	5 - being unavailable	1 - reason not stated	7 - being unavailable

Table 4. Drop outs (*Continued*)

	(cardiac problems)			
Scheidtmann 1999	No drop outs	No follow-up period	No drop outs	No follow-up period
Smith 2008	Drop outs not stated	Drop outs not stated	Drop outs not stated	Drop outs not stated
Sullivan 2007	6 - withdrawn by administration 1 - refused to participate	4 - refused to participate	2 - withdrawn by administration	1 - withdrawn by administration 3 - refused to participate
Suputtitada 2004	Drop outs not stated	No follow-up period	Drop outs not stated	No follow-up period
Takami 2010	3 - for family reasons	No follow-up period	Drop outs not stated	No follow-up period
Toledano-Zarhi 2011	1 - chose to discontinue treatment	No follow-up period	No drop outs	No follow-up period
Visintin 1998	2 - chose to discontinue treatment 2 - medical reasons 2 - discharged to chronic care prior to completion of data collection (no longer eligible) 1 - discharged home prior to completion of data collection and was unwilling or unable to complete the training	14 - medical event, repeated stroke, lack of willingness to participate or moved away from area	4 - chose to discontinue treatment 5 - medical reasons 3 - discharged to chronic care prior to completion of data collection (no longer eligible) 2 - discharged home prior to completion of data collection and were unwilling or unable to complete the training	13 - medical event, repeated stroke, lack of willingness to participate or moved away from area
Weng 2004	2 - reasons unknown due to issues of translation	No follow-up period	3 - reasons unknown due to issues of translation	No follow-up period
Weng 2006	Drop outs not stated	No follow-up period	Drop outs not stated	No follow-up period
Werner 2002a	No drop outs	No follow-up period	No drop outs	No follow-up period
Yang 2010	No drop outs	No follow-up period	No drop outs	No follow-up period
Yen 2008	No drop outs	No follow-up period	No drop outs	No follow-up period
Zhang 2008	Drop outs not stated	No follow-up period	Drop outs not stated	No follow-up period
Zhu 2004	No drop outs	No follow-up period	No drop outs	No follow-up period

CTL: control
EXP: experimental

APPENDICES

Appendix 1. CENTRAL search strategy

#1. [mh ^"cerebrovascular disorders"] or [mh "basal ganglia cerebrovascular disease"] or [mh "brain ischemia"] or [mh "carotid artery diseases"] or [mh "intracranial arterial diseases"] or [mh "intracranial embolism and thrombosis"] or [mh "intracranial hemorrhages"] or [mh ^stroke] or [mh "brain infarction"] or [mh ^"stroke, lacunar"] or [mh ^"vasospasm, intracranial"] or [mh ^"vertebral artery dissection"]
#2. stroke or poststroke or "post-stroke" or cerebrovasc* or brain next vasc* or cerebral next vasc* or cva* or apoplex* or SAH
#3. (brain* or cerebr* or cerebell* or intracran* or intracerebral) near/5 (isch*emi* or infarct* or thrombo* or emboli* or occlus*)
#4. (brain* or cerebr* or cerebell* or intracerebral or intracranial or subarachnoid) near/5 (haemorrhage* or hemorrhage* or haematoma* or hematoma* or bleed*)
#5. [mh ^hemiplegia] or [mh paresis]
#6. hemipleg* or hemipar* or paresis or paretic
#7. [mh ^"gait disorders, neurologic"]
#8. #1 or #2 or #3 or #4 or #5 or #6 or #7
#9. [mh êxercise] or [mh ^"exercise test"] or [mh ^"exercise therapy"] or [mh ^"motion therapy, continuous passive"]
#10. [mh ^"body weight"] or [mh ^weight-bearing]
#11. treadmill* or tread next mill* or running next wheel* or running next machine*
#12. (walking or walk or exercise) near/5 (machine* or device*)
#13. (walking or gait or locomotor or ambulation) near/5 (train* or re-train* or retrain*)
#14. [mh ^walking]
#15. machine* or device* or train* or re-train* or retrain*
#16. #14 and #15
#17. (weight or "body-weight" or bodyweight) near/5 (support* or suspen* or relief)
#18. (walk or walking or ambulat* or locomot* or gait or overhead) near/5 support*
#19. harness*
#20. #9 or #10 or #11 or #12 or #13 or #16 or #17 or #18 or #19
#21. [mh ^walking] or [mh ^gait] or [mh ^"mobility limitation"] or [mh ^locomotion]
#22. walk* or gait* or ambulat* or mobil* or locomot* or stride
#23. #21 or #22
#24. #8 and #20 and #23

Appendix 2. MEDLINE search strategy

1. cerebrovascular disorders/ or exp basal ganglia cerebrovascular disease/ or exp brain ischemia/ or exp carotid artery diseases/ or exp intracranial arterial diseases/ or exp "intracranial embolism and thrombosis"/ or exp intracranial hemorrhages/ or stroke/ or exp brain infarction/ or stroke, lacunar/ or vasospasm, intracranial/ or vertebral artery dissection/
2. (stroke or poststroke or post-stroke or cerebrovasc$ or brain vasc$ or cerebral vasc$ or cva$ or apoplex$ or SAH).tw.
3. ((brain$ or cerebr$ or cerebell$ or intracran$ or intracerebral) adj5 (isch?emi$ or infarct$ or thrombo$ or emboli$ or occlus$)).tw.
4. ((brain$ or cerebr$ or cerebell$ or intracerebral or intracranial or subarachnoid) adj5 (haemorrhage$ or hemorrhage$ or haematoma$ or hematoma$ or bleed$)).tw.
5. hemiplegia/ or exp paresis/
6. (hemipleg$ or hemipar$ or paresis or paretic).tw.
7. exp gait disorders, neurologic/
8. 1 or 2 or 3 or 4 or 5 or 6 or 7
9. exercise/ or exercise test/ or exercise therapy/ or motion therapy, continuous passive/
10. body weight/ or weight-bearing/
11. (treadmill$ or tread mill$ or running wheel$ or running machine$).tw.
12. ((walking or walk or exercise) adj5 (machine$ or device$)).tw.
13. ((walking or gait or locomotor or ambulation) adj5 (train$ or re-train$ or retrain$)).tw.
14. exp walking/ and (machine$ or device$ or train$ or re-train$ or retrain$).tw.
15. ((weight or body-weight or bodyweight) adj5 (support$ or suspen$ or relief)).tw.

16. ((walk or walking or ambulat$ or locomot$ or gait or overhead) adj5 support$).tw.
17. harness$.tw.
18. 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17
19. exp walking/ or gait/ or mobility limitation/ or locomotion/
20. (walk$ or gait$ or ambulat$ or mobil$ or locomot$ or stride).tw.
21. 19 or 20
22. Randomized Controlled Trials as Topic/
23. random allocation/
24. Controlled Clinical Trials as Topic/
25. control groups/
26. clinical trials as topic/
27. double-blind method/
28. single-blind method/
29. Placebos/
30. placebo effect/
31. cross-over studies/
32. Therapies, Investigational/
33. Research Design/
34. randomized controlled trial.pt.
35. controlled clinical trial.pt.
36. clinical trial.pt.
37. (random$ or RCT or RCTs).tw.
38. (controlled adj5 (trial$ or stud$)).tw.
39. (clinical$ adj5 trial$).tw.
40. ((control or treatment or experiment$ or intervention) adj5 (group$ or subject$ or patient$)).tw.
41. (quasi-random$ or quasi random$ or pseudo-random$ or pseudo random$).tw.
42. ((control or experiment$ or conservative) adj5 (treatment or therapy or procedure or manage$)).tw.
43. ((singl$ or doubl$ or tripl$ or trebl$) adj5 (blind$ or mask$)).tw.
44. (cross-over or cross over or crossover).tw.
45. (placebo$ or sham).tw.
46. trial.ti.
47. (assign$ or allocat).tw.
48. or/22-47
49. 8 and 18 and 21 and 48
50. exp animals/ not humans.sh.
51. 49 not 50

Appendix 3. EMBASE search strategy

1. cerebrovascular disease/ or exp basal ganglion hemorrhage/ or exp brain hematoma/ or exp brain hemorrhage/ or exp brain infarction/ or exp brain ischemia/ or exp carotid artery disease/ or cerebral artery disease/ or exp cerebrovascular accident/ or exp intracranial aneurysm/ or exp occlusive cerebrovascular disease/ or vertebrobasilar insufficiency/
2. stroke patient/ or stroke unit/
3. exp neurologic gait disorder/ or hemiparesis/ or hemiplegia/ or paresis/
4. (stroke or poststroke or post-stroke or cerebrovasc$ or brain vasc$ or cerebral vasc$ or cva$ or apoplex$ or SAH).tw.
5. ((brain$ or cerebr$ or cerebell$ or intracran$ or intracerebral) adj5 (isch?emi$ or infarct$ or thrombo$ or emboli$ or occlus$)).tw.
6. ((brain$ or cerebr$ or cerebell$ or intracerebral or intracranial or subarachnoid) adj5 (haemorrhage$ or hemorrhage$ or haematoma$ or hematoma$ or bleed$)).tw.
7. (hemipleg$ or hemipar$ or paresis or paretic).tw.
8. 1 or 2 or 3 or 4 or 5 or 6 or 7
9. treadmill/ or treadmill exercise/ or treadmill ergometry/
10. walking harness/ or walking machine/

11. exp exercise/ or exp kinesiotherapy/ or exercise test/
12. body weight/ or weight bearing/
13. (treadmill$ or tread mill$ or running wheel$ or running machine$).tw.
14. ((walking or walk or exercise) adj5 (machine$ or device$)).tw.
15. ((walking or gait or locomotor or ambulation) adj5 (train$ or re-train$ or retrain$)).tw.
16. exp walking/ and (machine$ or device$ or train$ or re-train$ or retrain$).tw.
17. ((weight or body-weight or bodyweight) adj5 (support$ or suspen$ or relief)).tw.
18. ((walk or walking or ambulat$ or locomot$ or gait or overhead) adj5 support$).tw.
19. harness$.tw.
20. 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19
21. walking/ or walking speed/ or gait/ or locomotion/ or walking difficulty/
22. (walk$ or gait$ or ambulat$ or mobil$ or locomot$ or stride).tw.
23. 21 or 22
24. Randomized Controlled Trial/
25. Randomization/
26. Controlled Study/
27. control group/
28. clinical trial/
29. Crossover Procedure/
30. Double Blind Procedure/
31. Single Blind Procedure/ or triple blind procedure/
32. placebo/
33. "types of study"/
34. random$.tw.
35. (controlled adj5 (trial$ or stud$)).tw.
36. (clinical$ adj5 trial$).tw.
37. ((control or treatment or experiment$ or intervention) adj5 (group$ or subject$ or patient$)).tw.
38. (quasi-random$ or quasi random$ or pseudo-random$ or pseudo random$).tw.
39. ((control or experiment$ or conservative) adj5 (treatment or therapy or procedure or manage$)).tw.
40. ((singl$ or doubl$ or tripl$ or trebl$) adj5 (blind$ or mask$)).tw.
41. (cross-over or cross over or crossover).tw.
42. placebo$.tw.
43. sham.tw.
44. (assign$ or allocat$).tw.
45. trial.ti. or (RCT or RCT).tw.
46. or/24-45
47. 8 and 20 and 23 and 46
48. exp animals/ or exp invertebrate/ or animal experiment/ or animal model/ or animal tissue/ or animal cell/ or nonhuman/
49. human/ or normal human/ or human cell/
50. 48 not 49
51. 47 not 50

Appendix 4. CINAHL search strategy

S48. S13 AND S24 AND S28 AND S47
S47. S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S40 OR S41 OR S44 OR S45 OR S46
S46. TI trial OR (TI (RCT or RCTs) OR AB (RCT or RCTs))
S45. TI (counterbalance* or multiple baseline* or ABAB design) or AB (counterbalance* or multiple baseline* or ABAB design)
S44. S42 and S43
S43. TI trial* or AB trial*
S42. TI (clin* or intervention* or compar* or experiment* or preventive or therapeutic) or AB (clin* or intervention* or compar* or experiment* or preventive or therapeutic)

S41. TI (crossover or cross-over or placebo* or control* or factorial or sham) or AB (crossover or cross-over or placebo* or control* or factorial or sham)
S40. S38 and S39
S39. TI (blind* or mask*) or AB (blind* or mask*)
S38. TI (singl* or doubl* or tripl* or trebl*) or AB (singl* or doubl* or tripl* or trebl*)
S37. TI random* or AB random*
S36. (MH "Community Trials") or (MH "Experimental Studies") or (MH "One-Shot Case Study") or (MH "Pretest-Posttest Design+") or (MH "Solomon Four-Group Design") or (MH "Static Group Comparison") or (MH "Study Design")
S35. (MH "Clinical Research") or (MH "Clinical Nursing Research")
S34. (MH "Placebo Effect") or (MH "Placebos") or (MH "Meta Analysis")
S33. (MH "Factorial Design") or (MH "Quasi-Experimental Studies") or (MH "Nonrandomized Trials")
S32. (MH "Control (Research)") or (MH "Control Group")
S31. (MH "Crossover Design") or (MH "Clinical Trials+") or (MH "Comparative Studies")
S30. (MH "Random Assignment") or (MH "Random Sample+")
S29. PT randomized controlled trial or clinical trial
S28. S25 OR S26 OR S27
S27. TI (walk* or gait* or ambulat* or mobil* or locomot* or stride) OR AB (walk* or gait* or ambulat* or mobil* or locomot* or stride)
S26. (MH "Gait Analysis") OR (MH "Gait Training")
S25. (MH "Locomotion") OR (MH "Walking") OR (MH "Gait") OR (MH "Step")
S24. S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23
S23. TI harness* OR AB harness*
S22. (TI (walk or walking or ambulat* or locomot* or gait or overhead) OR AB (walk or walking or ambulat* or locomot* or gait or overhead)) AND (TI support* OR AB support*)
S21. (TI (weight or body-weight or bodyweight) OR AB (weight or body-weight or bodyweight)) AND (TI (support* or suspen* or relief) OR AB (support* or suspen* or relief))
S20. ((MH "Walking") OR (MH "Gait training")) AND (TI (machine* or device* or train* or re-train* or retrain*) OR AB (machine* or device* or train* or re-train* or retrain*))
S19. (TI (walking or gait or locomotor or ambulation) OR AB (walking or gait or locomotor or ambulation)) AND (TI (train* or re-train* or retrain*) OR AB (train* or re-train* or retrain*))
S18. (TI (walking or walk or exercise) OR AB (walking or walk or exercise)) AND (TI (machine* or device*) OR AB (machine* or device*))
S17. TI (treadmill* or tread mill* or running wheel* or running machine*) OR AB (treadmill* or tread mill* or running wheel* or running machine*)
S16. (MH "Weight-Bearing") or (MH "Body Weight")
S15. (MH "Exercise+") or (MH "Therapeutic Exercise+") or (MH "Exercise Test")
S14. (MH "Treadmills")
S13. S1 OR S2 OR S3 OR S6 OR S9 OR S10 OR S11 OR S12
S12. (MH "Gait Disorders, Neurologic+")
S11. TI (hemipleg* or hemipar* or paresis or paretic) or AB (hemipleg* or hemipar* or paresis or paretic)
S10. (MH "Hemiplegia")
S9. S7 and S8
S8. TI (haemorrhage* or hemorrhage* or haematoma* or hematoma* or bleed*) or AB (haemorrhage* or hemorrhage* or haematoma* or hematoma* or bleed*)
S7. TI (brain* or cerebr* or cerebell* or intracerebral or intracranial or subarachnoid) or AB (brain* or cerebr* or cerebell* or intracerebral or intracranial or subarachnoid)
S6. S4 and S5
S5. TI (ischemi* or ischaemi* or infarct* or thrombo* or emboli* or occlus*) or AB (ischemi* or ischaemi* or infarct* or thrombo* or emboli* or occlus*)
S4. TI (brain* or cerebr* or cerebell* or intracran* or intracerebral) or AB (brain* or cerebr* or cerebell* or intracran* or intracerebral)
S3. TI (stroke or poststroke or post-stroke or cerebrovasc* or brain vasc* or cerebral vasc or cva or apoplex or SAH) or AB (stroke or poststroke or post-stroke or cerebrovasc* or brain vasc* or cerebral vasc or cva or apoplex or SAH)

S2. (MH “Stroke Patients”) OR (MH “Stroke Units”)
S1. (MH “Cerebrovascular Disorders”) OR (MH “Basal Ganglia Cerebrovascular Disease+”) OR (MH “Carotid Artery Diseases+”) OR (MH “Cerebral Ischemia+”) OR (MH “Cerebral Vasospasm”) OR (MH “Intracranial Arterial Diseases+”) OR (MH “Intracranial Embolism and Thrombosis”) OR (MH “Intracranial Hemorrhage+”) OR (MH “Stroke”) OR (MH “Vertebral Artery Dissections”)

Appendix 5. AMED search strategy

1. cerebrovascular disorders/ or cerebral hemorrhage/ or cerebral infarction/ or cerebral ischemia/ or cerebrovascular accident/ or stroke/
2. (stroke or poststroke or post-stroke or cerebrovasc$ or brain vasc$ or cerebral vasc$ or cva$ or apoplex$ or SAH).tw.
3. ((brain$ or cerebr$ or cerebell$ or intracran$ or intracerebral) adj5 (isch?emi$ or infarct$ or thrombo$ or emboli$ or occlus$)).tw.
4. ((brain$ or cerebr$ or cerebell$ or intracerebral or intracranial or subarachnoid) adj5 (haemorrhage$ or hemorrhage$ or haematoma$ or hematoma$ or bleed$)).tw.
5. hemiplegia/ or gait disorders/
6. (hemipleg$ or hemipar$ or paresis or paretic).tw.
7. 1 or 2 or 3 or 4 or 5 or 6
8. exercise/ or exercise testing/ or exercise therapy/ or continuous passive motion/
9. body weight/ or weight bearing/
10. (treadmill$ or tread mill$ or running wheel$ or running machine$).tw.
11. ((walking or walk or exercise) adj5 (machine$ or device$)).tw.
12. ((walking or gait or locomotor or ambulation) adj5 (train$ or re-train$ or retrain$)).tw.
13. exp walking/ and (machine$ or device$ or train$ or re-train$ or retrain$).tw.
14. ((weight or body-weight or bodyweight) adj5 (support$ or suspen$ or relief)).tw.
15. ((walk or walking or ambulat$ or locomot$ or gait or overhead) adj5 support$).tw.
16. harness$.tw.
17. 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16
18. exp walking/ or gait/ or locomotion/ or mobility limitation/ or gait analysis/
19. (walk$ or gait$ or ambulat$ or mobil$ or locomot$ or stride).tw.
20. 18 or 19
21. 7 and 17 and 20
22. (clinical trial or clinical trial phase iii or clinical trialb or clinical trials or controlled clinical trial or controlled trial or randomised controlled trial or randomized controlled trial).pt.
23. clinical trials/ or randomized controlled trials/ or double blind method/ or random allocation/
24. (random$ or RCT or RCTs).tw.
25. (controlled adj5 (trial$ or stud$)).tw.
26. (clinical$ adj5 trial$).tw.
27. ((control or treatment or experiment$ or intervention) adj5 (group$ or subject$ or patient$)).tw.
28. (quasi-random$ or quasi random$ or pseudo-random$ or pseudo random$).tw.
29. ((control or experiment$ or conservative) adj5 (treatment or therapy or procedure or manage$)).tw.
30. ((singl$ or doubl$ or tripl$ or trebl$) adj5 (blind$ or mask$)).tw.
31. (cross-over or cross over or crossover).tw.
32. (placebo$ or sham).tw.
33. trial.ti.
34. (assign$ or allocat).tw.
35. or/22-34
36. 21 and 35

Appendix 6. SPORTDiscus search strategy

S30. S28 AND S29
S29. TI (random* or RCT or trial* or placebo* or sham or double-blind* or single-blind or control or controls or assign* or allocat*) OR AB (random* or RCT or trial* or placebo* or sham or double-blind* or single-blind or control or controls or assign* or allocat*)
S28. S13 AND S24 AND S27
S27. S25 OR S26
S26. TI (walk* or gait* or ambulat* or mobil* or locomot* or stride) OR AB (walk* or gait* or ambulat* or mobil* or locomot* or stride)
S25. (DE "WALKING" OR DE "GAIT in humans") AND (DE "LOCOMOTION" OR DE "HUMAN locomotion")
S24. S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23
S23. TI harness* OR AB harness*
S22. (TI (walk or walking or ambulat* or locomot* or gait or overhead) OR AB (walk or walking or ambulat* or locomot* or gait or overhead)) AND (TI support* OR AB support*)
S21. (TI (weight or body-weight or bodyweight) OR AB (weight or body-weight or bodyweight)) AND (TI (support* or suspen* or relief) OR AB (support* or suspen* or relief))
S20. (DE "WALKING" OR DE "FITNESS walking" OR DE "GAIT in humans") AND (TI (machine* or device* or train* or re-train* or retrain*) OR AB (machine* or device* or train* or re-train* or retrain*))
S19. (TI (walking or gait or locomotor or ambulation) OR AB (walking or gait or locomotor or ambulation)) AND (TI (train* or re-train* or retrain*) OR AB (train* or re-train* or retrain*))
S18. (TI (walking or walk or exercise) OR AB (walking or walk or exercise)) AND (TI (machine* or device*) OR AB (machine* or device*))
S17. TI (treadmill* or tread mill* or running wheel* or running machine*) OR AB (treadmill* or tread mill* or running wheel* or running machine*)
S16. (DE "BODY weight") OR (DE "WEIGHT-bearing (Orthopedics)")
S15. DE "EXERCISE" OR DE "AEROBIC exercises" OR DE "EXERCISE for people with disabilities" OR DE "EXERCISE therapy" OR DE "KNEE exercises" OR DE "LEG exercises" OR DE "STRENGTH training" OR DE "EXERCISE therapy" OR DE "EXERCISE tests" OR DE "EXERCISE -- Equipment & supplies"
S14. DE "TREADMILL exercise tests" OR DE "TREADMILL exercise" OR DE "TREADMILLS (Exercise equipment)"
S13. S1 or S2 or S3 or S4 or S7 or S10 or S11 or S12
S12. DE "GAIT disorders"
S11. TI (hemipleg* or hemipar* or paresis or paretic) or AB (hemipleg* or hemipar* or paresis or paretic)
S10. S8 and S9
S9. TI (haemorrhage* or hemorrhage* or haematoma* or hematoma* or bleed*) or AB (haemorrhage* or hemorrhage* or haematoma* or hematoma* or bleed*)
S8. TI (brain* or cerebr* or cerebell* or intracerebral or intracranial or subarachnoid) or AB (brain* or cerebr* or cerebell* or intracerebral or intracranial or subarachnoid)
S7. S5 and S6
S6. TI (ischemi* or ischaemi* or infarct* or thrombo* or emboli* or occlus*) or AB (ischemi* or ischaemi* or infarct* or thrombo* or emboli* or occlus*)
S5. TI (brain* or cerebr* or cerebell* or intracran* or intracerebral) or AB (brain* or cerebr* or cerebell* or intracran* or intracerebral)
S4. TI (stroke or poststroke or post-stroke or cerebrovasc* or brain vasc* or cerebral vasc or cva or apoplex or SAH) or AB (stroke or poststroke or post-stroke or cerebrovasc* or brain vasc* or cerebral vasc or cva or apoplex or SAH)
S3. DE "HEMIPLEGIA" OR DE "HEMIPLEGICS"
S2. DE "CEREBROVASCULAR disease -- Patients"
S1. DE "CEREBROVASCULAR disease" OR DE "BRAIN -- Hemorrhage" OR DE "CEREBRAL embolism & thrombosis"

WHAT'S NEW

Last assessed as up-to-date: 4 September 2013.

Date	Event	Description
30 August 2013	New search has been performed	We have updated the searches to June 2013 and revised the text as appropriate. We have included 44 trials with 2658 participants in this update compared with 15 trials with 622 participants in the last version of this review from 2005
15 August 2013	New citation required and conclusions have changed	The conclusions of the review have changed. The previous version of this review concluded that, overall, no statistically significant effect of treadmill training with or without body weight support could be detected. This updated version concludes that overall walking ability was not improved but a statistically significant effect of treadmill training with or without body weight support was detected for improving walking speed and walking endurance. The authorship of the review has changed

HISTORY

Protocol first published: Issue 4, 2000

Review first published: Issue 3, 2003

Date	Event	Description
18 August 2008	Amended	Converted to new review format.
14 April 2005	New search has been performed	The search for trials was extended from March 2003 to March 2005. Four trials (Eich 2004; Jaffe 2004; Macko 2005; Werner 2002a) and one outcome measure (walking endurance) have been added to our original review. We have been able to obtain individual patient data for another trial (Visintin 1998).

CONTRIBUTIONS OF AUTHORS

On 28 March 2013 we were contacted by the Cochrane Stroke Group and our author team (BE, MP, JM) took over this review and updated it from 2005. We contacted the former review team from 2005 and received all requested data. We used the data collection provided by the former review team and, based on this information, we updated the review by including all eligible studies from 2005 onwards.

For this 2013 update, BE and JM conducted the literature selection, data extraction and analyses, and were responsible for the major content of the review. BE, JM and MP interpreted the data from the individual trials and the statistically pooled results, and contributed to the manuscript. All authors edited the manuscript.

DECLARATIONS OF INTEREST

Marcus Pohl and Jan Mehrholz were authors of one included trial (Pohl 2002). They did not participate in quality assessment and data extraction for this study.

No other potential conflicts of interest are known.

SOURCES OF SUPPORT

Internal sources

- Rehabilitation Studies Unit, Northern Clinical School, Faculty of Medicine, The University of Sydney, Australia.
- School of Physiotherapy, The University of Sydney, Australia.
- Department of Public Health, Medizinische Fakultät 'Carl Gustav Carus', TU Dresden, Germany.
- Wissenschaftliches Institut, Private Europäische Medizinische Akademie der Klinik Bavaria in Kreischa GmbH, An der Wolfsschlucht 1-201731 Kreischa, Germany.

External sources

- No sources of support supplied

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

In the protocol it was stated that we would use the PEDro Scale to assess the methodological quality of the included trials. However, in Chapter 8 of the latest edition of the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011), it is suggested that scales that yield a summary score should be avoided. In accordance with this suggestion, we no longer used the PEDro Scale to assess the methodological quality of the included trials. Instead, we used the Cochrane 'Risk of bias' tool to analyse trial methodology as suggested by the *Cochrane Handbook* (Higgins 2011).

In the protocol it was planned to test the homogeneity between trial results using the Chi^2 test and, if there was statistically significant heterogeneity ($P < 0.10$), to calculate the overall effects using a random-effects model and perform a series of sensitivity analyses to investigate. In this update, we estimated all effects using a random-effects model, regardless of the level of heterogeneity.

In the protocol it was planned to calculate relative risks and 95% confidence intervals for dichotomous variables. In this update, we used risk differences for dichotomous variables because many studies reported no events and it was therefore not possible to calculate relative risks.

In the protocol it was planned to include patient quality of life, ability to perform activities of daily living, and the combined outcomes of death or dependency and death or institutional care. However, we did not find enough studies to perform such analyses.

INDEX TERMS

Medical Subject Headings (MeSH)

*Stroke Rehabilitation; Body Weight; Exercise Therapy [instrumentation; *methods]; Orthotic Devices; Randomized Controlled Trials as Topic; Walking; Weight-Bearing

MeSH check words

Humans