

A Systematic Review of Job Loss Prevention Interventions for Persons with Inflammatory Arthritis

Madsen, Christina Merete Tvede; Bisgaard, Sara Kjær; Primdahl, Jette; Christensen, Jeanette Reffstrup; von Bülow, Cecilie

Published in:
Journal of Occupational Rehabilitation

DOI:
10.1007/s10926-021-09972-9

Publication date:
2021

Document version:
Accepted manuscript

Citation for published version (APA):

Madsen, C. M. T., Bisgaard, S. K., Primdahl, J., Christensen, J. R., & von Bülow, C. (2021). A Systematic Review of Job Loss Prevention Interventions for Persons with Inflammatory Arthritis. *Journal of Occupational Rehabilitation*, 31(4), 866-885. <https://doi.org/10.1007/s10926-021-09972-9>

Go to publication entry in University of Southern Denmark's Research Portal

Terms of use

This work is brought to you by the University of Southern Denmark.
Unless otherwise specified it has been shared according to the terms for self-archiving.
If no other license is stated, these terms apply:

- You may download this work for personal use only.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying this open access version

If you believe that this document breaches copyright please contact us providing details and we will investigate your claim.
Please direct all enquiries to puresupport@bib.sdu.dk

A systematic review of job loss prevention interventions for persons with inflammatory arthritis

Christina Merete Tvede Madsen, MSc in Health (OT)^{a*}; Sara Kjær Bisgaard, MSc in Health (OT)^b;

Jette Primdahl, PhD^{a,c,d}; Jeanette Reffstrup Christensen, PhD^b; Cecilie von Bülow, PhD^{b,e}

^aDepartment of Regional Health Research, University of Southern Denmark, Campusvej 55, 5230 Odense M, Denmark

^bDepartment of Public Health, University of Southern Denmark mark, J.B. Winsløvs Vej 9B, 5000 Odense C, Denmark

^cDanish Hospital for Rheumatic Diseases, University Hospital of Southern Denmark, Engelshøjgade 9A, 6400 Sønderborg, Denmark

^dHospital of Southern Jutland, University Hospital of Southern Denmark, Kresten Philipsens Vej 15, 6200 Aabenraa, Denmark

^eThe Parker Institute, Copenhagen University Hospital, Bispebjerg and Frederiksberg, Nordre Fasanvej 57, 2000 Frederiksberg, Denmark

*Correspondence should be addressed to:

Christina Merete Tvede Madsen
Email: cmadsen@danskgighospital.dk
Phone: 0045 28551373

Abstract

Purpose To present an overview of the evidence of the effect of job loss prevention interventions, aiming to improve work ability and decrease absenteeism and/or job loss in persons with inflammatory arthritis (IA).

Method A systematic literature search in the databases PubMed, EMBASE, CINAHL, PsycINFO and the Cochrane Library was conducted. A search strategy used in a review from 2014 was copied and additional keywords were added with no time restriction. The Cochrane Risk of Bias Tool (RoB 1) was used for quality assessment and the overall quality of each study was determined using predetermined cut-off criteria, categorising studies to be of good-, acceptable- or low quality. Results were summarised narratively.

Results Six randomised controlled trials (published in seven articles) were included, one of good quality and five of acceptable quality. One study identified significant improvements in work ability, while three found no significant difference between groups. One study identified significant difference in absenteeism, while two studies identified no difference between the intervention and control groups. Two studies identified significant reduction in job loss, while two studies identified no group difference. The inconsistent results may be due to heterogeneity in interventions and outcome measures used, and the results should therefore be interpreted with caution.

Conclusion The results indicate that job loss prevention interventions may have an effect on work ability, absenteeism and in particular job loss among persons with IA. Further good-quality studies regarding job loss prevention interventions for people with IA are still recommended.

Keywords Occupational therapy, rehabilitation, vocational rehabilitation, employment, rheumatoid arthritis

Background

Participation in work is an essential part of adulthood and contributes not only to an individual's financial security, but also to physical and psychological health (1). For people living with chronic health conditions, such as inflammatory arthritis (IA) (including rheumatoid arthritis (RA), psoriatic arthritis (PsA) and axial spondyloarthritis (ax-SpA)), work holds the potential to promote self-esteem, sense of normality and quality of life (2, 3). Despite ongoing developments of new pharmacological and surgical treatments, IA still affects daily life, including work participation (3-6). Work demands and repetitive work tasks are often challenging for persons with IA due to physical limitations, pain and fatigue (4, 7, 8). This means that persons with IA have an increased risk of sickness absenteeism compared to the general population (9), and following their diagnosis, up to 38% lose their job within the first few years (10-13). As a result, persons with IA have a high risk of job loss and permanent exclusion from the labour market (10, 14-16).

It is therefore relevant to offer non-pharmacological interventions that help keep people in the labour market (2, 10, 16). Such interventions are referred to as job loss prevention, occupational rehabilitation or vocational rehabilitation and in Denmark these interventions may be delivered by physiotherapists, occupational therapists, social workers and psychologists (1). In this article, these interventions are all referred to as job loss prevention interventions (JLPs).

JLPs are characterised by focusing on the person and the work setting and may include alternative ways to accomplish work tasks and adaptations of work settings (1, 17). Observational and qualitative studies indicate that such strategies may increase work ability and improve participation in work life for people living with IA (3, 7, 18). In 2014, Hoving et al. conducted a Cochrane review to assess the effectiveness of non-pharmacological interventions to prevent job loss, work absenteeism or improve work functioning for employees with IA (19). The review included randomised controlled trials (RCTs) that evaluated interventions aiming at preventing job

loss and included job loss as the primary outcome, with sickness absenteeism and work functioning as secondary outcomes (19). The interventions could include job accommodation or strategies to overcome work-related challenges. Thus, interventions aiming i.e. to improve physical functioning and coping were excluded, as these interventions were not directly designed to target work ability and employment. Three RCTs were included in the review, including a total of 414 participants at risk of losing their jobs (19). The review showed that participants receiving JLPIs reported a lower risk of losing their jobs and improved their work functioning compared to the control groups. However, the quality of the evidence was assessed to be low across study outcomes and the results were assessed as having a high risk of bias (19). Consequently, high-quality evidence is still needed (19). As the review was published in 2014, it seemed relevant to explore whether new evidence had been published since then, which could strengthen the evidence. Therefore, the aim of this study was to get an overview of the evidence to date of the effect of JLPIs that aim to improve work ability or decrease absenteeism and job loss in persons with IA.

Methods

The aim was achieved through an update of the previous Cochrane review by Hoving et al. from 2014 but with additional keywords (19). This review is reported as recommended by the PRISMA 2009 checklist (20), and adheres to the methods for a systematic review as described by Khan et al. which consists of five steps; 1) framing questions for a review, 2) identifying relevant work, 3) assessing the quality of studies, 4) summarising the evidence and 5) interpreting the findings (21).

Step 2: Identifying relevant work

We searched for articles published until February 2021 with no time restriction in the databases PubMed, EMBASE, CINAHL, PsycINFO and the Cochrane Library (Appendix 1). Besides using

the same keywords as in the review from 2014 (19), we added the following keywords; spondylitis, ankylosis, bechterew and spondyloarthritis. An experienced research librarian was involved in the search. An example of the search strategy for one of the databases can be seen in Appendix 1.

Selection criteria

The selection criteria were guided by the PICO model (Population, Intervention, Comparison and Outcome) (21, 22). Eligible studies included:

Population: Adults diagnosed with IA, encompassing RA, PsA, ax-SpA (including Morbus Bechterew and Ankylosing spondylitis) and of working age (18-65 years).

Intervention: The review included the same types of JLPs as described in the review from 2014 (19). JLPs that contained at least two of the following criteria were included:

- a) Interventions targeting work challenges including trying out different strategies and adaptations to improve specific work situations.
- b) Interventions directed at the individual person, including job coaching and training, vocational counselling, empowerment for work or self-management.
- c) Interventions directed at the work environment, including work adaptations, ergonomic measures, job accommodations or interventions targeted directly at the participants, supervisors or co-workers.

The above-mentioned intervention strategies (a, b or c) could be delivered as part of a multidisciplinary intervention.

Comparison: Participants receiving usual care, which may include medical treatment as well as outpatient consultations with a doctor and/or a nurse. The participants could also receive general oral or written information about living with a rheumatological disease.

Outcomes: We included outcomes concerning work participation (e.g. work functioning and work

ability), sickness absenteeism and job loss.

Study design and languages: Only RCTs published in English were included.

Inclusion and exclusion criteria: Only western countries were included meaning all countries in the European Union plus Andorra, Australia, Canada, Iceland, Liechtenstein, Monaco, New Zealand, Norway, San Marino, Switzerland, USA and Vatican City. Studies from non-western countries were excluded, as the cultural and legal context were considered to influence the content and effect of the JLPis.

Study selection

The selection of eligible studies was guided by the inclusion and exclusion criteria and was performed in two steps using the software management program Covidence (23). Two authors independently screened the search results and included articles based on title and abstract. Full-text articles were retrieved if it was not possible to assess study eligibility based on title and abstract. Two authors read and assessed the full-text articles independently. Agreement was achieved through discussions between all authors.

Step 3: Assessing the quality of the included studies

Two authors assessed the quality of the included RCTs using the Cochrane Risk of Bias Tool (RoB 1) and consulted the last author when in doubt (24). The RoB 1 assessment includes an evaluation of the quality on seven domains: 1) random sequence generation, 2) allocation concealment, 3) blinding of participants and personnel, 4) blinding of outcome assessment (in regard to work ability, absenteeism and job loss), 5) incomplete outcome data, 6) selective reporting, and 7) other sources of bias (25). The quality of each domain was evaluated using a simple assessment of low risk, high risk or unclear risk. The overall quality of each study was determined and assigned to one of three

pre-specified categories using the following predetermined cut-off criteria inspired by Nielsen et al. and Brandt et al. (26, 27):

- Good quality: when at least 75% of the RoB domains were assessed to be of low risk
- Acceptable quality: if 50–74% of the RoB domains were assessed to be of low risk
- Low quality: if 49% or less of the RoB domains were assessed to be of low risk

Step 4: Summarising the evidence

Extracted data were structured in a table, including study reference, population, the intervention (duration, dose, setting, delivery and content of the intervention) and control group (Table 1).

Finally, the outcome measures used to assess work ability, absenteeism and job loss were reported as well as the results from the identified studies. The results from the RCTs were reported as short term (\geq one day, up to three months), intermediate term (\geq three months and \leq 12 months) and long term (\geq 12 months) follow-up on each study outcome for both the interventions and the control groups and were summarised narratively.

Step 5: Interpretation of the findings

The results from each study were interpreted in relation to the RoB 1. The study results were compared and explored due to heterogeneity, to determine whether the overall summary was trustworthy. If not, the effects observed in the highest-quality studies were emphasised.

Recommendations were graded by reference to the studies strengths and weaknesses.

Results

Study selection

The search identified 6119 titles, including 1277 duplicates. In total 4807 titles were excluded based on title and abstract, and 35 full-text articles were retrieved, of which six RCTs were included, reported in seven articles (28-34) (Fig. 1).

[Fig. 1 - near here]

Characteristics of the included studies

Characteristics of the six included RCTs are shown in Table 1. One study was a feasibility RCT and thus not powered to show effect (30). Consequently, the study did not include statistical analyses to test for group differences. Still, we chose to include the study to illuminate changes across time in the intervention and control group, respectively. The six included RCTs involved a total of 906 participants (ranging from 32 to 287), in which the vast majority were women (n=684, 75%) with a mean age of 49 years.

The participants were recruited through rheumatologists, rheumatology departments, through community settings or medical registries (28-34). Two studies only included participants with RA (28, 29, 34) whereas the remaining four studies included participants with different rheumatology diagnoses including IA (30-33). In all studies, the participants undertook paid work, but were at risk of losing their jobs.

All studies included participants that were either in full-time or part-time work, and one study also included participants on sick leave (32). The participants reported being at risk of job loss, using different methods. Allaire et al., Keysor et al. and Hammond et al. assessed risk of job loss using question #6 from the Work Ability Index Questionnaire (WAI) "Do you have any concern about your health affecting your ability to work now or over the next few years?" (30, 31, 33). De

Buck et al. used the question “Do you have concerns that your rheumatic condition-related problems at work may result in job loss?” (32). Macedo et al., Vilsteren et al. and Hammond et al. assessed participants to be at risk of losing their job if they scored ≥ 10 on the RA-Work Instability scale (RA-WIS) (28, 29, 34) (Table 1). Five RCTs measured functional ability as in the range of mild limitation using the Health Assessment Questionnaire (HAQ) (28-30, 32-34).

In all six RCTs, the described JLPs aimed to improve one or more of the outcomes work ability, absenteeism and job loss through assessment, education and/or vocational counselling, self-management strategies, work adaptations or assistive devices. Duration and dose of the JLPs varied from 4-12 weeks up to six months and included a minimum of two individual sessions (32, 33) and up to 6-8 sessions of 30-120 minutes (34). In the study by Vilsteren et al., the JLP was performed at the participants’ workplaces (28, 29), while in the studies by de Buck et al., Hammond et al. and Macedo et al., the participants’ workplaces were only involved if considered relevant (30, 32, 34). The studies by Allaire et al. and Keysor et al. the workplaces were not involved (31, 33).

The JLPs also varied by being delivered by different monodisciplinary or multidisciplinary health professionals. In the studies by de Buck et al. and Vilsteren et al. (28, 29, 32), the interventions were delivered by a multidisciplinary team, while in the studies by Macedo et al. and Hammond et al., the JLPs were delivered by occupational therapists only (30, 34). In the study by Keysor et al., the JLP was either delivered by an occupational therapist or physiotherapist (31). The study by Allaire et al. was the only study in which occupational therapists did not take part in the intervention, which was delivered by rehabilitation counsellors employed by the study (33). In all studies, the control groups received usual care such as information packs with written resource material in print or by email, interviews, self-help information or written information about the social security system regarding work ability or absenteeism in the country in question. Please see Table 1 for further details.

All studies reported outcomes at 6-month follow-up. Macedo et al. was the only study that did not include additional follow-up time periods (34). Hammond et al. also included a 9-month follow-up (30), Vilsteren et al. included a 12-month follow-up (29) de Buck et al. and Keysor et al. included a 24-month follow-up (31, 32), while Allaire et al. even included 48-months follow up (33).

Work ability and/or workplace barriers were assessed systematically using self-administered questionnaires in five of the six studies (28-31, 33, 34). The RA-WIS (35), which includes 23 items measuring the degree of present mismatch between functional abilities and workplace demands, was used in three studies (28-30, 34). The Work Limitations Questionnaire (WLQ) (36), which includes 25 items measuring work related limitations during the last two weeks, such as physical work demands, time demands, mental-interpersonal demands and output demands, was used in three of the included studies (28-31). The Work Activities Limitations Scale (WALS) (37), which includes 12 items measuring the degree of difficulty performing physical work activities, was used in one study (30). Absenteeism was assessed in three studies (30, 31, 34). Macedo et al. combined absenteeism and presenteeism in a self-developed Modified Health Economics Questionnaire (34). Keysor et al. and Hammond et al. reported absenteeism by self-reported count of workdays missed due to general health or arthritis (30, 31). In three studies, job loss was assessed by number of self-reported days of job loss (30, 32, 33).

[Table 1 - near here]

Quality of the included studies

Fig. 2 gives an overview of the authors' assessment of each domain in the RoB 1, which is presented as percentages across all the included studies. Across all studies, problems related to

attrition-, reporting - or other types of bias were assessed to be of low risk. Selection bias (random sequence generation and allocation concealment) predominately caused low risk of bias. However, in some studies the risk of selection bias was unclear. Performance bias (blinding of participants and personnel) was high in five out of six studies (28-32, 34). Detection bias (blinding of outcome assessment) was assessed as high in all the studies that included work ability and absenteeism as outcomes, while detection bias was assessed to be low in studies reporting on job loss (30-33).

[Fig. 2- near here]

Fig. 3 provides the authors' RoB 1 assessments across all six RCTs and presents the overall quality assessments. The study by Allaire et al., was the only study assessed as having overall good quality (33), while the other five studies were assessed as having acceptable quality (28-32, 34).

[Fig. 3 - near here]

Randomisation and group allocation were performed with high quality in four of the six RCTs (28-32). Two studies did not report how the randomisation was performed (33, 34) and one study did not report how allocation concealment was accomplished (32). Due to the nature of the JLPs, blinding of participants and personnel was difficult. Only one study was assessed as having low risk of bias regarding performance bias, as the participants in both the intervention and the control group were informed that two different JLPs were tested and thus this study was assessed as having low risk of bias regarding job loss as outcome (33). Absenteeism and work ability as outcomes were assessed as having high risk of bias in four of the studies as the self-reported outcome assessments may be influenced by recall bias and performance bias which may occur when participants are informed about their group allocation (28-31, 34).

All studies had low risk of bias due to loss of follow-up, as loss of follow-up was equally distributed in the intervention - and control groups (28-34). There was low risk of reporting bias, as significant and non-significant results of the interventions were reported in all studies (28-34) (see Fig. 3). In Table 2 the assessment of risk of bias are described in more detail.

[Table 2 - near here]

Overall quality of the studies

Only the study by Allaire et al. was assessed to be of overall good quality, as only the random sequence generation was unclearly described (33). The other five studies were assessed to be of acceptable quality (Fig. 3). The study by de Buck et al. was downgraded due to an unclear description of the allocation concealment and lack of blinding among the participants and the rheumatologist (32). This lack may have influenced the participants' subjective outcomes reporting of work ability and absenteeism. Thus, the studies by Macedo et al., Vilsteren et al., Hammond et al and Keysor et al, were downgraded to acceptable quality (28-31, 34). In addition, the studies by Hammond et al. and Keysor et al. risked bias due to the lack of blinding and the use of subjective outcome reporting on work ability and absenteeism (30, 31).

Effect of the interventions

Work ability

Table 1 reports the effect of JLPs on work ability. Four of the six RCTs reported work ability as an outcome (28-31, 34). Macedo et al. reported a statistically significant group difference in work ability at six-months follow-up using the RA-WIS favouring the intervention group (34). Keysor et al. found no statistically significant group difference in work ability at any time point measured by

the WLQ (31). Both the intervention and control group seemed to improve in work ability (reflected in lower WLQ scores) although the changes from baseline were insignificant (31). Vilsteren et al. did not find a significant difference either at six or 12 months on the WLQ or any of the subscales time management demands, physical demands, mental-interpersonal demands or output demands (28, 29). The results from the feasibility study by Hammond et al. indicated a small effect in work ability at the six-month follow-up and nine-month follow-up, but as the study was a feasibility study no statistical tests were performed to test for group differences (30) (Table 1).

Absenteeism

Three of the six RCTs that were included reported absenteeism as an outcome (30, 31, 34). One study showed a statistically significant effect from the JLPI on number of sick days due to arthritis at the 24-month follow-up (31). The participants in the intervention group reported 1.4 days of absenteeism compared to 3.6 days in the control group (31). Contrary to this, Macedo et al. did not find a statistically significant difference in number of workdays missed due to illness at the 6-month follow-up (34). The feasibility study by Hammond et al. indicated an intervention effect but was not powered to test for statistical significance (Table 1) (30).

Job loss

Four RCTs reported on job loss (30-33), in which two studies indicated a positive effect on job loss (31, 33). Keysor et al. reported a significant difference between the groups in permanent job loss after 24 months (31). In addition, 35% of the participants in the intervention group and 46% in the control group experienced temporary job loss, but this difference was not statistically significant. In the study by Allaire et al., the participants in the intervention group reported significantly less

permanent and temporary job loss at both the 12-month follow-up and 24-month follow-up compared to participants who received usual care (33).

No group difference was indicated in the feasibility study by Hammond et al. regarding job loss (30). Likewise, de Buck et al. reported no statistically significant difference in job loss at the 12-month follow-up and 24-month follow-up (32) (Table 1).

Discussion

The aim of this review was to get an overview of the present evidence of the effect of JLPI, which aims to improve work participation and decrease absenteeism and job loss in persons with IA. Five of the six RCTs were assessed to be of acceptable quality (28-32, 34) and one study of good quality (33).

Work ability

Four RCTs measured work ability (28-31, 34) but only the study by Macedo et al. reported a statistically significant reduction in work disability favouring the JLPI group (34). Of the four studies reporting work ability as an outcome, this study represented the highest dose and duration of the JLPI. Although only 14 participants received 6-8 sessions and two participants only received a single session, an improvement in work ability (RA-WIS) was still seen among the 16 participants.

The Macedo et al. study was the only study to include group sessions in combination with individualised JLPI (34), and the positive results may indicate that a combination can be important for a positive effect on work ability, when delivering an effective JLPI. A positive trend towards a reduction in work disability was also identified in the feasibility study by Hammond et al. (30).

Occupational therapists were involved in delivering the JLPI in five of the six RCTs (28-32, 34). However, in the studies by Macado et al. and Hammond et al. (30, 34), the JLPis were

delivered only by occupational therapists emphasising tailoring individualised plans for the participants.

Occupational therapists are trained to use process models and theories to individualize interventions to directly target those task performance problems that the individual identifies as important. Thus, occupational therapists are skilled in delivering individualised JLPs in order to increase work ability. Despite small sample sizes in the studies by Hammond et al. and Macedo et al. (30, 34) these studies showed positive improvements whereas the more powered studies by Vilsteren et al. and Keysor et al. showed no effect (28, 29, 31). This may indicate that it is easier to ensure a consistent focus and engagement from the health professionals delivering interventions in small studies, but the effect also has to be higher to reach statistical significance.

Different outcome measures for work ability were used across the studies, which makes it difficult to compare the results. Both the studies by Macedo et al. and Hammond et al. were assessed to be of acceptable quality and were predominately downgraded due to problems with blinding of participants, personal and outcome assessment (30, 34). Consequently, the results on work ability should be interpreted with caution.

Absenteeism

Three RCTs assessed absenteeism (30, 31, 34) and two of these reported positive results of reduced number of sick days in the intervention group (30, 31). The intervention in these two studies was delivered by occupational therapists and physiotherapists and included assessment and action plans. In all three studies sick leave was self-reported, which could bias the results. In the study by Hammond et al. the participants reported sick leave in a weekly calendar (30). In the studies by Keysor et al. and Macedo et al. the participants reported their number of sick leaving days once a month or once every three months (31, 34). Macedo et al. did not find any difference between the

intervention and the control group in absenteeism, which may be due to the small sample size and that the power calculation was based on the primary outcome, the Canadian Occupational Performance Measure (COPM), which is an outcome with a wide variation (34). The studies by Hammond et al. and Keysor et al. were assessed to be of acceptable quality, as they were downgraded due to problems with blinding of participants, personal and outcome assessment (30, 31). Consequently, the results related to absenteeism should also be interpreted with caution.

Job loss

Four out of the six studies reported job loss outcomes (30-33) and in the two studies by Keysor et al. and Allaire et al., the participants in the intervention groups had a lower risk of losing their job or lower risk of having to go on disability pension than the participants in the control groups (31, 33). De Buck et al. did not find an effect on job loss (32) which might be due to the low dose with only 4-12 weeks of intervention compared to the study by Allaire et al., where the intervention lasted for five months and involved job accommodation, vocational counselling and work self-efficacy (33). In the study by Allaire et al. the JLPI was delivered by clinicians employed in the study (33). It can be speculated whether they may have a greater interest in demonstrating good results than clinicians outside the research team. Consequently, this may have influenced delivery and outcomes. In the study by Keysor et al., occupational therapists and physiotherapists delivered the interventions over a three-month period, involving action plans and telephone follow-ups (31). The participants in de Buck et al.'s study were allowed to be absent due to sickness at randomisation, indicating that the participants may already have a higher risk for permanent job loss at inclusion than participants in the other studies (32).

The study by Keysor et al. was assessed to be of acceptable quality and downgraded due to problems with blinding of participants, personal and outcome assessment (31). The study by Allaire

et al. was the only study to be assessed as overall good quality as the researchers had been able to blind participants to group allocation (33). Consequently, the results on job loss are based on a stronger evidence, compared to evidence supporting the effects on JLPI on work ability and absenteeism.

Overall completeness and applicability of evidence

The six RCTs used very heterogeneous outcomes. The descriptions of the content, duration and dose of the JLPis in the six studies were most often sparsely described, which makes them difficult to replicate. According to the UK Medical Research Council's (MRC) guidance, JLPI can be considered a complex intervention as it contains several interacting components which can influence the outcomes of the intervention such as the context, the implementation and the mechanism of impact (38). 1) The 'context' in which the JLPI is delivered, includes e.g. the health professionals delivering the JLPI and the characteristics of the participants receiving the JLPI, as well as the setting for delivering the JLPI. 2) The 'implementation' relates to *how* delivery is achieved, training of the clinicians etc. JLPI permits some flexibility in terms of tailoring the intervention to fit individual needs and the implemented JLPI will therefore vary in terms of *what* was actually delivered (fidelity, dose, adaptation and reach). 3) The 'mechanism of impact' informs about the participants' response to and interaction with JLPI, mediators and unexpected consequences (38). Without a clear description of the JLPI components, it is impossible to conclude whether limited effect in the RCTs are related to flaws in the JLPI design or failure to implement the interventions fully. In future studies the description of the interventions should be improved by using the TIDieR checklist and guide (39). Beyond focusing on the effectiveness of JLPI in RCTs, there is a need for a process evaluation to understand how the JLPI is implemented and what was

actually delivered, the causal mechanisms and their interaction with the context in order to be able to develop new effective JLPs for persons with IA (40, 41).

JLPs are related to an economic burden for society as well as for the individual (10, 14, 16). Several contextual factors have been found to affect the effect of JLPs such as job type, disease status, co-workers attitude, employers attitude, societal incentive, job motivation, habits and support at home (42). These factors should therefore be considered in future JLP studies.

Another important contextual factor when comparing JLPs across studies and countries is the potential difference in cultural and legal contexts (42, 43). For example, each country has its own insurance and disability pension system (43). In the Netherlands, the focus is on reintegration of employees when they are absent due to sickness (43). Two of the six RCTs that are included in this review are Dutch (28, 29, 32). Unfortunately, these studies did not measure absenteeism, but de Buck et al. measured job loss but showed no effect (32).

The lack of a consistent effect of JLPs across the included studies, may also be due to other factors. Persons with IA use energy in other daily occupations than work, why it is necessary to include other parts of daily life in the assessment and evaluation of work ability. It is worth mentioning that support and assistance at home are contextual factors that may influence work ability (42, 44). Change in work ability can be due to changes in general health or changes in job demands (44). Therefore, it could be important in future studies to explore the contextual factors such as disease status or job motivation through interviews with the participants.

Five of the six RCTs were assessed as having high risk of bias due to lack of blinding of the participants, personnel and outcome assessments (28-32, 34). Consequently, the body of evidence investigating the effects of JLPs are dominated by studies that are only of acceptable quality. Only the study by Allaire et al. succeeded in blinding the participants, and a similar approach is relevant in future studies (33).

Strengths and limitations

We consider it as a strength that we followed the five steps described by Khan et al., as it has made the process more transparent (21). We copied the strategy for the literature search used in the Cochrane review by Hoving et al. (19), but added new updated keywords on further diagnostic terms which strengthened the validity of the present review. Despite the efforts, more homogeneous studies of good quality including detailed descriptions of the interventions are needed to be able to develop stronger recommendations for future JLPs.

Two authors performed the selection of studies, while three authors were involved in the process of data extraction and risk of bias. We consider the involvement of several authors as a strength as it has minimised bias in the selection, extraction and assessment process. An experienced research librarian was involved in the literature search to ensure that the search strategy was conducted in a qualified manner. However, it is a limitation that we have not searched for grey literature, and consequently we cannot exclude that unpublished studies remain unidentified.

Conclusion

This review indicates that JLPs may have an effect on work ability, absenteeism and job loss among persons with IA. As the included studies showed inconsistent results, were heterogeneous in terms of content, duration, dose and outcomes, and causal mechanism of impact were not identified, recommendations for future JLPs are difficult to provide. Thus, it is relevant to test JLPs in good-quality RCTs nesting process evaluations to investigate the quality of implementation, mechanisms and contextual factors associated with variation in outcomes and with detailed descriptions of the content of the JLPs to be able to establish '*what works and for whom*'.

Compliance with Ethical Standards

In this review no participants or sensitive personal information is included and thus no consent or ethical approval were relevant.

Conflict of interest

The authors declare that they have no conflict of interest.

Research Involving Human and Animal Participants

This article does not contain any studies with human participants or animals performed by any of the authors.

References

1. Sturesson M, Edlund C, Fjellman-Wiklund A, Falkdal AH, Bernspång B. Work ability as obscure, complex and unique: Views of Swedish occupational therapists and physicians. *Work*. 2013;45(1):117-28.
2. Verstappen SMMP. Rheumatoid arthritis and work: The impact of rheumatoid arthritis on absenteeism and presenteeism. *Best Pract Res Cl Rh*. 2015;29(3):495-511.
3. Kristiansen TM, Primdahl J, Antoft R, Horslev-Petersen K. Everyday life with rheumatoid arthritis and implications for patient education and clinical practice: a focus group study. *Musculoskeletal Care*. 2012;10(1):29-38.
4. Lutze U, Archenholtz B. The impact of arthritis on daily life with the patient perspective in focus. *Scand J Caring Sci*. 2007;21(1):64-70.
5. Kristiansen TM, Primdahl J, Antoft R, Horslev-Petersen K. It means everything: continuing normality of everyday life for people with rheumatoid arthritis in early remission. *Musculoskeletal Care*. 2012;10(3):162-70.
6. Lempp H, Scott D, Kingsley G. The personal impact of rheumatoid arthritis on patients' identity: A qualitative study. *Chronic Illness*. 2006;2(2):109-20.
7. Nordmark B, Blomqvist P, Andersson B, Hägerström M, Nordh-Grate K, Rönnqvist R, et al. A two-year follow-up of work capacity in early rheumatoid arthritis: a study of multidisciplinary team care with emphasis on vocational support. *Scand J Rheumatol*. 2006;35(1):7-14.
8. Primdahl J, Hegelund A, Lorenzen AG, Loeppenthin K, Dures E, Appel Esbensen B. The Experience of people with rheumatoid arthritis living with fatigue: a qualitative metasynthesis. *BMJ Open*. 2019;9(3):e024338-e.
9. Beaton D, Bombardier C, Escorpizo R, Zhang WEI, Lacaille D, Boonen A, et al. Measuring Worker Productivity: Frameworks and Measures. *The Journal of Rheumatology*. 2009;36(9):2100-9.
10. Sokka T, Kautiainen H, Pincus T, Verstappen SM, Aggarwal A, Alten R, et al. Work disability remains a major problem in rheumatoid arthritis in the 2000s: data from 32 countries in the QUEST-RA study. *Arthritis Res Ther*. 2010;12(2):R42.
11. Uhlig T, Moe RH, Kvien TK. The burden of disease in rheumatoid arthritis. *Pharmacoeconomics*. 2014;32(9):841-51.
12. Verstappen SM, Bijlsma JW, Verkleij H, Buskens E, Blaauw AA, ter Borg EJ, et al. Overview of work disability in rheumatoid arthritis patients as observed in cross-sectional and longitudinal surveys. *Arthritis and rheum*. 2004;51(3):488-97.
13. Verstappen SM, Watson KD, Lunt M, McGrother K, Symmons DP, Hyrich KL. Working status in patients with rheumatoid arthritis, ankylosing spondylitis and psoriatic arthritis: results from the British Society for Rheumatology Biologics Register. *Rheumatology (Oxford, England)*. 2010;49(8):1570-7.
14. Hansen SM, Hetland ML, Pedersen J, Ostergaard M, Rubak TS, Bjorner JB. Effect of rheumatoid arthritis on longterm sickness absence in 1994-2011: A danish cohort study. *J Rheumatol*. 2016;43(4):707-15.
15. Boonen A, Vet Hd, Heijde Dvd, Linden Svd. Work status and its determinants among patients with ankylosing spondylitis. A systematic literature review. *The Journal of Rheumatology*. 2001;28(5):1056-62.
16. Cooper NJ. Economic burden of rheumatoid arthritis: A systematic review. *Rheumatology*. 2000;39(1):28-33.

17. Desiron HAM, de Rijk A, Van Hoof E, Donceel P. Occupational therapy and return to work: a systematic literature review. *BMC Public Health*. 2011;11(1):615-.
18. Holland P, Collins AM. "Whenever I can I push myself to go to work": a qualitative study of experiences of sickness presenteeism among workers with rheumatoid arthritis. *Disabil Rehabil*. 2018;40(4):404-13.
19. Hoving JL, Lacaille D, Urquhart DM, Hannu TJ, Sluiter JK, Frings-sen MHW. Non-pharmacological interventions for preventing job loss in workers with inflammatory arthritis. *Cochrane Libr*. 2014;2014(11).
20. Moher D, Liberati A, Tetzlaff J, Altman DG, Group P, for the PG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *BMJ*. 2009;339(7716):332-6.
21. Khan KS, Kunz R, Kleijnen J, Antes G. Five Steps to Conducting a Systematic Review. *J Roy Soc Med*. 2003;96(3):118-21.
22. Lund H. *Håndbog i litteratursøgning og kritisk læsning: redskaber til evidensbaseret praksis*. 1. udgave ed. Kbh2014.
23. Covidence. 2019 Available from: <https://www.covidence.org/home>.
24. Cochrane. Cochrane Risk of Bias Tool Available from: <https://methods.cochrane.org/bias/resources/cochrane-risk-bias-tool>.
25. Higgins JPT, Green S, Cochrane C. *Cochrane handbook for systematic reviews of interventions*. 1. Aufl.;1st; ed. Chichester, West Sussex: John Wiley & Sons; 2008.
26. Nielsen TL, Petersen KS, Nielsen CV, Strøm J, Ehlers MM, Bjerrum M. What are the short-term and long-term effects of occupation-focused and occupation-based occupational therapy in the home on older adults' occupational performance? A systematic review. *Scand J Occup Ther*. 2017;24(4):235-48.
27. Brandt Å, Hansen EM, Christensen JR. The effects of assistive technology service delivery processes and factors associated with positive outcomes – a systematic review. *Disabil Rehabil*. 2019:1-14.
28. van Vilsteren M, Boot CR, Twisk JW, van Schaardenburg D, Steenbeek R, Voskuyl AE, et al. Effectiveness of an integrated care intervention on supervisor support and work functioning of workers with rheumatoid arthritis. *Disabil Rehabil*. 2017;39(4):354-62.
29. van Vilsteren M, Boot CR, Twisk JW, Steenbeek R, Voskuyl AE, van Schaardenburg D, et al. One Year Effects of a Workplace Integrated Care Intervention for Workers with Rheumatoid Arthritis: Results of a Randomized Controlled Trial. *J Occup Rehabil*. 2017;27(1):128-36.
30. Hammond A, O'Brien R, Woodbridge S, Bradshaw L, Prior Y, Radford K, et al. Job retention vocational rehabilitation for employed people with inflammatory arthritis (WORK-IA): a feasibility randomized controlled trial. *BMC Musculoskelet Di*. 2017;18(1):315.
31. Keysor JJ, LaValley MP, Brown C, Felson DT, AlHeresh RA, Vaughan MW, et al. Efficacy of a Work Disability Prevention Program for People with Rheumatic and Musculoskeletal Conditions: A Single-Blind Parallel-Arm Randomized Controlled Trial. *Arthrit Car Res*. 2018;70(7):1022-9.
32. de Buck PD, le Cessie S, van den Hout WB, Peeters AJ, Ronday HK, Westedt ML, et al. Randomized comparison of a multidisciplinary job-retention vocational rehabilitation program with usual outpatient care in patients with chronic arthritis at risk for job loss. *Arthritis Rheum*. 2005;53(5):682-90.

33. Allaire SH, Li W, LaValley MP. Reduction of Job Loss in Persons With Rheumatic Diseases Receiving Vocational Rehabilitation: A Randomized Controlled Trial. *Arthrit Rheum.* 2003;48(11):3212-8.
34. Macedo AM, Oakley SP, Panayi GS, Kirkham BW. Functional and work outcomes improve in patients with rheumatoid arthritis who receive targeted, comprehensive occupational therapy. *Arthrit Care Res.* 2009;61(11):1522-30.
35. Gilworth G, Chamberlain MA, Harvey A, Woodhouse A, Smith J, Smyth MG, et al. Development of a work instability scale for rheumatoid arthritis. *Arthrit Care Res.* 2003;49(3):349-54.
36. Lerner D, Amick BC, Rogers WH, Malspeis S, Bungay K, Cynn D. The Work Limitations Questionnaire. *Med Care.* 2001;39(1):72-85.
37. Gignac MAM, Badley EM, Lacaille D, Cott CC, Adam P, Anis AH. Managing arthritis and employment: Making arthritis-related work changes as a means of adaptation. *Arthrit Car Res.* 2004;51(6):909-16.
38. Craig PD, Paul; Macintyre, Sally; Michie, Susan; Nazareth, Irwin; Petticrew, Mark; . Developing and evaluating complex interventions: the new Medical Research Council guidance. *BMJ.* 2008;337(a1655).
39. Hoffmann TC, Glasziou PP, Boutron I, Milne R, Perera R, Moher D, et al. Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. *BMJ : Brit Med J.* 2014;348(mar07 3):g1687-g.
40. Oakley A, Strange V, Bonell C, Allen E, Stephenson J, Team RS. Process evaluation in randomised controlled trials of complex interventions. *BMJ.* 2006;332(7538):413-6.
41. Moore GF, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions: Medical Research Council guidance. *BMJ : Brit Med J.* 2015;350.
42. Escorpizo R, Burghardt E, Richards C. Type of job, personal factors, and disease status are important contextual factors when measuring worker productivity in people with arthritis: a Delphi study. *Disabil Rehabil.* 2019:1-8.
43. Mittag O, Kotkas T, Reese C, Kampling H, Groskreutz H, de Boer W, et al. Intervention policies and social security in case of reduced working capacity in the Netherlands, Finland and Germany: a comparative analysis. *Int J Public Health.* 2018;63(9):1081-8.
44. Tang K, Escorpizo R, Beaton DE, Bombardier C, Lacaille D, Zhang W, et al. Measuring the Impact of Arthritis on Worker Productivity: Perspectives, Methodologic Issues, and Contextual Factors. *J Rheumatol.* 2011;38(8):1776-90.