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Biopsychosocial rehabilitation for inflammatory arthritis and osteoarthritis

Protocol for a systematic review and meta-analysis of randomised trials

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Biopsychosocial rehabilitation for inflammatory arthritis and osteoarthritis: Protocol for a systematic review and meta-analysis of randomised trials

Collaborators/authors

Morten L. Pedersen (DK), Peter Thinggaard (DK), Rinie Geenen (NL), Marianne U. Rasmussen (DK), Maarten De Wit (NL), Lyn March (AUS), Philip Mease (US), Ernest Choy (UK), Phillip Conaghan (UK), Lee Simon (US), Anne Faber Hansen (DK), Simon Tarp (DK), Carsten B. Juhl (DK), Sabrina M. Nielsen (DK), Kirstine Amris (DK), Robin Christensen (DK)

Affiliations

MLP: Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark & Musculoskeletal statistics Unit: The Parker Institute, Bispebjerg and Frederiksberg Hospital, Denmark.

PT: Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark

RG: Department of Psychology, Utrecht University, Utrecht, The Netherlands

MUR: The Parker Institute, Bispebjerg and Frederiksberg Hospital, Denmark

MDW: Department of Medical Humanities, Amsterdam University Medical Centre, Netherlands

LM: Institute of Bone and Joint Research, University of Sydney, Royal North Shore Hospital, St Leonards, New South Wales, Australia

PM: Swedish Medical Center/Providence St Joseph Health and University of Washington, Seattle, USA

EC: CREATE Centre, Section of Rheumatology, Division of Infection and Immunity, Cardiff University School of Medicine, Cardiff, UK

PC: Leeds Institute of Rheumatic and Musculoskeletal Medicine, University of Leeds, UK and NIHR Leeds Musculoskeletal Biomedical Research Center, Chapel Allerton Hospital, Leeds, UK

LS: SDG LLC, Cambridge, MA, USA

AFH: Research and Analysis Department: University Library of Southern Denmark

ST: Musculoskeletal Statistics Unit: The Parker Institute, Bispebjerg and Frederiksberg Hospital, Denmark

CBJ: Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark & Department of Physiotherapy and Occupational Therapy, Herlev and Gentofte Hospital, Denmark

SMN: Musculoskeletal Statistics Unit: The Parker Institute, Bispebjerg and Frederiksberg Hospital, Denmark & Department of Rheumatology, Odense University Hospital, Denmark.

KA: The Parker Institute, Bispebjerg and Frederiksberg Hospital, Denmark

RC: Musculoskeletal Statistics Unit: The Parker Institute, Bispebjerg and Frederiksberg Hospital, Denmark & Department of Rheumatology, Odense University Hospital, Denmark. robin.christensen@regionh.dk

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Corresponding author:

Dr. Robin Christensen, MSc, PhD

Professor of Biostatistics and Clinical Epidemiology & Head of Musculoskeletal Statistics Unit, The Parker Institute, Bispebjerg and Frederiksberg Hospital

Nordre Fasanvej 57 DK-2000 Copenhagen Frederiksberg
Denmark

Phone: +45 3816 4165

Fax: +45 3816 4159

E-mail: robin.christensen@regionh.dk

SUMMARY

Introduction

Inflammatory arthritis (IA) and osteoarthritis (OA) have a detrimental effect on function and quality of life, primarily due to pain and physical limitations, resulting in a large global socioeconomic burden. International guidelines and the European League Against Rheumatism (EULAR) recommend the use of biopsychosocial approaches for non-pharmacological rehabilitation. The ability to weigh benefits and harms will support decisions for treatment in clinical practice.

Objective

To assess the benefits and harms of biopsychosocial rehabilitation for patients with IA or OA.

Methods and analysis

Eligible studies will be located through a systematic search of MEDLINE (via Pubmed), EMBASE (via Ovid), CENTRAL (via Cochrane Library), PsycINFO (via Ovid) and CINAHL (via Ebsco), ClinicalTrials.gov, Web of Science, the abstract archives of American College of Rheumatology (ACR) and European League Against Rheumatism (EULAR). Hand searching of trials and relevant reviews will be performed. Randomised and quasi-randomised controlled trials examining the benefits and/or harms of biopsychosocial rehabilitation compared to any other control therapy for IA or OA will be included. Trials will be restricted to English, German and Scandinavian languages. No restrictions will be imposed regarding age, gender, trial duration, setting, publication date or publication status. Risk of bias will be assessed using the Cochrane Risk of Bias tool. There is currently no consensus on a generic core outcome measurement set that would apply across all rheumatic and musculoskeletal diseases and for all types of biopsychosocial rehabilitation. However, pain, physical function and mental well-being remains constructs of major importance to all (rheumatology) stakeholders. Meta-analyses of outcome measures will be performed using a restricted maximum likelihood (REML) based model (i.e. random-effects). Subgroup analyses will be conducted by stratifying for type of musculoskeletal condition, treatment modality/component, approach in care (i.e. multidisciplinary rehabilitation, interdisciplinary rehabilitation or others), supervision of intervention (e.g. group or individual), extent of intervention (measured in hours per week), length of intervention, trial duration and comparator/control group. GRADE (Grading of Recommendations Assessment, Development and Evaluation) will be used to rate the overall certainty of the evidence for risk of bias, publication bias, imprecision, inconsistency, indirectness, and magnitude of effect. This results in ratings of high-, moderate-, low-, or very low-, quality of evidence reflecting the extent to which we are confident that the effect estimates are correct.

Perspectives and dissemination

We anticipate that the findings of this study will be useful in clinical recommendations for the management of IA and OA. The results will be disseminated as at least one scientific article in at least one peer-reviewed research journal. Also, we expect that our systematic review will facilitate evidence-based research; i.e. identifying key areas for future trial research and provide a framework for conducting the trials urgently needed.

PROSPERO Registration number: CRD42019127670

INTRODUCTION

Background

Inflammatory arthritis (IA) (including rheumatoid arthritis (RA), spondyloarthritis (SpA) and psoriatic arthritis (PsA)) and osteoarthritis (OA) have a detrimental effect on function and quality of life, primarily due to pain, resulting in a large global socioeconomic burden (1-6). Rehabilitation is thus considered essential for this patient group, in order to reduce pain and achieve optimal social integration (7). Both local (joint-specific) and generalised (widespread) pain can be observed in these types of patients, caused by a direct influence of inflammation on various joints, and centrally modulated by biological, psychological and social factors. Because of the permanence of the patient's illness and the many contributing factors of modulation, the pain is often considered chronic. According to a recent European League Against Rheumatism (EULAR) Task Force on the health professional's approach to pain management in IA and OA, the importance for the health professional to adopt a patient-centred perspective within a biopsychosocial framework was emphasized (7). Furthermore, several international guidelines and recommendations have the management of these conditions as focus, recommending the use of biopsychosocial interventions, or parts thereof, for non-pharmacological rehabilitation (7-12). These modalities involve a physical component (EULAR recommendation 4) and a psychological, social or work targeted component (EULAR recommendation 6), such as exercise programs, self-management course or patient education. In combination, these modalities result in a multidisciplinary treatment (EULAR recommendation 10). The intervention is preferably delivered by a team of clinicians with different professional backgrounds (e.g. rheumatologists, occupational therapists or physiotherapists).

Rationale and evidence-based research

In an attempt to reduce research waste and further justify this study, a systematic review of existing evidence was carried out (search date: 17 October 2018), in accordance to the Evidence-Based Research principles (13).

To uncover all existing systematic reviews regarding biopsychosocial rehabilitations effect on patients with IA and/or OA, a pragmatic search was carried out in MEDLINE, EMBASE and Cochrane CENTRAL. The search strategy (**appendix 1**) was derived from previous thorough systematic reviews by Kamper et al (14) and Geenen et al (15), concerning biopsychosocial rehabilitation for low back pain and pain in IA and OA, respectively. The search, after removal of duplicates, resulted in 1214 articles of which 9 systematic reviews (16-24) were potentially relevant judged by the title/abstract. An overview of the guidelines and systematic reviews is presented in **appendix 2 and 3**.

Finney et al. (16) and Bearne et al. (17) directly investigated the use of multidisciplinary biopsychosocial rehabilitation in the treatment of IA or OA, the remaining systematic reviews either directly or indirectly analysed the biopsychosocial element exclusively due to the nature of their included interventions, with Riemsma et al. (20, 21) and Devos-Comby et al. (19) allowing the inclusion of trials with a physical aspect in combination with the psychosocial intervention. None of the systematic reviews investigated potential harms of their chosen intervention although harmful consequences might be part of the original trials.

Finney et al. limits their inclusion criteria to patients treated in primary care suffering from OA in two or more sites, resulting in only a narrative review being conducted, due to the small amount of studies included (16). Bearne et al. has a primary outcome of disability and no secondary outcome for pain (17), although pain is the predominant symptom for most patients suffering from IA or OA (1, 2, 5).

Geenen et al. (7) and National Institute for Health and Care Excellence (8) is the only guidelines directly recommending a multidisciplinary treatment, and is doing so on a small evidence base. Geenen et al. (7) describes their quality of evidence on this subject as low on GRADE. The other guidelines recommend the use of physical, psychological or social components individually, but not as a combined multimodal treatment.

To our knowledge, no systematic review has examined benefit and harms associated with biopsychosocial rehabilitation in the treatment of IA and OA. However, the modality is gaining widespread acceptance as seen in multiple international guidelines, despite there being no clear evidence base to confirm its credibility. Making our systematic review useful for practitioners and future guideline panels to enable them to make informed decisions whether to encourage biopsychosocial rehabilitation or not. Also, we expect that our systematic review will facilitate evidence-based research; i.e. identifying key areas for future trial research and provide a framework for conducting further trials.

Objectives

The objective of this systematic review and meta-analysis of randomised controlled trials (RCTs) will be to assess the benefits and harms associated with biopsychosocial rehabilitation in patients with IA and OA based on effect on pain, disability, health-related quality of life, and adverse events.

METHODS

Protocol and registration

The protocol was developed according to the guidance provided in the 'Preferred Reporting Items for Systematic Reviews and Meta-Analyses' protocols (PRISMA-P)(25), and subsequently the PRISMA statement (26) will be used as a guide for reporting of the final systematic review with meta-analysis. The systematic review protocol is registered with the International Prospective Register of Systematic Reviews (PROSPERO): CRD42019127670

Eligibility criteria

We will consider all RCTs and quasi-randomised controlled clinical trials that examine the benefits and/or harms of biopsychosocial rehabilitation compared to any other control therapy for IA and OA. Trials will be restricted to English, German and Scandinavian languages. No restrictions will be imposed regarding publication date or publication status. Animal trials will be excluded.

Adult participants of any age or sex, with IA and OA in the form of either OA, rheumatoid arthritis (RA), spondyloarthritis (SpA) or psoriatic arthritis (PsA) being their primary reason (i.e. diagnosis) for treatment will be considered potentially eligible.

Biopsychosocial rehabilitation must involve a physical component and one or both of a psychological component or a social/work targeted component to be eligible. Furthermore,

the different components must be delivered by clinicians or other health care providers with different professional backgrounds, but no specific professional background is required. The intervention can be of any intensity, approach (interdisciplinary or multidisciplinary), supervision (group-based or individual) and setting.

In order to assess and evaluate the likelihood of outcome reporting bias, studies will be included without regard to their reported outcome measures. However, only studies presenting suitable quantitative data will be included in the primary evidence synthesis. Completed trials which have yet to be published, will be included in the assessment of reporting bias.

Information sources

The search for relevant trials will be conducted in MEDLINE (via Pubmed), EMBASE (via Ovid), CENTRAL (via Cochrane Library), PsycINFO (via Ovid) and CINAHL (via Ebsco). Completed, withdrawn or terminated clinical trials will be identified through ClinicalTrials.gov (27). Citation searches of all relevant articles will be performed through Web of Science. American College of Rheumatology (ACR) and European League Against Rheumatism (EULAR) will be searched for conference abstracts, from 2014 till present. Furthermore, handsearching of references and relevant reviews (e.g. the reviews included in **appendix 3**) will be performed.

Search strategy

The search strategy was developed by MLP and PT with assistance from RC and CBJ. As advised by Cochrane Collaboration guidelines and the Updated Method Guidelines for Cochrane Musculoskeletal Group Systematic Reviews and Meta-analyses (27), the search strategies for all databases was generated through the use of PICOS, and peer reviewed by a research librarian not otherwise associated with the project (AFH). Keywords and Medical Subject Heading (MeSH) will aim to increase sensitivity of the search, rather than specificity.

Keywords for patient type (P in PICOS) is based on Geenen et al. (7) search strategy, with intervention keywords (I in PICOS) being based on Kamper et al. (14) search strategy. Both modified to increase sensitivity by adding more synonyms and keywords found relevant by the authors.

In order for the search to only identify RCTs, a highly sensitive study filter developed by the University Library of Southern Denmark will be applied (28). The filter is based on 11 filters identified by McKibbin et al. (29) and includes the *Cochrane Highly Sensitive Search Strategy for identifying randomised trials in MEDLINE: sensitivity-maximising version* (30). However, in order to reduce the risk of excluding relevant trials, the boolean operators "NOT" were removed from the filter. Date for the search will be stated. The search strategy for MEDLINE (via PubMed) is shown in **Box 1**. Search strategies for other databases can be located in **appendix 4**.

Box 1: MEDLINE (via. PubMed) search strategy:

osteoarthritis[tiab] OR osteoarthritis[MeSH] OR osteoarthrosis[tiab] OR "degenerative arthritis"[tiab] OR "inflammatory arthritis"[tiab] OR "rheumatoid arthritis"[tiab] OR arthritis, rheumatoid[MeSH] OR ((rheumatoid[tiab] OR reumatoid[tiab] OR revmatoid[tiab] OR rheumatic[tiab] OR reumatic[tiab] OR reumat*[tiab] OR reumat*[tiab] OR rheum*[tiab]) AND (arthritis[tiab] OR artritis[tiab] OR arthrit*[tiab] OR artrit*[tiab])) OR "ankylosing spondylitis"[tiab] OR "reactive arthritis"[tiab] OR

"psoriatic arthritis"[tiab] OR arthritis, psoriatic[Mesh] OR "arthritis psoriatica"[tiab] OR "arthropathic psoriasis"[tiab] OR "psoriatic arthropathy"[tiab] OR arthrosis*[tiab] OR "degenerative joint disease"[tiab] OR ankylosi*[tiab] OR spondyloarthr*[tiab] OR spondylarthr*[tiab] OR spondylarthritis[MeSH] OR bechterew[tiab] OR "Marie-Strumpell"[tiab] OR ((degenerative[tiab] OR inflammatory[tiab] OR psoriatic[tiab]) AND (arthritis[tiab] OR artrit[tiab] OR arthrit*[tiab] OR artrit*[tiab]))

AND

Biopsychosocial[tiab] OR back pain/psychology[MeSH] OR chronic pain/psychology[MeSH] OR chronic disease/psychology[MeSH] OR multiprofessional*[tiab] OR multidisciplinary*[tiab] OR interdisciplinary*[tiab] OR multimodal*[tiab] OR "team care"[tiab] OR "patient education"[tiab] OR patient education[MeSH] OR "patient care management"[tiab] OR patient care management[MeSH] OR self-manage*[tiab] OR patient care team[MeSH] OR "patient care team"[tiab] OR pain clinics[MeSH] OR occupational therapy[MeSH] OR "occupational therapy"[tiab] OR psychotherapy[tiab] OR social work[MeSH] OR vocational rehabilitation[MeSH] OR "behaviour therapy"[tiab] OR "behavior therapy"[tiab] OR "behavioural therapy"[tiab] OR "behavioral therapy"[tiab] OR behavior therapy[MeSH]

AND

"Clinical Trials as Topic"[MeSH] OR "Double-Blind Method"[MeSH] OR "Single-Blind Method"[MeSH] OR "Research Design"[MeSH] OR "Placebos"[MeSH] OR "Random Allocation"[MeSH] OR "Randomized Controlled Trials as Topic"[MeSH] OR "Double-Blind Method"[MeSH] OR "Randomized Controlled Trial"[pt] OR "Practice Guideline"[pt] OR "Clinical Trial"[pt] OR "Controlled Clinical Trial"[pt] OR single blind[tiab] OR single blinded[tiab] OR single masked[tiab] OR double blind[tiab] OR double blinded[tiab] OR double masked[tiab] OR triple blind[tiab] OR triple blinded[tiab] OR triple masked[tiab] OR double-blind* OR random allocation[tiab] OR random allocations[tiab] OR random allocated[tiab] OR randomly allocated[tiab] OR clinical trial[tiab] OR clinical trials[tiab] OR placebo*[tiab] OR random* OR trial*[tiab]

Study selection

Duplicates will be removed through the use of EndNote X9. The initial screening of title/abstract and subsequent full text assessment will be performed in an unblinded but standardised manner by two independent reviewers (MLP and PT) using Covidence online tool (31). Any disagreements in study selection will be resolved by discussion or through consultation with a third reviewer (SMN/RC). Inter-rater agreement, frequency of arbitration about selection, and which efforts were made to resolve disagreements (e.g. contacting the study author) will be reported to create transparency of the selection process. In addition to Covidence, EndNote X9 (or newer versions) will be used to manage citations.

Data collection process

Two independent reviewers (MLP and PT) will collect data from selected studies using standardised forms through Covidence. The raw data (e.g. means and standard deviations for continuous outcomes and number of events and participants for dichotomous outcomes) will be extracted for all outcomes of interest. Continuous outcome data will be extracted as change scores with their corresponding measure of dispersion; data from studies reporting their findings only as final scores will be converted to change scores. If the study contains insufficient data for conversion to change scores, the corresponding trialist will be contacted. If necessary, means and measures of dispersion will be approximated from the study figures. If a change score cannot be obtained, differences in mean values at the end of the treatment will be used (32).

Due to possible carry-over effects, data from cross-over trials will be extracted from the first period only (33). Data will be collected for the follow-up measurement closest to 12

months. Any disagreements in extracted data will be resolved through discussion or through arbitration with a third reviewer (SMN/RC).

Outcomes

According to the guidance document provided by the Cochrane Musculoskeletal Group (aligned with Outcome Measures in Rheumatology [OMERACT]), there is currently no consensus on a generic core outcome measurement set that is applicable across all IA conditions and OA (34). However, pain remains a construct of major importance to all (rheumatology) stakeholders (e.g., patients and physicians) (35). Thus, for the purpose of this review we consider pain the primary outcome (36). Further, we will collect data on other major outcomes such as patient global, disability, health-related quality of life, fatigue, inflammation, and adverse events. In **Table 1** we present our “Generic” Core Outcome Set, incl. the Outcome Domains (i.e. what to measure).

Outcome Domain
Pain
Patient Global
Observed disability/physical function
Self-reported disability/physical function
Health related quality of life
Mental well-being
Fatigue
Inflammation (e.g. acute phase reactants)
Physician Global

Table 1. Generic Core Outcome Set, presented in prioritised order

To the extent that it is possible, we will extract the number of (pain) responders to facilitate interpretation of a successful (dichotomised) outcome into reduction in pain intensity $\geq 30\%$, based on recommendations from the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT) (37).

Our major harm outcomes will be (i) total number of withdrawals, (ii) withdrawals due to adverse events, and (iii) the number of patients with serious adverse events (SAE). If possible, we will also extract (i) increase of radiographic damage, (ii) increase of inflammation and (iii) increase of pain intensity dichotomised in $\geq 30\%$.

Data collection

Eligible trials will be assigned an ID number and have the following data extracted: main author, year of publication, publication status, and funding source. Following details regarding the study methodology will be collected: trial design, trial size (N_{total}), number of patients allocated to each intervention arm, duration of trial (months), notes on the statistical analysis method (e.g. intention-to-treat analysis), risk of bias domains and items, completeness of outcome data and handling of missing values, and a list of all reported outcomes in the study.

Demographic information will be extracted on: mean age, % female, duration of symptoms, type of condition (e.g. RA), coping/self-management skills at baseline, type of pain (local or general/widespread), and baseline values of outcomes of interest.

Details of the intervention used will be extracted on: approach in care delivery (e.g. multidisciplinary or interdisciplinary), treatment modalities/components (e.g. psychological or social/work), frequency and duration, type of comparator/control group, supervision of intervention (e.g. group-based or individual), extent of intervention (measured in hours per week), length of intervention (measured in weeks), outcomes and timing of outcome assessment.

Risk of bias in individual studies

As illustrated in **Table 2**, Cochranes Risk of Bias (RoB) tool will be used to assess whether there is high, low, or unclear risk of bias in various domains following abstraction of the following items: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective outcome reporting, and other sources of bias. to assess whether there is a high, low, or unclear risk of bias (38); As recommended by the Cochrane Collaboration, the blinding and incomplete outcome data domains will be assessed at the outcome level. MLP and PT will assess the risk of bias; discrepancies will be resolved by referring to the original publications and discussion with a third reviewer (SMN/RC).

Table 2. Modified from Cochrane Collaboration's tool for assessing risk of bias

Bias domain	Bias item	Support for judgment	Review authors' judgment (assess as low, unclear or high risk of bias)
Selection bias	Random sequence generation	Describe the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups.	Selection bias (biased allocation to interventions) due to inadequate generation of a randomised sequence.
	Allocation concealment	Describe the method used to conceal the allocation sequence in sufficient detail to determine whether intervention allocations could have been foreseen before or during enrolment.	Selection bias (biased allocation to interventions) due to inadequate concealment of allocations before assignment.
Performance bias	Blinding of participants and personnel*	Describe all measures used, if any, to blind trial participants and researchers from knowledge of which intervention a participant received. Provide any information relating to whether the intended blinding was effective.	Performance bias due to knowledge of the allocated interventions by participants and personnel during the study.
Detection bias	Blinding of outcome assessment*	Describe all measures used, if any, to blind outcome assessment from knowledge of which intervention a participant received. Provide any information relating to whether the intended blinding was effective.	Detection bias due to knowledge of the allocated interventions by outcome assessment.
Attrition bias	Incomplete outcome data*	Describe the completeness of outcome data for each main outcome, including attrition and exclusions from the analysis. State whether attrition and exclusions were reported, the numbers in each intervention group (compared with total randomised	Attrition bias due to amount, nature, or handling of incomplete outcome data.

		participants), reasons for attrition or exclusions where reported, and any reinclusions in analyses for the review.	
Reporting bias	Selective reporting	State how selective outcome reporting was examined and what was found.	Reporting bias due to selective outcome reporting.
Other bias	Concomitant condition/treatment	Describe the presence of concomitant psychoactive medication/treatments, pre-existing mental illnesses or co-morbid fibromyalgia.	Bias due to problems not covered elsewhere.

*Assessments should be made for each main outcome or class of outcomes.

Strategy for data synthesis

Among our major outcomes, pain will be considered the primary outcome domain. We will summarise continuous outcomes using standardised mean differences (SMDs) with 95% confidence intervals (CI), with the differences in mean change from baseline values across intervention groups divided by the pooled standard deviation (SD). If differences in mean change are unavailable, differences in mean values at the end of the intervention will be used (32). Further on the use of SMD's as effect sizes: The Cohen's d value is biased in small samples, Hedges's g value will be applied in the meta-analysis treating the variance as an estimate (39). Dichotomous (binary) data will be analysed as a relative risk (RR) also with 95% confidence intervals. For trials with more than one intervention group, the number of patients in the comparator (control) group will be divided by the number of comparisons, hence avoiding double counting of patients and increasing the standard errors, resulting in more correct estimates.

We will use restricted maximum likelihood (REML) based (i.e. random-effects) meta-analyses to combine the trials (40). Study heterogeneity will be assessed and interpreted by using Tau² and the I² inconsistency index; I² values of less than 25% will be communicated as low, and more than 75% as substantial between trial heterogeneity. Anticipating some clinical heterogeneity due to differences in study characteristics, random effects meta-analysis will be used per default to combine the study results (41). Also, a fixed-effect analysis model will be applied for the purpose of sensitivity. Because a random-effects meta-analysis is not always conservative – as when the intervention appears more effective in small studies (small-study bias) - the random-effects estimate of the intervention effect is more beneficial than the corresponding fixed-effect estimate. We will apply the following decision rule: If the point estimate from the “fixed effect model” is not included in the 95% CI from the “random effects model” we will rate down our certainty of the evidence.

Statistical analyses will be conducted using Stata 13.2 (or newer). The quality of the evidence will be assessed for all outcome measures through the Grading of Recommendations Assessment, Development and Evaluation (GRADE) tool, and graphically presented through a Summary of Findings table (42).

Risk of bias across studies

Accounting for the observed heterogeneity between trials, it is likely that a meta-analysis might be inconclusive. We will perform sensitivity analyses to explore the impact of systematic errors from risk of bias (resulting from the inclusion of flawed trials) (43) by stratifying

according to the following methodological (internal validity) characteristics of the included trials:

- Selection bias
 - Low risk
 - Unclear risk
 - High risk
- Performance bias
 - Low risk
 - Unclear risk
 - High risk
- Detection bias
 - Low risk
 - Unclear risk
 - High risk
- Attrition bias
 - Low risk
 - Unclear risk
 - High risk
- Reporting bias
 - Low risk
 - Unclear risk
 - High risk
- Other bias
 - Low risk
 - Unclear risk
 - High risk

Finally, each RCT will be assigned an overall risk of bias in terms of low risk (low for all bias items), unclear risk (unclear for ≥ 1 bias item and no high risk in any bias item), and high risk (high for ≥ 1 bias item regardless of any bias items scoring unclear risk).

- Overall risk of bias
 - Low risk
 - Unclear risk
 - High risk

Subgroup and Meta-regression analyses

Stratified analyses of the primary effectiveness outcome (effect size for pain) will be performed using REML-based (i.e. random-effects) meta-analyses, according to the following clinical trial (external validity) characteristics:

Type of conditions by group; conditions have varying pathologies manifesting in different locations and severity throughout the body. Stratification will be applied by the two included groups of disorders:

- Osteoarthritis
- Inflammatory arthritis (RA, SpA, PsA)

Treatment modalities/components; interventions can contain various rehabilitating elements, having different effects on the patients:

- Physical rehabilitation including a psychological element
- Physical rehabilitation including a social/work related element
- Physical rehabilitation including a psychological and a social/work related element
- Other

Approach in care; the healthcare professionals' approach in managing the care may affect the outcome of the patient:

- Interdisciplinary biopsychosocial rehabilitation
- Multidisciplinary biopsychosocial rehabilitation
- Other

Supervision of intervention; different types of supervision may lead to varying amounts of time spent on each patient by the healthcare professionals, affecting the outcome of the intervention:

- Group-based supervision of intervention
- Individually supervised intervention
- Non-supervised intervention
- Other

Comparator/Control; the type of control group strategy may affect the measured effect from the intervention:

- Usual care (e.g. medication, non-biopsychosocial intervention)
- Waitlist
- Physical treatment
- Surgery
- Other

REML-based (i.e. random-effects) meta-regression-analyses will be performed in order to investigate the relationship between the following variables and the size of effect in the included studies:

- Proportion of patients with chronic widespread pain (CWP) at baseline
- Pain at baseline (normalised to VAS units)
- Physical function at baseline (normalised to VAS units)
- Health related quality of life at baseline (normalised to VAS units)
- Extent of intervention (the number of hours used in consultations per week)
- Length of intervention (the length of the intervention in weeks)
- Trial duration (the length of the trial in weeks, from baseline until last follow-up)
- Coping/self-management skills at baseline

ETHICS AND DISSEMINATION

We anticipate the findings of this systematic review with evidence synthesis will have an impact on future research strategies and could have an impact on clinical practice, when deciding whether to recommend the use of biopsychosocial rehabilitation approach in patients with either inflammatory arthritis or osteoarthritis. The results of this effort will be disseminated in a peer-reviewed article in (a) scientific journal(s), and through scientific meetings as well as presented for public outreach to patients and the public via suitable sources.

Following the ICMJE standards, this article will be drafted by the primary investigator MLP and revised critically by collaborators, who will be authors when they provide substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; drafting the work or revising it critically for important intellectual content; final approval of the version to be published. Finally, all authors need to agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Contributors

MLP, SMN, KA and RC conceived and designed the study; MLP, PT, SMN, KA and RC contributed to the development of the protocol. All of the authors (MLP, PT, RG, MUR, MDW, LM, PM, EC, PC, LS, AFH, ST, CBJ, SMN, KA and RC) assisted in the final protocol and agreed to its final approval before submission.

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Competing interests

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APPENDIX

Appendix 1: Search strategies for systematic reviews of existing evidence (sear date: 17 October 2018)

Searchstrategy of individual keywords for MEDLINE through Pubmed

Nr.	Keyword
#1	rheumatoid arthritis[tiab]
#2	spondyloarthritis[tiab]
#3	psoriatic arthritis[tiab]
#4	osteoarthritis[tiab]
#5	or /1-4
#6	multidisciplinary[tiab]
#7	biopsychosocial[tiab]
#8	interdisciplinar*[tiab]
#9	multiprofessional*[tiab]
#10	multimodal*[tiab]
#11	patient care team [MeSH]
#12	patient education [MeSH]
#13	or /6-12
#14	review[pt] or meta-analysis[pt] or systematic review[pt]
#15	and/5,23,24

Searchstrategy of individual keywords for CENTRAL through Cochrane Library

Nr.	Keyword
#1	rheumatoid arthritis:ti,ab
#2	spondyloarthritis:ti,ab
#3	psoriatic arthritis:ti,ab
#4	osteoarthritis:ti,ab
#5	or /1-4
#6	multidisciplinary:ti,ab
#7	biopsychosocial:ti,ab
#8	interdisciplinary*:ti,ab
#9	multiprofessional*:ti,ab
#10	multimodal*:ti,ab
#11	[mh "patient care team"]
#12	[mh "patient education"]
#13	or /6-12
#14	and /5,13
#15	15 filtered for systematic reviews through menu

Searchstrategy of individual keywords for EMBASE through Ovid

Nr.	Keyword
#1	rheumatoid arthritis.ti,ab
#2	spondyloarthritis.ti,ab
#3	psoriatic arthritis.ti,ab
#4	osteoarthritis.ti,ab
#5	or /1-4
#6	multidisciplinary.ti,ab
#7	biopsychosocial.ti,ab
#8	interdisciplinary*.ti,ab
#9	multiprofessional*.ti,ab
#10	multimodal*.ti,ab
#11	patient care team/
#12	patient education/
#13	or /6-12
#14	review/ or meta-analysis/ or systematic review/
#15	and/5,13,14

Appendix 2. Overview of guidelines and recommendations presented in the order of publication date

Author, year	Title	PICO(TS)	Recommendation regarding biopsychosocial rehabilitation	Evidence base for the recommendation
Geenen 2018, (7)	EULAR recommendations for the health professional's approach to pain management in IA and OA	P: Patients with IA and OA I: pharmacological and non-pharmacological management C: n/a O: Pain, physical function, psychological function T: no restriction S: n/a	The patient should receive physical activity, exercise, psychological or social interventions If indicated, the patient should receive a multidisciplinary treatment.	The recommendation for physical activity and exercise is based on at least 18 systematic reviews. Psychological or social interventions was based on at least 7 systematic reviews. Multimodal treatment is based on 3 systematic reviews.
NICE, 2018 (8)	RA in adults: management	P: Adults with RA I: Pharmacological and non-pharmacological care and management C: Sham, no treatment or other OA therapies O: Pain, function, stiffness, time to joint replacement, quality of life, patient global assessment, OARSI responder criteria and adverse events T: n/a S: n/a	Adults with RA should have ongoing access to a multidisciplinary team. This should provide the opportunity for periodic assessments of the effect of the disease on their lives (such as pain, fatigue, everyday activities, mobility, ability to work or take part in social or leisure activities, quality of life, mood, impact on sexual relationships) and help to manage the condition.	Based on 6 RCTs and 3 case series.
NICE, 2014 (9)	OA: care and management	P: Patients with OA	Advise people with OA to exercise as a core treatment, preferably through	Primarily based on a review by Roddy et al. (44)

		<p>I: Pharmacological and non-pharmacological care and management C: Sham, no treatment or other OA therapies O: Pain, function, stiffness, time to joint replacement, quality of life, patient global assessment, OARSI responder criteria and adverse events T: n/a S: n/a</p>	individualised self-management programmes.	
Fernandes, 2013 (45)	EULAR recommendations for the non-pharmacological core management of hip and knee OA	<p>P: Patients with hip or knee OA I: Non-pharmacological management C: n/a O: Pain, function and quality of life T: n/a S: n/a</p>	In people with hip and/or knee OA the combination of patient education or self-management intervention plus exercise was found to have a significant effect on pain, but a less marked effect on function. The patient should receive an integrated package of care rather than single treatments alone or in succession, including information and education, exercise and/or weight reduction.	Based on a systematic review by Walsh et al. (46) and 19 trials.
Hochberg, 2012 (10)	American College of Rheumatology 2012 Recommendations for the Use of Nonpharmacologic and Pharmacologic Therapies in OA of the Hand, Hip, and Knee	<p>P: Patients with hand, hip and knee OA I: Non-pharmacologic and pharmacologic therapies C: n/a O: Pain and function T: n/a S: n/a</p>	Strongly recommended aerobic, aquatic, and/or resistance exercises as well as weight loss for overweight patients. Conditionally recommended self-management programs, and psychosocial interventions.	Based on EULAR, AAOS and OARSI recommendations for the management of OA.
Zhang, 2008 (12)	OARSI recommendations for the management of hip and knee OA, Part II: OARSI evidence-based, expert consensus guidelines	<p>P: hip and knee OA I: pharmacological and non-pharmacological modalities of treatment C: n/a O: pain and stiffness, mobility, physical disability, quality of life, progression of joint damage, self-management T: n/a S: n/a</p>	Patients with hip and knee OA should be encouraged to undertake, and continue to undertake, regular aerobic, muscle strengthening and range of motion exercises. For patients with symptomatic hip OA, exercises in water can be effective.	Based on a review by Roddy et al. (44) and 21 guidelines.

P: included patient type; I: intervention type; C: comparison group; O: outcome measure; T: timing; S: setting; RA: Rheumatoid Arthritis; OA Osteoarthritis; NICE: National Institute for Health and Care Excellence; EULAR: European League Against Rheumatism; OARSI: Osteoarthritis Research International; AAOS: American Association of Orthopaedic Surgeons; RCT: Randomised Controlled Trial.

Appendix 3. Overview of systematic reviews and guidelines presented in the order of publication date

Author, year, publication type	(Apparent) Objective	PICO(TS)	Reported conclusion(s)
Finney, 2016, (16)	To determine the effectiveness of primary care based interventions involving multidisciplinary packages of care utilizing the National Institute for Health and Care Excellence (NICE) core treatments for OA (access to information/education, exercise and weight loss), in the adult population with OA across multiple joint sites.	P: Adults ≥ 18 years with OA in ≥ 2 joint sites I: Multidisciplinary (defined as: involving ≥ 2 health disciplines) interventions targeting the NICE core treatments in primary care C: Usual care, uni-disciplinary approaches, placebo or no intervention O: Self-reported pain, function, QoL and health care utilisation T: n/a S: Primary care	4 studies were included. A meta-analysis was unachievable due to heterogeneity. A narrative review found that only one study was able to report significant improvements in outcomes that were sustainable over time.
Bearne, 2016, (17)	To evaluate the effectiveness of clearly defined multidisciplinary team care (MDT) in the management of adults with RA.	P: Adults ≥ 18 years with RA I: MDT (defined as: ≥ 2 health and social care professionals working in a coordinated way) C: Not involving MDT, e.g. usual care, nurse-led clinics, unidisciplinary care, uncoordinated care delivered by several professions, information only or waiting list comparisons O: Modified/Improved/Regular Stanford Health Assessment Questionnaire (HAQ), AIMS/AIMS2 physical subscale, DAS/DAS28 activity score, any quality of life measure T: n/a S: Inpatient, outpatient or day patient facilities	10 trials and 2 follow-up studies were included. The included studies suggest that there is limited effect of MDT care on disability in people with RA. More robustly designed studies are needed to fully demonstrate the clinical and cost-effectiveness of MDT care on disease activity, QoL and other outcomes
Kroon, 2014 (18)	To assess the effectiveness of self-management education programmes for people with OA.	P: All age groups with OA I: Self-management education programmes (may include: problem solving, goal setting, decision making, self-monitoring, coping, etc.) C: No self-management education (i.e. no information, usual care, waiting list control, etc.) O: Self-management, Positive and active engagement in life (e.g. return to work, completion of ADL), pain score, global OA scores, function scores, Quality of life score and withdrawals T: Any S: Any	29 studies were included. Low to moderate quality evidence indicates that self-management education programmes result in no or small benefits in people with osteoarthritis but are unlikely to cause harm.
Devos-Comby, 2006 (19)	To assess the influence of patient education and exercise regimens on the well-being of patients with knee OA.	P: Patients with OA of the knee exclusively I: Exercise interventions combined with self-management interventions (focusing on OA education, e.g. Arthritis Self-Help course) C: No treatment, standard care, attention or sham electrical stimulation O: Any function scores, any pain scores, AIMS pain subscale, any psychological outcomes, "direct measures of impairment"	16 studies were included. Overall, both patient education and exercise regimens had a modest, yet clinically important, influence on patients' well-being.

		(e.g. swelling of the knee), overall impact of OA T: Maximum of 4 months follow-up S: n/a	
Walsh, 2006 (46)	To evaluate the impact of exercise and self-management programmes on pain and function in patients with hip and knee OA, and to determine the cost-effectiveness of these programmes.	P: Patients with hip and knee OA I: Combined exercise and self-management programmes C: Any O: Pain and function T: Any S: n/a	The data suggest that combined exercise and self-management programmes reduce pain and increase function in community-based patients with knee and hip osteoarthritis. However, many of the included studies had methodological weaknesses.
Riemsma, 2004 (20)	To determine the effectiveness of patient education in patients with RA.	P: Patients with RA I: Patient education including an instructional component with or without complement interventions (e.g. exercise or psychosocial supports) C: non-intervention control group O: pain, functional disability, affected joint count, patients and physician global assessment, affect scores and measures of acute phase reactants T: Any S: Any	31 studies were included. Results suggest significant effects of patient education for scores on functional disability. Unfortunately, the effects are short lived. Therefore, strategies to preserve the effects over time need to be explored.
Riemsma, 2003 (21)	To assess the effectiveness of patient education interventions on health status in patients with rheumatoid arthritis.	P: Patients with RA I: Patient education including an instructional component with or without complement interventions (e.g. exercise or psychosocial supports) C: non-intervention control group O: Impact measurement (AIMS/AIMS ₂), pain, disability, affected joint count, patient global assessment, psychological status and disease activity T: Any S: Any	31 studies were included. Significant effect was found of patient education at first follow-up for scores on disability, joint counts, patient global assessment, psychological status, and depression. A trend favouring patient education was found for scores on pain. At final follow up no significant effects of patient education were found, although there was a trend favouring patient education for scores on disability.
Astin, 2002 (22)	To examine the efficacy of psychological interventions (e.g., relaxation, biofeedback, cognitive-behavioural therapy) in the treatment of rheumatoid arthritis	P: Patients with RA I: Any active treatment including some psychological/psychosocial component beyond information/education C: non-intervention controls (e.g. wait list, usual care, or attention placebo) O: Pain, functional disability, psychological status, coping, self-efficacy and tender joints T: n/a S: n/a	25 studies were included. Psychological interventions may be important adjunctive therapies in the medical management of RA.
Vliet Vlieland, 1997 (23)	To assess the efficacy of multidisciplinary team care programs in rheumatoid arthritis.	P: Patients with RA or functional decline or both I: Multidisciplinary team care C: Review not limited to RCTs O: Overall measurement of functional status (preferably HAQ), pain score, articular index, psychosocial functioning T: Any S: In- or outpatients	35 trials were included. 15 were controlled, 9 were controlled and randomized. Favourable effects on disease activity were seen in most trials comparing short inpatient team care with regular outpatient care. Proof of efficacy of prolonged outpatient team care is scanty. Results of trials

			comparing inpatient with outpatient team care remain inconclusive.
Hawley, 1995 (24)	To ascertain effectiveness of psycho-educational interventions for arthritis patients	P: Patients with OA and/or RA I: Various types of psycho-education C: Review not limited to RCTs O: Knowledge of disease, health status, psychological status, behaviours T: n/a S: In- and outpatients	34 trials were included. Psycho-educational interventions are a useful additional modality in the management of rheumatic diseases and may improve treatment effects and patient quality of life.

P: included patient type; I: intervention type; C: comparison group; O: outcome measure; T: timing; S: setting; RA: Rheumatoid Arthritis; OA Osteoarthritis; NICE: National Institute for Health and Care Excellence; QoL: Quality of Life; MDT: Multidisciplinary team care; HAW: Stanford Health Assessment Questionnaire; AIMS: Arthritis Impact Measurement Scales; DAS: Disease Activity Score; ADL: Activity of Daily Living; RCT: Randomised Controlled Trial; HAQ: Health Assessment Questionnaire

Appendix 4: Search strategies for other databases

Planned search strategies for MEDLINE, EMBASE, CENTRAL, PsycINFO and CINAHL.

Searchstrategy of individual keywords for MEDLINE through Pubmed

Nr.	Keyword
#1	osteoarthritis[tiab]
#2	osteoarthritis[MeSH]
#3	osteoarthritis[tiab]
#4	"degenerative arthritis"[tiab]
#5	"inflammatory arthritis"[tiab]
#6	"rheumatoid arthritis"[tiab]
#7	arthritis, rheumatoid[MeSH]
#8	(rheumatoid[tiab] OR reumatoid[tiab] OR revmatoid[tiab] OR rheumatic[tiab] OR reumatic[tiab] OR rheumat*[tiab] OR reumat*[tiab] OR rheum*[tiab]) AND (arthritis[tiab] OR artritis[tiab] OR arthrit*[tiab] OR artrit*[tiab])
#9	"ankylosing spondylitis"[tiab]
#10	"reactive arthritis"[tiab]
#11	"psoriatic arthritis"[tiab]
#12	arthritis, psoriatic[Mesh]
#13	"arthritis psoriatica"[tiab]
#14	"arthropathic psoriasis"[tiab]
#15	"psoriatic arthropathy"[tiab]
#16	arthrosis*[tiab]
#17	"degenerative joint disease"[tiab]
#18	ankylosi*[tiab]
#19	spondyloarthr*[tiab]
#20	spondylarthr*[tiab]
#21	spondylarthritis[MeSH]
#22	bechterew[tiab]
#23	"Marie-Strumpell"[tiab]
#24	(degenerative[tiab] OR inflammatory[tiab] OR psoriatic[tiab]) AND (arthritis[tiab] OR artritis[tiab] OR arthrit*[tiab] OR artrit*[tiab])
#25	OR /#1-#24
#26	Biopsychosocial[tiab]

#27 back pain/psychology[MeSH]
#28 chronic pain/psychology[MeSH]
#29 chronic disease/psychology[MeSH]
#30 multiprofessional*[tiab]
#31 multidisciplinary*[tiab]
#32 interdisciplinary*[tiab]
#33 multimodal*[tiab]
#34 "team care"[tiab]
#35 "patient education"[tiab]
#36 patient education[MeSH]
#37 "patient care management"[tiab]
#38 patient care management[MeSH]
#39 self-manage*[tiab]
#40 patient care team[MeSH]
#41 "patient care team"[tiab]
#42 pain clinics[MeSH]
#43 occupational therapy[MeSH]
#44 "occupational therapy"[tiab]
#45 psychotherapy[tiab]
#46 social work[MeSH]
#47 vocational rehabilitation[MeSH]
#48 "behaviour therapy"[tiab]
#49 "behavior therapy"[tiab]
#50 "behavioural therapy"[tiab]
#51 "behavioral therapy"[tiab]
#52 behavior therapy[MeSH]
#53 **OR /#26-#52**
#54 "Clinical Trials as Topic"[MeSH]
#55 "Double-Blind Method"[MeSH]
#56 "Single-Blind Method"[MeSH]
#57 "research design"[MeSH]
#58 "placebos"[MeSH]
#59 "Random Allocation"[MeSH]
#60 "Randomized Controlled Trials as Topic"[MeSH]
#61 "Double-Blind Method"[MeSH]
#62 "Randomized Controlled Trial" [pt]
#63 "Clinical Trial"[pt]
#64 "Controlled Clinical Trial"[pt]
#65 single blind[tiab]
#66 single blinded[tiab]
#67 single masked[tiab]
#68 double blind[tiab]
#69 double blinded[tiab]
#70 double masked[tiab]
#71 triple blind[tiab]
#72 triple blinded[tiab]
#73 triple masked[tiab]
#74 double-blind*
#75 random allocation[tiab]
#76 random allocations[tiab]
#77 random allocated[tiab]
#78 randomly allocated[tiab]
#79 clinical trial[tiab]

#80 clinical trials[tiab]
 #81 placebo*[tiab]
 #82 random*
 #83 trial*[tiab]
 #84 **OR /#54-#83**
 #85 **AND /#25,#53,#84**

Searchstrategy of individual keywords for EMBASE and PsycINFO through OVID

Nr.	Keyword
#1	osteoarthritis.ti,ab
#2	osteoarthritis/
#3	osteoarthrosis.ti,ab
#4	degenerative arthritis.ti,ab
#5	inflammatory arthritis.ti,ab
#6	rheumatoid arthritis.ti,ab
#7	arthriti, rheumatoid/
#8	((rheumatoid or reumatoid or revmatoid or rheumatic or reumatic or rheumat* or reumat* or rheum*) adj (arthritis or artrit* or arthrit* or artrit*)).ti,ab.
#9	ankylosing spondylitis.ti,ab
#10	reactive arthritis.ti,ab
#11	psoriatic arthritis.ti,ab
#12	arthriti, psoriatic/
#13	arthriti psoriatica.ti,ab
#14	arthropathic psoriasis.ti,ab
#15	psoriatic arthropathy.ti,ab
#16	arthrosis*.ti,ab
#17	degenerative joint disease.ti,ab
#18	ankylosi*.ti,ab
#19	spondyloarthr*.ti,ab
#20	spondylarthr*.ti,ab
#21	Spondylarthriti/
#22	Bechterew.ti,ab
#23	Marie-Strumpell.ti,ab
#24	((degenerative or inflammatory or psoriatic) adj (arthriti or artrit* or arthrit* or artrit*)).ti,ab.
#25	OR /#1-#24
#26	Biopsychosocial.ti,ab
#27	back pain/px
#28	chronic pain/px
#29	chronic disease/px
#30	multiprofessional*.ti,ab
#31	Multidisciplinar*.ti,ab
#32	Interdisciplinar*.ti,ab
#33	multimodal*.ti,ab
#34	team care.ti,ab
#35	patient education.ti,ab
#36	patient education/
#37	patient care management.ti,ab
#38	patient care management/
#39	self-manage*.ti,ab
#40	patient care team/
#41	patient care team.ti,ab

- #42 pain clinics/
- #43 occupational therapy/
- #44 occupational therapy.ti,ab
- #45 psychotherapy.ti,ab
- #46 social work/
- #47 vocational rehabilitation/
- #48 behaviour therapy.ti,ab
- #49 behavior therapy.ti,ab
- #50 behavioural therapy.ti,ab
- #51 behavioral therapy.ti,ab
- #52 behavior therapy/
- #53 **OR /#26-#52**
- #54 ((singl* or doubl* or treb* or tripl*) adj (blind\$3 or mask\$3)).tw.
- #55 (allocated adj2 random).tw.
- #56 (clin* adj25 trial*).ti, ab.
- #57 (clinic* adj trial\$1).tw.
- #58 (double-blind* or random*).af.
- #59 exp clinical trial/
- #60 exp double blind procedure/
- #61 exp single blind procedure/
- #62 exp triple blind procedure/
- #63 placebo*.tw.
- #64 exp placebo/
- #65 exp randomization/
- #66 Random.af.
- #67 Random*.tw.
- #68 exp randomized controlled trial/
- #69 randomized.ab.
- #70 randomly allocated.tw
- #71 randomly.ab.
- #72 trial.ab.
- #73 trial.ti.
- #74 exp controlled clinical trial/
- #75 randomized controlled trial/
- #76 randomized controlled trial/
- #77 exp controlled clinical trial/
- #78 **OR /#54-#77**
- #79 **AND /#25,#53,#78**

Searchstrategy of individual keywords for CENTRAL through Cochrane Library

Nr.	Keyword
#1	osteoarthritis:ti,ab
#2	[mh "osteoarthritis"]
#3	osteoarthrosis:ti,ab
#4	degenerative arthritis:ti,ab
#5	inflammatory arthritis:ti,ab
#6	rheumatoid arthritis:ti,ab
#7	[mh "arthritis, rheumatoid"]
#8	ankylosing spondylitis:ti,ab
#9	reactive arthritis:ti,ab
#10	psoriatic arthritis:ti,ab
#11	[mh "arthritis, psoriatic"]

- #12 arthritis psoriatica:ti,ab
- #13 arthropathic psoriasis:ti,ab
- #14 psoriatic arthropathy:ti,ab
- #15 arthrosis*:ti,ab
- #16 degenerative joint disease:ti,ab
- #17 ankylosi*:ti,ab
- #18 spondyloarthr*:ti,ab
- #19 spondylarthr*:ti,ab
- #20 [mh "Spondylarthritis"]
- #21 Bechterew:ti,ab
- #22 Marie-Strumpell:ti,ab
- #23 **OR /#1-#22**
- #24 Biopsychosocial:ti,ab
- #25 multiprofessional*:ti,ab
- #26 Multidisciplinar*:ti,ab
- #27 Interdisciplinar*:ti,ab
- #28 multimodal*:ti,ab
- #29 team care:ti,ab
- #30 patient education:ti,ab
- #31 [mh "patient education"]
- #32 patient care management:ti,ab
- #33 [mh "patient care management"]
- #34 self-manage*:ti,ab
- #35 [mh "patient care team"]
- #36 patient care team:ti,ab
- #37 [mh "pain clinics"]
- #38 [mh "occupational therapy"]
- #39 occupational therapy:ti,ab
- #40 psychotherapy:ti,ab
- #41 [mh "social work"]
- #42 [mh "vocational rehabilitation"]
- #43 behaviour therapy:ti,ab
- #44 behavior therapy:ti,ab
- #45 behavioural therapy:ti,ab
- #46 behavioral therapy:ti,ab
- #47 [mh "behavior therapy"]
- #48 **OR /#24-#47**
- #49 **AND /#23,#48 sorted by trials**

Searchstrategy of individual keywords for CINAHL through Ebsco

Nr.	Keyword
#1	TI osteoarthritis OR AB osteoarthritis
#2	MH osteoarthritis
#3	TI osteoarthrosis OR AB osteoarthrosis
#4	TI "degenerative arthritis" OR AB "degenerative arthritis"
#5	TI "inflammatory arthritis" OR AB "inflammatory arthritis"
#6	TI "rheumatoid arthritis" OR AB "rheumatoid arthritis"
#7	MH arthritis, rheumatoid
#8	TI ((rheumatoid OR reumatoid OR revmatoid OR rheumatic OR reumatic OR rheumat* OR reumat* OR rheum*) AND (arthritis OR artritis OR arthrit* OR artrit*)) OR AB ((rheumatoid OR reumatoid OR revmatoid OR rheumatic OR

- reumatic OR reumat* OR reumat* OR rheum*) AND (arthritis OR arthritis
OR arthrit* OR artrit*))
- #9 TI "ankylosing spondylitis" OR AB "ankylosing spondylitis"
 - #10 TI "reactive arthritis" OR AB "reactive arthritis"
 - #11 TI "psoriatic arthritis" OR AB "psoriatic arthritis"
 - #12 MH arthritis, psoriatic
 - #13 TI "arthritis psoriatica" OR AB "arthritis psoriatica"
 - #14 TI "arthropathic psoriasis" OR AB "arthropathic psoriasis"
 - #15 TI "psoriatic arthropathy" OR AB "psoriatic arthropathy"
 - #16 TI arthrosis* OR AB arthrosis*
 - #17 TI "degenerative joint disease" OR AB "degenerative joint disease"
 - #18 TI ankylosi* OR AB ankylosi*
 - #19 TI spondyloarthr* OR AB spondyloarthr*
 - #20 TI spondylarthr* OR AB spondylarthr*
 - #21 MH spondylarthritis
 - #22 TI Bechterew OR AB Bechterew
 - #23 TI "Marie-Strumpell" OR AB "Marie-Strumpell"
 - #24 TI ((degenerative or inflammatory or psoriatic) AND (arthritis or arthritis or
arthrit* or artrit*)) OR AB ((degenerative or inflammatory or psoriatic) AND
(arthritis or arthritis or arthrit* or artrit*))
 - #25 **OR /#1-#24**
 - #26 TI Biopsychosocial OR AB Biopsychosocial
 - #27 MH back pain/psychology
 - #28 MH chronic pain/psychology
 - #29 MH chronic disease/psychology
 - #30 TI multiprofessional* OR AB multiprofessional*
 - #31 TI multidisciplinary* OR AB multidisciplinary*
 - #32 TI interdisciplinary* OR AB interdisciplinary*
 - #33 TI multimodal* OR AB multimodal*
 - #34 TI "team care" OR AB "team care"
 - #35 TI "patient education" OR AB "patient education"
 - #36 MH patient education
 - #37 TI "patient care management" OR AB "patient care management"
 - #38 MH patient care management
 - #39 TI self-manage* OR AB self-manage*
 - #40 MH patient care team
 - #41 TI "patient care team" OR AB "patient care team"
 - #42 MH pain clinics
 - #43 MH occupational therapy
 - #44 TI "occupational therapy" OR AB "occupational therapy"
 - #45 TI psychotherapy OR AB psychotherapy
 - #46 MH social work
 - #47 MH vocational rehabilitation
 - #48 TI "behaviour therapy" OR AB "behaviour therapy"
 - #49 TI "behavior therapy" OR AB "behavior therapy"
 - #50 TI "behavioural therapy" OR AB "behavioural therapy"
 - #51 TI "behavioral therapy" OR AB "behavioral therapy"
 - #52 MH behaviour therapy
 - #53 **OR /#26-#52**
 - #54 MH Clinical Trials as Topic
 - #55 MH Double-Blind Method
 - #56 MH Single-Blind Method
 - #57 MH Research Design

#58 MH Placebos
#59 MH Random Allocation
#60 MH Randomized Controlled Trials as Topic
#61 PT Randomized Controlled Trial
#62 PT Clinical Trial
#63 PT Controlled Clinical Trial
#64 TI single blind OR AB single blind
#65 TI single blinded OR AB single blinded
#66 TI single masked OR AB single masked
#67 TI double blind OR AB double blind
#68 TI double blinded OR AB double blinded
#69 TI double masked OR AB double masked
#70 TI triple blind OR AB triple blind
#71 TI triple blinded OR AB triple blinded
#72 TI triple masked OR AB triple masked
#73 double-blind*
#74 TI random allocation OR AB random allocation
#75 TI random allocations OR AB random allocations
#76 TI random allocated OR AB random allocated
#77 TI randomly allocated OR AB randomly allocated
#78 TI clinical trial OR AB clinical trial
#79 TI clinical trials OR AB clinical trials
#80 TI placebo* OR AB placebo*
#81 random*
#82 TI trial* OR AB trial*
#83 **OR /#54-#82**
#84 **AND /#25,#53,#83**