Supplement_B_PICO_1

Clinical Question 1: What strategies are efficacious in managing non-adherence?

All interventions aiming to improve adherent behaviour (in regards to regarding medication/exercise adherence, adherence to diet/visits) in comparison to SoC or other interventions were included.

Summary

The screening by title and abstract yielded 38 studies to appraise in full-text, of which 4[1-4] reviews on interventions to improve adherence to medications, 8[5-12] reviews on adherence to exercise and 1[13] on adherence to follow-up visits were finally included. We did not find any review regarding non-adherence to diet. In total, these reviews, included 17 original studies regarding medication non-adherence[14-30], 34 on exercise/physical activity non-adherence[17, 31-63], and 3 on non-adherence to follow up visits[64-66]. The details and descriptions interventions are displayed in Table 1 to 16.

Abbreviations

CBP, chronic back pain
CBT, cognitive-behavioural therapy
CG, control group
CQR, Compliance Questionnaire in Rheumatology
Diag., diagnosis
Edu, education
IG, intervention group
JIA, juvenile idiopathic arthritis
IBD, inflammatory bowel disease
MMAS, Morisky Green Adherence Screening
OA, osteoarthritis
Observ., observational
OP, osteoporosis
PSP, Patient support program
QoL, quality of life
RA, rheumatoid arthritis
RCT, randomised controlled trial
RoB, risk of bias
SoC, standard of care
SLE, systemic lupus erythematosus

Adherence to medications

A broad variety of assessments was used in the studies, such as the Morisky Medication Adherence Score[1], Compliance Questionnaire on Rheumatology[1], customized questionnaires[2] [3], concentration of medication or metabolites[1], refill data from pharmacies or pill count, medical records[1, 4].

As the interventions were very different in content, the qualitative analysis was performed by classifying the interventions into four categories: educational, behavioural, cognitive behavioural, and multicomponent intervention[1, 67]. Interventions that did not fit into these categories were labelled as "other interventions". Following Greenley, Kunz [67], (1) educational interventions aim to enhance patient knowledge (disease and symptoms, benefits and mechanisms interventions, consequences of non-adherence and side effects of interventions); (2) behavioural interventions aim to enhance the act of being adherent to different interventions, by providing incentives for medication taking/performing exercises; (3) CBTs enhance adherence by altering thinking patterns that contribute to non-adherence while also establishing behavioural patterns that support adherence using behavioural strategies; (4) multicomponent interventions use multiple strategies to enhance adherence including educational, behavioural, cognitive behavioural, motivational and/or support provision strategies.

Educational interventions were found in 7 studies. The detailed summary is shown in Table 2. Four of these interventions reached significant differences (telephone-based, patient-tailored pharmacy advisory service[14], information about drugs,

disease, and disease progression[15], rheumatologist-delivered, agreed treatment and ongoing assessment[19], and individualised counselling sessions from a clinical pharmacist[20]. Brus, van de Laar [17] (using therapy, energy conservation, joint protection) and Conn, Pan [18] (instructor-led, group-based Arthritis Self-Management Program) did not reach significance. Homer, Nightingale [16], found no differences in the way the education was provided for the patients. In a comparison of group and individual settings, none of the settings were found to be better.

Three of the studies used **behavioural interventions**. The detailed summary is shown in Table 3. Only the visualization of disease progression resulted in a significant difference regarding non-adherent behaviour, compared to the control group (SoC)[21]. Text Messaging Reminders did not increase the use of hydroxychloroquine but to follow up visits[23]. In the study from van den Bemt, den Broeder [22] the adherence pattern were reported to the treating physician, but the knowledge of the physician regarding the adherence patterns of their patients did not result in an significant increase.

Only one study used **CBT** to increase adherence levels (Table 4). An approach that addresses dysfunctional emotions, behaviours, and thought processes through goal-oriented psychotherapy proved to be effective at 12 months[24].

Three studies used **multicomponent interventions** (Table 5). In all three studies a significant difference was measured. Balato, Megna [25] and El Miedany, El Gaafary [26] used a combination of educational and behavioural interventions (educational about disease, and daily life, in combination with daily text messages, reminders[25], respectively evaluation and review of patient reported outcomes measures as well as education on skills for self-care and decision making, and joint fitness program[26]) interventions. In the study of McEvoy Devellis, Blalock [27] an educational affective (psychosocial interview and problem-solving intervention) was used.

Three studies used **other interventions** (Table 6). Lai, Chua [28] used pharmaceutical counselling sessions, which included medication review, education/information on osteoporosis, risk factors, lifestyle modifications, goals of therapy, side effects and the importance of medication adherence, which resulted in an significant increase in adherent behaviour. However, Solomon, Iversen [29] did not reach a significant difference compared to the control group (using telephone-based counselling) and the results of Stockl, Shin [30] were inconclusive regarding adherence-outcomes (using mailed [or emailed] reminders and information, as well as phone support).

Adherence to prescribed exercise

Number of sessions attended/exercises done (self-reported, therapist-reported) [5, 8, 9, 11, 12], Self-reported physical activity scales, e.g. Physical Activity Scale for the Elderly (PASE) [10, 11], Adherence Stanford Scale [7], and customized questionnaires, such as 5-point Likert scales or 7-day physical activity recall[6] were used to assess adherence rates reported in the reviews (Table 7).

Similar to the section on adherence to medications, we classified the different interventions. We used 6 different categories to classify the interventions: (1) educational interventions; (2) behavioural interventions[67]; (3) exercise class based interventions enhance adherence by altering thinking patterns that contribute to non-adherence while also establishing behavioural patterns that support adherence using behavioural strategies; (4) motivational based intervention; (5) multicomponent interventions[67] and (6) other interventions.

Educational interventions (Table 8) were found in 9 studies and had as content general information on the disease, treatment, interventions and/or exercises, adherence and possible problems with non-adherent behaviour, and benefit of exercises/physical activity. Education was delivered in very different ways, web-based[31], mail-based[33], pamphlet/brochure/booklet based[34, 38], face-to-face[36], and based on audio/video tapes[37]. Five of these interventions reached significance[17, 31, 33, 35, 36] compared to the control group, the other four did not.

Behavioural interventions (Table 9) to increase adherence to exercises/physical activity was examined in 10 articles, 4 studies [39, 42, 44, 46, 47] (5 articles, in one study the follow up was reported in an extra article[46, 47]) of them had a significant increase in adherence-outcomes. The main content of the behavioural interventions were counselling [39-44], goal setting[40, 42-44, 51, 52], persuasive argument[43, 46, 47, 51, 52], coping/action planning[43-45], (self-)monitoring[43, 44, 46, 47, 51, 52], social support[42, 44, 46, 47, 51, 52].

Exercise class based interventions (Table 10) or supervised-exercises to increase adherence were used in 3 studies[48-50] of which 2 had a significant increase in adherence to treatment[48, 50].

Motivational interventions (Table 11) were found in 2 studies, both had a significant increase in adherence to treatment[53, 54]. Hughes, Seymour [53] compared negotiated vs. mainstreamed follow-up with telephone reinforcement and Vong, Cheing [54] motivational enhancement therapy in combination with exercises/home exercise compared to exercises/home exercise only.

Four studies used **multicomponent interventions** (Table 12) (multiple strategies) to enhance adherence including education, counselling, and positive reinforcement[55]; daily exercise diaries, booklet exercise instructions (including photographs), and behaviour change strategies[56]; group education, self-management, and global upper extremity exercise training sessions[57]; and daily exercise diaries, booklet exercise instructions (including photographs), and review appointment[58]. The study from Friedrich, Gittler [55] showed significant results regarding adherence, the other studies[56-58] reported high adherence rates, but data are not presented in the studies.

Other Interventions to Increase Adherence to Exercises/Physical Activity are presented in Table 13. These were booster sessions (review of exercises, discussion/plans to increase adherence) in combination with exercises/home exercises[59], cost free programs compared to fee-based programs[60], computer-assisted video instruction compared to conventional education[61], pedometer-based intervention (goal of increasing their step count by 30%)[62], and demonstration and coaching of performing exercises compared to verbal explanations of home exercises[63]. Three of these interventions[60, 62, 63] reached a significant differences compared to the control-intervention.

Adherence to diet and clinical visits

We did not find any review regarding diets, and one review regarding (non-)adherence to visits[13] (Table 14). Taneja, Su'a [13] reviewed studies regarding "patient-initiated follow up". Three of these studies were on rheumatoid arthritis[64-66] (Table 15). The patients did not have routine hospital visits but rapid access for an appointment on request. Patients reported to have less pain, less resources per patient were required, and patients were more confident in their system of care. No clinical differences were found in the long-term, but greater self-efficacy and satisfaction with care.

Summary

Overall, of the results, 29 indicate positive impact of interventions on adherence, 18 had no impact and 6 of the studies did not present the results clearly (Table 16).

Table 1. Reviews used for PICO 1: Adherence to pharmacological interventions

No	Review; year	Studies	Diseases	Interventions	Assessments
1	Depont, Berenbaum [1]; 2015	14 RCT, 1 observ. study	6 IBD, 7 RA, 1 psoriasis, 1 MS	Educational, behavioural, cognitive behavioural, multicomponent	MMAS, CQR, concentration of medication/metabolites, refill data, pill count
2	Galo, Mehat [2]; 2015	23 RCT to classify interventions, 13 RCT to measure impact on intervention to increase adherence	16 RA, 3 SLE, 1 gout, 2 JIA, 1 unspecified arthritis	Educational, behavioural, affective	Validated measures of adherence
3	Ganguli, Clewell [3], 2016	64 Studies, OP (2x RCT, prospective cohort), RA (1x Quasi-experimental, 1x retrospective cohort study)	Diverse conditions (2 OP, 1 RA) with adherence outcome	PSPs	Validated measures of adherence (mixed)
4	Nieuwlaat, Wilczynski [4], 2014	182 RCTs	Diverse conditions, 3 RA	Patient education, feedback	Pill count, medical records

Table 2. Studies on Educational Interventions (single) to Increase Adherence to Pharmacological Interventions

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
1	Clifford, Barber [14], 2006; RCT	500	RA	Educational (telephone-based, patient-tailored pharmacy advisory service)/ vs. SoC	Adherence to treatment increased (4 weeks)	High quality
2	Hill, Bird [15], 2001; RCT	100	RA	Educational (information about drugs, disease, progression) vs. SoC	Adherence to treatment increased (pharmacological marker, after 6 months)	High quality
3	Homer, Nightingale [16], 2009; Pilot RCT	62	RA	Educational individual vs. group counselling	No difference compared to the control group (Pill count after 12 months, p 0.06)	Low quality
4	Brus, van de Laar [17], 1998; RCT	55	RA	Educational (therapy, energy conservation, joint protection) Experimental group (6 education meeting) vs control group (Brochure on RA)	No difference compared to the control group (after 3, 6, and 12 months)	Low quality
5	Conn, Pan [18], 2013; RCT	104	RA	Educational (instructor-led, group-based Arthritis Self-Management Program -ASMP) vs. SoC	No difference compared to the control group (6, 12, 18 months)	High quality
6	Ravindran and Jadhav [19], 2013; RCT	122	RA	Educational (rheumatologist-delivered, agreed treatment, ongoing assessment) vs. SoC	Adherence to treatment increased (4 weeks)	Low quality
7	Ganachari and Almas [20], 2012; RCT	45	SLE	Educational (3 individualised counselling sessions from a clinical pharmacist) vs. routine counselling	Adherence to treatment increased (2 months)	Low quality

Table 3. Studies on Behavioural Interventions (single) to Increase Adherence to Pharmacological Interventions

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
1	El Miedany, El Gaafary [21], 2012; Pilot RCT	111	RA	Behavioural (visualization of disease progression) vs. SoC	Adherence to treatment increased (12 months)	No serious limitations
2	van den Bemt, den Broeder [22], 2011; RCT	50	RA	Behavioural (report on patient adherence hand to physician) vs. SoC	No difference compared to the control group (median time between the assessments was 102 days)	Lack of Power
3	Ting, Kudalkar [23], 2012; RCT	70	SLE	Behavioural (Cellular Text Messaging Reminders (CTMR) on adherence to clinic visits; the influence of CTMR on adherence to use of hydroxychloroquine) vs. SoC	No difference compared to the control group at 14 months (adherence to visits increased significantly)	Low quality

Table 4. Studies on Cognitive Behavioural Interventions (single) to Increase Adherence to Pharmacological Interventions

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
1	Evers, Kraaimaat [24], 2002; RCT	59	RA	Cognitive behavioural (approach that addresses dysfunctional emotions, behaviours, and thought processes through goal-oriented psychotherapy) vs. SoC	Adherence to treatment increased (12 months)	No serious limitations

Table 5. Studies on Multicomponent Interventions to Increase Adherence to Pharmacological Interventions

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
1	Balato, Megna [25], 2013; RCT	40	Psoriasis	Multicomponent (educational [disease, daily life] +behavioural [daily text messages, providing reminders]) vs. SoC	Adherence to treatment increased (3 months)	No serious limitations
2	El Miedany, El Gaafary [26], 2012b; RCT	147	RA	Educational behavioural affective (evaluation and review of patient reported outcomes measures + education on skills for self-care and decision making, and joint fitness program) vs. SoC	Adherence to treatment increased (18 months)	No serious limitations
3	McEvoy Devellis, Blalock [27], 1988; RCT	101	RA	Educational affective (psychosocial interview + problem-solving intervention) vs. psychosocial interview alone	Adherence to treatment increased (4 months)	Low quality

Table 6. Studies on Other Interventions to Increase Adherence to Pharmacological Interventions

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
1	Lai, Chua [28], 2013; RCT	198	Osteoporosis	Medication review, information on osteoporosis, risk factors, lifestyle modifications, goals of therapy, side effects and the importance of medication adherence; vs SoC	Adherence was reported as "better", numbers are not reported (3, 6, 12 months); knowledge, QOL and satisfaction improved	Not reported
2	Solomon, Iversen [29], 2012; RCT	2087	Osteoporosis	Telephone-based counseling; vs SoC	No difference compared to the control group (60 days intervals – 360 days) (P = 0.074)	Not reported
3	Stockl, Shin [30], 2010; Retrospective cohort study	732	RA	Mailed or emailed reminders and information, phone support; vs non-participating cohort	Mixed outcomes (6 months)	Not reported

Table 7. Reviews used for PICO 1: (Non-)Adherence to exercise/physical activity

No	Review; year	Studies	Diseases	Interventions	Assessments
1	Baillet, Zeboulon [5], 2010	14 RCTs	RA	Compared different types of exercises (no specific interventions on adherence): Dynamic exercise program criteria (n=5). Control: range of motion exercises (n=3) non-aerobic exercises (n=1) education programs (n=2) usual care (n=8)	Number of completers
2	Ezzat, MacPherson [6], 2015	19 RCTs	RA, OA	Knowledge-, motivational-, pedometer-based, and behavioural interventions	Custom made questionnaires, self reports
3	Gay, Chabaud [7], 2016	13 RCTs and 8 recommendations	Hip and knee OA, 1 outcome adherence	Treatment-based education for physical activity and exercise programs	Adherence Stanford scale
4	Hammond and Prior [8], 2016	3 RCT	RA	Behaviour strategies	Self reports

No	Review; year	Studies	Diseases	Interventions	Assessments
5	Jansons, Haines [9], 2017	11 RCT/ observational studies	Diverse conditions, 1 OA	Centre based programs; home exercise programs with telephone follow-up; home exercise programs with no follow-up; weaning programs that transitioned patients to an independent, off-site exercise program	Records at the gymnasium, log books, self reports
6	Larkin, Gallagher [10], 2015	5 RCT	RA	Behaviour change interventions	Questionnaire to assess amount of physical activity
7	Mazieres, Thevenon [11], 2008	12 RCT, 4 reviews/ recommendations	Hip and knee OA	Education, supervision, phone calls, monitoring	Mean number of sessions/ exercises, adherence rates, diary, estimates
8	Nicolson, Bennell [12], 2017	9 RCT	Older adults with chronic low back pain and/or hip/knee osteoarthritis	Counselling, motivation program, education, positive reinforcement, booster sessions, goal setting, action + coping plan, tailored behavioural graded exercises, audiotape/videotape with cues	Self reported logbook, self-reports, therapist- reported (class attendance)

Table 8. Educational/ Knowledge-Based Interventions to Increase Adherence to Exercises/Physical Activity

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
1	Bossen, Veenhof [31], 2013; RCT	199	Hip/ knee OA	Knowledge-based intervention (nine-week web-based, behavioural graded activity programme intervention) vs waiting list	Adherence to treatment increased (levels of subjective physical activity, 12 months)	High quality
2	Brus, van de Laar [17], 1998; RCT	65	RA	Knowledge-based intervention + patient education (information on RA, attendant problems, basic treatment, beliefs were discussed) vs brochure about RA and its treatment	Adherence to treatment increased (at 3 months)	Low quality
3	Farr, Going [32], 2010; RCT	293	OA	Knowledge-based intervention (Self-management intervention: overview of OA, general exercise principles and PA recommendations, stress management, foot care, pain management, analgesic) vs SoC	No difference compared to the control group (9 months)	Low quality
4	Fries, Carey [33], 1997; RCT	1099	mixed arthritis	knowledge-based intervention (mail-delivered arthritis self-management program) vs SoC	Adherence to treatment increased (at 6 and 12 months)	Low quality
5	Halbert, Crotty [34], 2001; RCT	69	OA	Knowledge-based intervention (3x tailored PA advice f2f) vs nutrition pamphlet + advice f2f	No difference compared to the control group (self reported walking frequency, after 3, 6, 12 months)	High quality
6	Mayoux-Benhamou, Giraudet-Le Quintrec [35], 2008; RCT	208	RA	Knowledge-based intervention + patient education (multidisciplinary education program, including training in home-based exercises and guidelines for leisure physical activity) vs. SoC + booklet	Adherence to treatment increased (6 months), not significant at 12 months	Low quality
7	Ravaud, Flipo [36], 2009; RCT	336	OA	Knowledge-based intervention (3 visits: OA edu., treatment management, information on PA and weight loss) vs. SoC	Adherence to treatment increased (time spent, physical exercises in	High quality

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
					leisure subscale of Baecke Index at 4 and 12 months)	
8	Schoo, Morris [37], 2005; RCT	115	Hip/knee OA	Knowledge-based intervention: verbal instructions on a home exercise program in addition to: (i) a home exercise brochure; (ii) a brochure together with an audiotape; or (iii) a brochure together with a videotape.	No difference compared to the control group (adherence good for all groups at 4 and 8 weeks)	Low quality
9	Williams, Amoakwa [38], 2011; RCT	119	Hip/ knee OA	Knowledge-based intervention (advice booklet outlining benefits of PA) vs standard information booklet	No difference compared to the control group (small benefit, but 95% CI crossed zero, after 1 and 3 months)	High quality

Table 9. Behavioural Interventions to Increase Adherence to Exercises/Physical Activity

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
1	Basler, Bertalanffy [39], 2007; RCT	170	Chronic low back pain	CG: exercise sessions + home exercises; IG: CG + counselling at each session	Significance not reported in detail	High RoB
2	Brosseau et al. [40], 2012; RCT	222	OA	Behavioural interventions (supervised walking + behaviour [goal setting, education, monthly f2f counselling) vs. walking SV vs. self-directed control	No difference compared to the control group (number of attendances at 3, 6, 12, 18 months)	High quality
3	Frost [41], 2004; Pilot RCT	26	Hip OA (TEP)	Behavioural interventions (counselling intervention on exercise adherence)	No difference compared to the control group (PhD Thesis, work not found)	High quality
4	Huffman, Sloane [42], 2010; RCT	178	mixed arthritis	Physical activity counselling programme [PA benefits were identified, short term PA goals were established, barriers to PA were discussed, and a source of social support for PA] vs. usual care	Adherence to treatment increased (after 3, 6, 12 months)	Low quality
5	John, Hale [43], 2013; RCT	110	RA	Behaviour change interventions (Persuasive argument, coping planning, graded goal setting, self- monitoring, review of behaviour goals) vs information and/or education	No difference compared to the control group (at 2 and 6 months)	High risk of bias for one or more domains
6	Knittle, De Gucht [44], 2013; RCT	78	RA	Behaviour change interventions (Graded tasks, social support (general), pros and cons identification, goal setting, self-monitoring, problem solving/coping planning, self-reward, focus on past success, action planning, review of behaviour goals, anticipation of future rewards, prompts/ cues) vs information and/or education	Increase in physical activity behaviour post-treatment and at 6 months, which was statistically significant in comparison with the control arm.	High risk of bias for one or more domains
7	Mayoux-Benhamou, Giraudet-Le Quintrec [35], 2008; RCT	208	RA	Behaviour change interventions (Persuasive argument, pros and cons identification, instruction on how to perform a behaviour, behavioural rehearsal/ practice) vs. SoC + booklet	Short-term significant increase in physical activity behaviour (6 months) compared to the control arm, but this	Low or unclear risk of bias for all domains

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
					increase was not maintained at 12-month follow-up	
8	O'Brien, Bassett [45], 2013; RCT	27	OA	Behavioural interventions (exercise, plus action and coping plan) vs. only exercise	No difference compared to the control group (after 8 weeks)	Unclear RoB
9	Van den Berg, Ronday [46], 2006; RCT Hurkmans, Van den Berg [47], 2010; RCT	160/110	RA	Behaviour change interventions (Instruction on how to perform a behaviour self-monitoring, persuasive argument, monitoring strategies, social support (practical), social comparison) [tailored vs. general]	Significant increase in moderate and vigorous physical activity behaviour at 6, 9, 12 but not at 24 months when compared to the control arm.	High risk of bias for one or more domains
10	Brodin, Eurenius [51], 2008; RCT Sjöquist, Brodin [52], 2011; RCT	228	RA	Behaviour change/ Motivational interventions (Pros and cons identification, goal setting, review of behaviour goals, problem solving, persuasive argument, self-monitoring of behaviour, social support) vs information and/or education	No difference compared to the control group (amount of PA after 3, 6, 9, 12, 24 months)	High risk of bias for one or more domains

Table 10. Exercise Class Based Interventions to Increase Adherence to Exercises/Physical Activity

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
1	Hughes, Seymour [48], 2006; RCT	215	Hip/knee OA	Exercise class-based (Exercises, Education–Behaviour Change, Reinforcement) vs. The Arthritis Help Book and a list of exercise programs in the community	Adherence to treatment increased (2, 6, 12 months)	Low quality
2	McCarthy, Mills [49], 2004; RCT	214	OA	Home exercise programme + class-based exercise vs. home exercise alone	No difference compared to the control group (12 months)	Not reported in the review
3	Pisters, Veenhof [50], 2010; RCT	200	Hip/knee OA	Exercise class-based (educational messages + performance charts + activity diaries) vs SoC	Adherence to treatment increased (self-rated five-point scale at 13, 65 weeks)	Unclear RoB

Table 11. Motivational Based Interventions to Increase Adherence to Exercises/Physical Activity

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
1	Hughes, Seymour [53], 2010; RCT	419	Hip/knee OA	To compare the impact of negotiated vs. mainstreamed follow-up with telephone reinforcement (TR)	Adherence to treatment increased (on maintenance of physical activity (PA) at 2, 6, 12, and 18)	not stated
2	Vong, Cheing [54], 2011; RCT	76	CBP	CG: exercise sessions + tailored home exercises; IG: CG + Motivational Enhancement Therapy	Adherence to treatment increased (No of sessions (4 weeks))	Unclear RoB

Table 12. Multicomponent Interventions to Increase Adherence to Exercises/Physical Activity

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
1	Friedrich, Gittler [55], 1998; RCT	93	Chronic low back pain	CG: exercise sessions + tailored home exercises; IG: CG + education, counselling, pos. reinforcement	Adherence to treatment increased (attendance (4 months), amount of days trained (12 months))	High RoB
2	Lamb, Williamson [56], 2015; RCT	490	RA	Multicomponent intervention (daily exercise diaries, booklet exercise instructions + photographs + behaviour change strategies) vs. SoC	Data on adherence not clearly reported	High quality
3	Manning, Hurley [57], 2014; RCT	108	RA	Multicomponent intervention (group education, self-management, and global upper extremity exercise training sessions) vs. SoC	Data on adherence not clearly reported	High quality
4	O'Brien, Jones [58], 2006; RCT	67	RA	Daily exercise diaries, booklet exercise instructions + photographs + review appointment vs. joint protection only	Data on adherence not clearly reported	High quality

Table 13. Other Interventions to Increase Adherence to Exercises/Physical Activity

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
1	Bennell, Kyriakides [59], 2014; RCT	78	Hip and/or knee OA	CG: exercise sessions + tailored home exercises; IG: CG + booster sessions (review of exercises, discussion/plans to increase adherence	No difference compared to the control group (24 weeks)	Unclear RoB
2	Cochrane, Davey [60], 2007; RCT	104	OA	Cost free program versus fee-based programs	Cost free program had a 53% adherence rate versus only 19% when patients had to pay.	Not assessed in the review
3	Lysack, Dama [61], 2005; RCT	40	OA	Computer-assisted video instruction vs conventional inpatient education	No difference compared to the control group (4 weeks)	Not reported in the review
4	Talbot, Gaines [62], 2003; RCT	34	Knee OA	Pedometer-based intervention (Walk + individualized instruction and the goal of increasing their step count by 30%) vs. education group only (CG)	Adherence to treatment increased (12, 24 weeks)	Low quality
5	Tüzün, Cifcili [63], 2012; RCT	64	Hip and/or knee OA	CG: individual sessions with a PT + verbal explanation of home exercises; IG: CG, + demonstration and coaching of performing exercises	NS after 4 weeks (self report), sig. after 12 weeks	Unclear RoB

Table 14. Reviews used for PICO 1: Adherence to visits

No	Review; year	Studies	Diseases	Interventions	Assessments
1	Taneja, Su'a [13], 2014	6 RCTs	3 RA 1 breast cancer 2 IBD	Patient-initiated follow up (PIFU): An initiative that allows patients to initiate hospital follow-up appointments on an 'as required' basis compared with the traditional 'physician-initiated' model.	Pain, costs, satisfaction, self-efficacy

Table 15. Studies on Patient-Initiated Follow Up (single) to increase Adherence to Visits

No	Study/Design	N	Diag.	Intervention/Control	Results	RoB
1	Hewlett, Mitchell [64], 2000; RCT Kirwan, Mitchell [65], 2003; RCT Hewlett, Kirwan [66], 2005; RCT	209	RA, extension of the same randomized cohort	IG: no routine hospital review but rapid access on request; CG: patients received routine, rheumatologist-initiated planned follow-up appointments	Had significantly less pain at 24 months with 3.9 cm on a 10 cm VAS compared with 4.8 cm for the CG (P < 0.05); Less resources per patient were required (£ 208 vs £ 313 for controls, P < 0.001); Patients were more confident in their system of care at 6, 9, 12, 18, 21 and 24 months of follow up (P < 0.01 to P < 0.001) No clinical differences in the long-term, but greater self-efficacy and satisfaction with care	Not reported for individual studies

Table 16. Summary.

The numbers indicate the count of the studies. Numbers followed with a "+" indicate significant increase in adherent behaviour, "-" means no increase in adherent behaviour, and "~" means unclear results.

	Diag.	Educational	Behavioural	CBT	Motivational	Exercise class	Multicomponent	Other
Medication	RA	3+/3-	1+/1-	1+			2+	1~
	SLE	1+	1-					
	Psoriasis						1+	
	OP							1~/1-
	Total	4+/3-	1+/2-	1+			3+	2~/1-
Exercise	OA	2+/4-	3-		1+	2+/1-		3+/2-
	RA	2+	3+/2-				3~	
	Mixed	1+	1+					
	CBP		1~		1+		1+	
	Total	5+/4-	4+/1~/5-		2+	2+/1-	1+/3~	3+/2-
Visits	RA							3+
	SLE							
	Total							3+

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Tables: