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What multi-disciplinary delivery models for Occupational Health services are effective for whom? An umbrella review

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What multi-disciplinary delivery models for Occupational Health services are effective for whom? An umbrella review

Final Report 12.08.22

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None.

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Data-sharing statement

Requests for access to data should be addressed to the corresponding author.

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Contributions

The opinions expressed in this publication are not necessarily those of the Exeter PRP Evidence Review Facility or the funders. Responsibility for the views expressed remains solely with the authors.

Guarantor of the review

Professor Jo Thompson Coon

This report should be cited as:



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Abbreviations

AMSTAR-2 A MeaSurement Tool to Assess systematic Reviews

CEESAT The Collaboration for Environmental Evidence Synthesis Appraisal Tool

DHSC Department of Health and Social Care

DWP Department of Work and Pensions

MDT Multi-disciplinary Team

NHS National Health Service

NHSE-I National Health Service England and NHS Improvement

OH Occupational Health

OP Occupational Physician

OT Occupational Therapist

PT Physio or Physical Therapist

PHE Public Health England

PRISMA Preferred Reporting Items for Systematic Reviews and Meta-Analyses

PRP Policy Research Programme

SW Social Worker

UK United Kingdom

Executive summary

What did we want to know?

In the UK, tens of millions of working days are lost due to work-related ill health every year, costing billions of pounds. Prior to the COVID-19 pandemic, around 8 million working-age people were registered disabled and about half of these were in employment.

The role of Occupational Health (OH) services is vital in helping workers to maintain employment when they encounter injury or illness. Part of this role is to advise on prevention of illness and injury at work, but a large part of it is to manage the recovery, rehabilitation and return to work (RTW) of sick-listed employees. The combination of an ageing population, increasing levels of chronic illness, mental health difficulties and disability, and the removal of the default retirement age, means that the demand for occupational health (OH) services is ever increasing.

OH providers traditionally rely on a clinical workforce to deliver these services, particularly doctors and nurses with OH qualifications. However, the increasing demand for OH services is unlikely to be met in future using this traditional model, as the number of OH-trained doctors and nurses in the UK is declining. Experts suggest multi-disciplinary models of OH delivery, including a more varied range of healthcare and non-healthcare professionals, can be highly effective. Moving to a more multidisciplinary workforce could also enable OH market capacity to significantly increase to meet new demand with less reliance on OH-trained doctors and nurses.

There is a therefore a pressing need to identify effective collaborative models of occupational health service delivery that involve a variety of healthcare and non-healthcare professionals. At this stage, it is necessary to review existing evidence regarding the effectiveness of multi-disciplinary OH-delivered interventions on return-to work outcomes.

There is an existing pool of systematic review evidence evaluating OH interventions, but it is difficult to identify which aspects of the delivery of these interventions may be associated with success. The array of interventions and conditions studied across the systematic review evidence base makes it difficult to distil a broader sense of what might be effective. By seeking to evaluate any workplace based multidisciplinary OH intervention that involved the workplace and looking across any health condition leading to sickness absence, we sought to determine which combination of multidisciplinary professionals are effective for different populations.

Aim

To review the effectiveness and cost-effectiveness systematic review evidence that evaluates multidisciplinary OH interventions aiming to improve work outcomes including return to work and reduced sickness absence.

Research questions

- 1. What multi-disciplinary delivery models for OH services are effective, and for whom?
- 2. What are the characteristics of effective multi-disciplinary delivery models for OH?
- 3. Which multi-disciplinary models of OH service delivery are cost-effective?

Specific research objectives:

To identify, critically appraise, and narratively summarise systematic review evidence regarding:

- 1. The effectiveness of multi-disciplinary interventions intended to improve work outcomes following illness or injury, such as return to work and reduced sickness absence;
- 2. The cost-effectiveness of multi-disciplinary interventions intended to improve work outcomes following illness or injury.

To meet these research objectives, we aimed to:

- 1. Identify, critically appraise, and map relevant systematic review evidence;
- 2. Narratively summarise the key findings;
- 3. Develop a taxonomy of successful interventions.

What did we find?

Systematic review evidence

We identified 89 systematic reviews that contained relevant interventions which involved a variety of professionals and the workplace, and which measured effectiveness in terms of RTW. Of these, we focused on the 24 where the population and intervention characteristics within the systematic reviews were the most relevant to our research questions. The 24 reviews were of varying quality, split evenly between High/Moderate quality and Low/Critically Low-quality ratings.

We mapped these 24 reviews in an evidence and gap map

(https://eppi.ioe.ac.uk/cms/Portals/35/Maps/MN_Exeter_Feb22.html), providing a visual representation of the evidence. Due to the heterogeneity of the interventions included within the systematic reviews, we were unable to structure the map according to the different types of intervention being evaluated. Instead, using the evidence and gap map, it is possible to view i) the quality and quantity of systematic review evidence for a given health condition, ii) how the review

authors rated the effectiveness or cost-effectiveness of the interventions included. Furthermore, by navigating the evidence and gap map, one can see the relevant primary studies within each review.

Our umbrella review provides the first point of reference for interventions under the broad remit of multidisciplinary OH services involving the workplace, across any health condition leading to sick leave. However, the body of systematic review evidence about multidisciplinary models of OH services is highly heterogeneous in terms of intervention, health condition, size and quality and we were unable to draw conclusions about the relative effectiveness of different interventions across health conditions from this body of evidence.

What are the implications?

This umbrella review has highlighted an array of systematic review evidence that exists in relation to the effectiveness or cost-effectiveness of multi-disciplinary OH interventions in supporting RTW. This evidence may be useful for supporting policy makers and commissioners of services to determine which OH interventions may be most useful for supporting different population groups in different contexts. OH professionals may find the content of the evidence and gap map useful in identifying systematic review evidence to support their practice.

The evidence and gap map also identifies where systematic review evidence in this area is lacking, or where existing evidence is of poor quality. These may represent areas where it may be particularly useful to conduct further systematic reviews. This umbrella review also highlights the primary studies within these reviews which are specifically relevant to our research aims and objectives. A series of smaller, more specific, systematic reviews, including a search focused on identifying primary studies, quality appraisal and full synthesis, could be conducted using these studies as a starting point/basis to determine the confidence which can be placed in the descriptive findings of this review.

How did we get these results?

We followed best practice guidance, and our protocol was registered on the Open Science Framework. Our approach was that of an umbrella review, featuring a rigorous search for systematic review evidence, critical appraisal and mapping of evidence.

Finding the systematic review evidence

The search strategy included search terms that describe returning to work, such as 'return to work', 're-entering work' and 'vocational rehabilitation', in conjunction with a systematic review study type filter. An historical date limit of 2001 was applied, and the results limited to English language studies. We searched a selection of health and non-health care bibliographic databases and search engines to

identify evidence from a variety of sectors of employment. To identify grey literature we searched Google Search, Google Scholar and a selection of topically relevant websites. We also consulted with stakeholders to identify reports already known to them.

We sought systematic reviews about adults (16 or over) in employment who have had absence or are absent from work for any medical reason and were receiving an intervention to get them back to work or help them retain work. Interventions needed to be multi-disciplinary (including professionals from different backgrounds in clinical and non-clinical professions) and designed to support employees and employers to manage health conditions in the workplace and/or to help employees with health conditions retain work and/or return to work following medical absence. Effectiveness needed to be measured in terms of return to work, work retention or measures of absence, or economic evaluation outcomes.

Data extraction and quality appraisal

Summary data for each eligible review was extracted. More detailed data extraction was carried out for the twenty-four reviews rated as being the most relevant to the aims of our umbrella review. Then, details of the primary studies identified within these reviews that met our inclusion criteria, were extracted. This aimed to supplement data which was reported poorly at the level of the review and focused on information about the professionals who delivered the intervention. All data were extracted by one reviewer and checked by a second, with disagreements being settled through discussion.

The quality of the systematic reviews rated as high or medium relevance following full-text screening was appraised using the AMSTAR-2 quality appraisal tool.

Data analysis and presentation

Summary data for all eligible systematic reviews were tabulated and described narratively. The data extracted from reviews of High and Medium relevance was imported into EPPI-Mapper software to create an evidence and gap map

(https://eppi.ioe.ac.uk/cms/Portals/35/Maps/MN Exeter Feb22.html)

The evidence and gap map was structured according to the health condition that led to sick leave, and the main findings relating to the return to work outcome(s) reported at review level. The size and colour of the circles within each segment of the map represent the number and quality of reviews reporting RTW outcomes for interventions conducted with particular health conditions.

Each segment can be clicked upon to view the abstracts of the systematic reviews included in that segment, and a link to the included primary studies which were relevant to our umbrella review.

Details of the systematic reviews included within the map were tabulated and described narratively.

Primary studies which were relevant to the aims of our umbrella review were tagged in the record of the included systematic review within the map.

Stakeholder involvement

We worked alongside a variety of stakeholders and advisors to ensure our umbrella review reflects the needs of individuals who will use it. Stakeholders included commissioners and policy makers from DHSC and DWP, OH personnel and people with lived experience of accessing OH services themselves and/or supporting employees to access OH services.

Background

The impact of ill-health on productivity within the workplace

In the UK, around 19.5% of working age adults have a disability¹ and approximately 42 percent of the 50-64 year olds within the UK living with a chronic condition.² Two-thirds of long-term sickness absence has been attributed to common health problems such as musculoskeletal, mental health and cardio-respiratory conditions,³ with 27% of Europeans of working age reporting living with a mental disorder.⁴ Overall in the UK during 2017/18, over 38 million working days were lost due to work-related ill health, with nearly £10 billion annual costs attributable to new cases in 2019/20.⁵ Approximately 8 million working age people were registered disabled prior to the COVID-19 pandemic. Of these around 50% were in employment, compared to over 80% of non-disabled people.⁶

The aging UK population,⁷ accompanied by the removal of default retirement age,⁸ increased prevalence of chronic conditions and comorbidities⁹ and concerns regarding the impact of the COVID-19 pandemic¹⁰⁻¹³ means there is an increased demand for workforce-based support to enable individuals to continue their productive working lives for as long as they choose. Workplace-led interventions can also help ensure the next generation of workers are healthier, thus remaining fit for work, by reducing the occurrence of work-based harms and impact of lifestyle challenges such as smoking and obesity.^{2,9} In addition to economic benefits, increased time in employment has been associated with improved mental and physical health, participation and reduced used of healthcare services, and a recent population-based study showed that employment status had a larger moderating effect on personal wellbeing than factors such as age, gender, ethnicity and education. ¹⁴ The recent COVID-19 pandemic is also likely to have implications for the workforce, both in terms of increased prevalence of mental ill-health,¹⁵ and 'long-Covid' symptoms,¹⁶ and changes to working patterns, which may affect the support requirements of employees.¹⁷

Role of Occupational Health services

Occupational Health (OH) services ensure that workplaces meet the physical and mental health needs of their employees. Whilst there is no internationally agreed definition of the OH services, their role can include advising employers on preventing work-related illness, fitness to work and reasonable work-adjustments. These services are traditionally mostly delivered by clinical staff, particularly OH-trained doctors and nurses, but can involve multi-disciplinary teams consisting of a combination of both healthcare and non-healthcare professionals including, but not limited to, doctors, nurses occupational therapists, physiotherapists and OH technicians. However, the number of existing clinicial occupational health specialists available are insufficient to meet current demand for services, and could be a barrier to measures aiming to expand access to OH amongst the working population.

To ensure that OH services meet the changing needs of the future workforce, commissioners of OH services will require continued support and guidance from OH leads to inform their decisions, with additional support being devoted to help employers not currently commissioning OH services to understand the benefits of occupational health and what multidisciplinary OH teams can provide. There is the need to reflect that whilst much healthcare is provided by the NHS, many OH services are not, with OH service provision needing to span work and healthcare settings and take into consideration the decline in the number of OH doctors and nurses. Reviewing existing evidence regarding the effectiveness of multi-disciplinary OH interventions on return-to work outcomes, including delivery mechanisms, will help inform the needs of those commissioning future OH services and be used by OH providers to expand OH market capacity.

Existing evidence

Whilst there is an abundance of systematic review evidence which seeks to evaluate single and multi-component OH interventions which aim to improve work and health-based outcomes, it is difficult to identify which aspects of the content and/or delivery of these interventions may be associated with success. One review sought to produce a classification of components of workplace disability management programmes, but found there was not sufficient evidence to determine if specific program components were associated with increased effectiveness.²¹ By seeking other types of OH intervention, we sought to determine which multi-disciplinary OH service models are effective for different populations. Here "service-model" means the number and profession of individuals contributing towards the multi-disciplinary OH team.

Aim

To review the effectiveness and cost-effectiveness systematic review evidence that evaluates multidisciplinary OH interventions aiming to improve work outcomes including return to work and reduced sickness absence.

Research questions

- 1. What multi-disciplinary delivery models for OH services are effective, and for whom?
- 2. What are the characteristics of effective multi-disciplinary delivery models for OH?
- 3. Which multi-disciplinary models of OH service delivery are cost-effective?

Specific research objectives:

To identify, critically appraise, and narratively summarise systematic review evidence regarding:

1. The effectiveness of multi-disciplinary interventions intended to improve work outcomes following illness or injury, such as return to work and reduced sickness absence;

2. The cost-effectiveness of multi-disciplinary interventions intended to improve work outcomes following illness or injury.

To meet these research objectives, we:

- 1. Identified, critically appraised, and mapped relevant systematic review evidence.
- 2. Narratively summarised the key findings from the systematic reviews.
- 3. Developed a taxonomy of successful interventions.

Methods

Scoping searches

Our choice of umbrella review resulted from a period of extensive scoping, which revealed an extremely large number of both existing systematic reviews and primary studies within this field. This presented us with a dilemma on how best to focus the inclusion criteria of our review to ensure the number of studies retrieved was manageable, whilst also ensuring the review fully addressed the interests of our stakeholders. We considered several options for this, including:

- Reducing the scope of this review through more focused inclusion criteria: This would have
 made the number of reviews/primary studies more manageable for us as reviewers but
 reduced the relevance to our stakeholders.
- 2. Including primary studies only. Given the breadth of our stakeholder's interests and the number of primary studies, this was deemed unfeasible within the timeframe available to us.
- 3. Conducting a systematic review of reviews, or umbrella review. We felt this was an appropriate option in a field with such a high number of relevant systematic reviews since it seeks to make the most of the existing evidence base.

Ultimately, we decided that we should undertake an umbrella review. This is a systematic review of systematic reviews which focuses on "a broad condition or problem for which there are competing interventions and highlights reviews that address these interventions and their results" (Grant and Booth, 2009 p95).²² An umbrella review does not include searches for primary evidence, instead focusing on identification and quality appraisal of component reviews and/or the primary studies within them. Typical methods of synthesis are graphical or tabular, accompanied by a narrative synthesis.²² An umbrella review does not usually involve additional statistical analysis of the data presented within the included reviews. We were aware that there can be issues in terms of heterogeneity of the research aims of included reviews and poor-quality reporting of key details of interventions but mapping out the body of evidence seemed the most appropriate compromise to address the uncertainties posed by the policy customer whilst not contributing further to research waste. We therefore undertook an umbrella review, presenting the findings as an interactive evidence and gap map. Our methods were consistent with the best practice approach recommended by Aromataris et al., (2015) for the conduct of umbrella reviews.²³ Full details of the methods used to identify the literature and create the evidence and gap map can be found in our review protocol, approved by review commissioners prior to commencement of the review and registered on the

Open Science Framework.(DOI 10.17605/OSF.IO/QA7N2) Methods are reported according to

relevant aspects of the PRISMA reporting guidance.²⁴

We made several amendments to the protocol over the course of the review. These are detailed

within the relevant sections of the methods below; a full list can be found in Appendix A.

Identification of studies

The search for relevant systematic reviews combined searches of bibliographic databases, with web-

based searches, checking the reference lists of included systematic reviews and contact with experts.

We also checked the reference lists of systematic reviews which were judged as highly relevant to the

review question.

The bibliographic database search strategies were developed using MEDLINE (via Ovid) by an

information specialist (SB) in consultation with the review team and key stakeholders. The initial

selection of search terms were derived from evidence on how to search for return to work studies²⁵

and the titles, abstracts and indexing terms of pre-identified studies relevant to our research

objectives. Search terms thus identified were supplemented by an appropriate selection of synonyms

and reviewed by stakeholders with expertise of returning to work following illness or parental leave.

The final search strategy included search terms that describe returning to work, such as 'return to

work', 're-entering work' and 'vocational rehabilitation', and search terms which describe sickeness

absence, combined with a systematic review study type filter. We used controlled headings wherever

they were available (e.g. MeSH in MEDLINE) alongside free-text searching in the title and abstract

fields of bibliographic records. An historical date limit of 2001 was applied and the results limited to

English language studies.

We searched a selection of health and non-health care resources in order to identify evidence from a

variety of sectors of employment. The bibliographic databases are listed below, alphabetically ordered

by provider:

Campbell Collaboration (via https://www.campbellcollaboration.org/better-evidence)

Cochrane Database of Systematic Reviews (via the Cochrane Library)

Business Source Complete (via EBSCO)

CINAHL (via EBSCO)

EconLit (via EBSCO)

Epistemonikos (via https://www.epistemonikos.org/en/)

Health Management Information Consortium (HMIC) (via Ovid)

MEDLINE ALL (via Ovid)

Web of Science Core Collection (via Web of Science, Clarivate Analytics) including:

Science Citation Index

Social Science Citation Index

Conference Proceedings – Science and Social Sciences

The Ovid MEDLINE search strategy is reproduced in Appendix A: Protocol deviations

Search strategy

Only the reference lists of systematic reviews that met our inclusion criteria and were judged by two independent reviewers to be highly relevant (see 'Inclusion criteria' section) to the aims and objectives of our review were checked for additional systematic reviews. This was a pragmatic decision, informed by the high number of systematic reviews eligible for inclusion in this review. Whilst this means any relevant systematic reviews within the reference lists of studies rated as Medium or Low relevance will not have been identified, the impact of this will have been mitigated somewhat through our extensive search strategies, including grey literature sources. Two independent reviewers applied the criteria used to identify highly relevant reviews as described in the inclusion criteria section (LS, MN, HL, SGS).

Application of inclusion criteria

Determining whether a systematic review met our inclusion criteria was often not straightforward. The review inclusion criteria were often broader than the aims of our umbrella review, which meant that some of the primary studies included within a single review could be relevant to the aims of our research, whilst others could not. In addition, the information required to determine if the review, and/or the primary studies it included, met the inclusion for our umbrella review was often not fully reported at the level of the review. Examples of the uncertainties we had regarding whether the review met our inclusion criteria are provided in Table 6 below.

Table 6: Queries regarding inclusion criteria of included reviews

PICO criteria	Potential uncertainties
Population	Was theere population employed prior to
	receiving occupational health support?
	Was theere population aged 16 or above?
Intervention	Was the intervention delivered in conjunction
	with workplace?

	Was the intervention delivered by an MDT?	
Comparator	N/A	
Outcome	Was a RTW outcome measured	
Other	Did the review conduct an adequate synthesis	
	of primary studies?	

MDT=Multidisciplinary Team, N/A=Not applicable, RTW=Return to Work

During the study selection process, we were over-inclusive, including all systematic reviews that appeared to meet the eligibility criteria but tagged each review with the uncertainties encountered in applying the criteria.

Data extraction

We conducted data extraction in three stages.

In the first stage, summary data for each eligible review was extracted by one reviewer and checked by a second using Microsoft Excel (LS, SGS, HL, MN). The summary data extracted from each included review is detailed in

Appendix C: Summary data extracted from all eligible reviews

	Description		
A thought	Description		
Author, date			
Review title			
Review aim	As reported in the abstract or end of introduction		
Type of review	Most common review types included systematic and scoping reviews		
Type of primary studies	As described in the review inclusion criteria or results section		
included in review			
Description of	This included any theory, rationale or model supporting the		
intervention and how it	intervention provided within the background and/or methods		
may work	section of the review		
Outcome of interest/How	Brief description of outcome of interest (RTW or cost) and how this		
RTW measured	was measured		
Synthesis method	Method used to synthesise data within the review, including meta-		
Synthesis method	analysis, narrative or 'best-evidence' synthesis or descriptive analysis		
Queries regarding	Any queries regarding how the population, intervention, outcome or		
relevance of review PICO	setting of the review aligned with the inclusion criteria of our		
to our umbrella review	umbrella review were identified here. These queries often arose		
to our unibrena review	·		
	through a lack of/unclear reporting of required detail within the included review		
5			
Review	From the methods section of each included review		
inclusion/exclusion			
criteria			
Review quality: Is	One criterion from the CEESAT. This item required that all search		
approach to searching	terms, Boolean operators ('AND', 'OR' etc.) and wildcards were		
clearly defined,	clearly stated so that the exact search is repeatable by a third party		
systematic and	AND		
transparent?	There was information about the sources searched, together with		
	dates of search [but no limitations justified (e.g. language, or		
	publication date, no grey literature searches)]		
Review quality: Is search	The original item from the CEESAT requires that sources of articles		
comprehensive?	searched capture both conventionally published scientific literature		
	and grey literature using a combination of databases, search engines		
	and specialist websites (may also be informed by stakeholders) or		
	limitations are fully justified.		
	However, for the purpose of this review we modified these criteria		
	to require a minimum of 3 databases AND at least one other.		
	Specific searches for grey literature were NOT necessary		
Review quality: Does the	This CEESAT item states that an effort should be made to identify		
review critically appraise	relevant sources of bias (threats to internal and external validity)		
each study?	AND		
,	Each type of bias or threat to internal and external validity was		
	assessed individually for all included studies and reported on a		
	critical appraisal sheet		
Review quality: During	The original item from the CEESAT requires that an effort was made		
critical appraisal is an	to minimise subjectivity by predefining critical appraisal process in a		
effort made to minimise	protocol		
subjectivity?	AND		
subjectivity:	MIND		

	At least two people critically appraised each study but not independently (e.g. second person aware of first person's decision) OR a subset of studies was appraised by at least two people independently and disagreements and process of resolution reported.	
	We modified this item: the review did not need to check protocol; did NOT need mention of process for resolving disagreements AS LONG AS it is clearly stated that two reviewers performed appraisal independently	
Overall avality reting	High quality = all four quality criteria listed above were met;	
Overall quality rating	Moderate = 2-3 of the four quality criteria listed above were met;	
	Low = a maximum of one of the four quality criteria listed above	
	were met	
Relevance of aim of	This encompasses how the aim of the included review relates to the	
review to umbrella review	·	
	High = Aim of systematic review directly relevant to our umbrella	
	review, with potentially just one query around population (i.e. were	
	they employed) or intervention (i.e. was it delivered by a	
	multidisciplinary team and in conjunction with the workplace?);	
	Medium = Two queries, or aim of study not completely compatible	
	with the aims of our review;	
	Low = Two to three queries regarding review inclusion criteria	
	and/or limited quantity of relevant included primary studies	
Number of relevant/total	The number of primary studies included within the review which,	
number of included	based on information provided in the review, appeared to meet the	
studies	inclusion criteria of our umbrella review. This information was	
	extracted for reviews which were of high or medium relevance to	
	our umbrella review.	
	The total number of included primary studies was also extracted for	
	these reviews.	

In a deviation from our protocol, due to the diversity of the systematic reviews which met our inclusion criteria, some of which were not closely aligned with our aims and research questions, we then categorised reviews as being of high, medium, or low relevance to the research questions using the following information:

- Aim of systematic review
- Number of uncertainties tagged against the review
- Proportion of primary studies within each review that met the inclusion criteria for our review

And awarded a relevance rating to each systematic review, as outlined below:

- High: Aim of systematic review directly relevant to our umbrella review, with up to one uncertainty against the inclusion criteria;
- Medium: Aim of systematic review not completely compatible with the aims of our review, with two uncertainties against the inclusion criteria;
- Low: Aim of systematic review not completely compatible with the aims of our review with two-three uncertainties against the inclusion criteria and/or limited number of relevant included primary studies.

Further detail of this process is provided in Supplementary Materials 1.

In the second stage of data extraction, we focussed on reviews with high and medium relevance in order to populate the evidence and gap map. No further data was extracted from reviews judged to be of low relevance to our research questions and these reviews were excluded from the evidence and gap map.

We developed a standardised data extraction form which was piloted by two reviewers (LS, MN) on a selection (n=5) of included reviews. The data extraction form was amended following this, to account for revised Quality Appraisal criteria (as described below) and to add further detail regarding the country the review was conducted in addition to the countries eligible studies were conducted in as specified by the review inclusion critiera. The following information was extracted from each systematic review:

- Age of sample as cited in inclusion criteria;
- Country review conducted in;
- Country included primary studies conducted in (as reported in inclusion criteria);
- Health conditions of sample as cited in inclusion criteria;

- Intervention of interest;
- Area of work/sector/employer;
- Whether review inclusion criteria and/or synthesis strategy considered any of the PROGRESS criteria (place of residence, race/ethnicity/culture/language, gender/sex, religion, education, socio-economic status, social capital);²⁷
- RTW outcome main findings.

Data extraction was performed by one reviewer (MN, JTC) and checked by a second (LS), with disagreements being settled through discussion. EPPI-Reviewer software was used to support data extraction.²⁸ In the third and final stage of data extraction, due to the often poor reporting of the characteristics of the included studies within the systematic reviews, where necessary we sought additional methodological detail from the primary studies. The process of conducting screening and data extraction for the primary studies is outlined in Appendix D.

Quality appraisal

Our protocol states our intention to quality appraise all the systematic reviews eligible for inclusion in our umbrella review. However, due to the high number of systematic reviews eligible for inclusion, we proceeded with full data extraction for only those reviews rated as "High" or "Medium" relevance (defined above). This only excluded low relevance reviews and is unlikely to have impacted on the findings.

To provide an indicator of the quality of low-relevance reviews we selected four items from the Collaboration for Environmental Evidence Synthesis Appraisal Tool (CEESAT):²⁹

- 1. Is approach to searching clearly defined, systematic and transparent?
- 2. Is search comprehensive?
- 3. Does the review critically appraise each study?
- 4. During appraisal is an effort made to minimise subjectivity

The CEESAT is an eight-item checklist which supports an appraisal of methods used withinby systematic reviews, how transparently these methods are reported and how any limitations in quantity and quality of primary data may influence the synthesis. Administering the whole checklist to each of our included studies reviews was infeasible. Instead, we used the four items above to develop to generate an overall quality rating for each included systematic review (see Supplementary Materials 1 for proxy quality ratings). Full quality appraisal was undertaken for systematic reviews which were of high or moderate relevance to the aims of our umbrella review, the process of which is described within the methods section of the main report.

Appendix B: Search report. A full report of the bibligoraphic database search strategies is available from the authors on request. The results of the bibliographic database searches were exported to Endnote X8 (Clarivate Analytics, Philadelphia, PA, USA) and de-duplicated using the automated deduplication feature and manual checking.

Scoping of the literature and consultation with stakeholders indicated that reviews of interventions to support return to work may have been conducted via non-academic institutions, as part of service-evaluations within healthcare settings or commissioned by third-sector services. Such research is not always published via traditional academic journals and may instead be published via institutional websites or as part of a student thesis. These sources, whilst potentially providing access to systematic review evidence which meets the inclusion criteria for this review, would not be identified through searching of bibliographic databases alone and require specific, targeted searches of grey literature sources. To identify grey literature and studies not accessible via bibliographic databases we also searched Google Search (www.google.co.uk/), Google Scholar (https://scholar.google.co.uk/) and a selection of topically relevant websites including:

Health and Safety Executive (HSE) https://www.hse.gov.uk/

HSE Solutions https://www.hsl.gov.uk/

NHS Health at Work Network https://www.nhshealthatwork.co.uk/

Society of Occupational Medicine https://www.som.org.uk/

Faculty of Occupational Health Nursing https://www.fohn.org.uk/

• Council for Work and Health https://www.councilforworkandhealth.org.uk/

The full search strategeies used for Google Search, Google scholar and websites are available in Appendix B.

We also screened the reference lists of included systematic reviews that were judged by two independent reviewers (LS, MN, HL, SGS) to be highly relevant (see 'Inclusion criteria' section) to the aims and objectives of our review for additional systematic reviews. This was a deviation from our original protocol where we intended to screen the reference lists of all included systematic reviews. It was pragmatic decision, informed by the high number of systematic reviews eligible for inclusion in this review. Whilst this means any relevant systematic reviews within the reference lists of studies rated as Medium or Low relevance will not have been identified, the impact of this will have been mitigated somewhat through our extensive search strategies, including grey literature identified via

HMIC and topically relevant websites We also consulted with stakeholders to identify reports already known to them.

Inclusion criteria

The inclusion and exclusion criteria applied to the reviews identified through the search strategy are detailed below. We have organised the criteria according to the PICO format (Population, Intervention, Comparator and Outcome).

Population

Include:

- People aged 16 or above;
- People in employment, who have had an absence from work for any medical reason;
- People who are in direct receipt of interventions for their own health;
- People who are in direct receipt of workplace or job role interventions to enhance their return to work.

Exclude:

- Children aged below 16;
- Those who are unemployed;
- Parents/carers of people with relevant health conditions, but who themselves are not receiving an intervention for their health condition.

Intervention

Include:

- Multi-disciplinary services designed to support employees and employers to manage health conditions in the workplace, to help employees with health conditions retain work and/or return to work following medical absence;
- Such interventions may be called Occupational Health (OH), Vocational Rehabilitation (VR), Return to Work planning, as well as other labels;
- By multi-disciplinary, we mean that interventions must be delivered by more than one individual from different disciplines across both clinical and non-clinical backgrounds. Acceptable combinations include:
 - Clinical and non-clinical professionals (e.g. psychiatrist and case-manager);
 - A mix of clinical professionals (e.g. psychiatrist & oncologist);
 - o A mix of non-clinical professionals (e.g. social worker and case manager).
- Interventions delivered by public or private companies.

Exclude:

- Services or interventions delivered by just one type of profession, whether clinical or nonclinical;
- Services or interventions not delivered by or in association with the workplace;
- Interventions aiming to support unemployed people to get into work;
- Single component interventions that only involve the provision of equipment or environmental modifications;
- Interventions aiming to prevent poor health/promote good health.

Comparator(s)/Control

Any comparator.

Outcomes

Include:

Return to work, work retention, measures of absence and any economic evaluation outcomes.

Context

Any workplace setting.

Study design

Include:

- Systematic reviews of effectiveness studies, whether randomised, non-randomised or observational;
- Mixed methods systematic reviews;
- Systematic reviews of reviews;
- Rapid reviews which include a synthesis of effectiveness;
- Cost effectiveness reviews.

Exclude:

- Reviews which were not undertaken systematically;
- Narrative summaries of literature base;
- Primary studies;
- Qualitative evidence syntheses;
- Scoping and mapping reviews.

To be eligible for inclusion systematic reviews needed to meet the minimum quality criteria for the Database of Abstracts of Reviews of Effects²⁶ i.e. they needed to satisfy all of the following:

- Report adequate inclusion/exclusion criteria;
- Report an adequate search strategy;
- Perform synthesis of the included studies;
- Assess the quality of the included studies;
- Provide sufficient details about the individual included studies.

Date limit

Systematic reviews published from 2001 onward. This twenty-year time-period was selected following consultation with stakeholders due to it offering the opportunity to capture evidence relevant to the current structure of OH services and the needs of the population they serve.

Geographical limit

None.

Language restriction

Reviews written in English only. This reflects limited resources available to us to translate non-English reviews during the time this review was completed.

Study selection

Systematic revewss

Four reviewers independently undertook an initial calibration exercise to check inclusion judgments and the clarity of our eligibility criteria (LS, HL, LS, SGS). These reviewers worked in pairs, with each pair screening fifty title and abstracts from the bibliographic database search results. Decisions were discussed within each reviewer pair to ensure consistent application of criteria.

The inclusion and exclusion criteria were then applied to the title and abstract of each remaining identified review citation independently by two reviewers (LS, HL, SGS), with disagreements resolved through discussion or referral to a third reviewer as required. The full text of each record was screened for inclusion in the same way.

Endnote X8 software was used to support study selection and a PRISMA-style flowchart (Figure 1: PRISMA diagram showing study selection process for systematic reviews with a return to work outcome) detailing the study selection process and reason for exclusion of each record retrieved at full text is reported below.²⁴

Determining whether a systematic review met our inclusion criteria was often not straightforward. The review inclusion criteria were often broader than the aims of our umbrella review, which meant that some of the primary studies included within a single review could be relevant to the aims of our research, whilst others could not. In addition, the information required to determine if the review, and/or the primary studies it included, met the inclusion for our umbrella review was often not fully reported at the level of the review. Examples of the uncertainties we had regarding whether the review met our inclusion criteria are provided in Table 1 below.

Table 1: Uncertainties regarding inclusion criteria of included reviews

PICO criteria	Potential uncertainties
Population	Was the population employed prior to receiving
	occupational health support?
	Was the population aged 16 or above?
Intervention	Was the intervention delivered in conjunction
	with workplace?
	Was the intervention delivered by an MDT?

Comparator	N/A
Outcome	Was a RTW outcome measured
Other	Did the review conduct an adequate synthesis
	of primary studies?

MDT=Multidisciplinary Team, N/A=Not applicable, RTW=Return to Work

Primary studies

Due to the difficulty in identifying the information required to answer our research questions from our included systematic reviews, we needed to consult the primary studies included in reviews which were highly relevant to our research aims. In a deviation from our protocol, one reviewer (LS, JTC) selected the primary studies included in each highly relevant review (as defined below within the '

Data extraction and quality appraisal' section) which, based on the description within the review, appeared relevant to our aims and objectives. The full texts of these articles were then located where possible and screened against the eligibility criteria for population, intervention, and outcome. The selection of these primary studies from the original review screened in full by a second reviewer (MN, SGS, HL). Any disagreements were resolved through discussion. This selection process for primary studies was conducted using Microsoft Excel.

Data extraction and quality appraisal Systematic reviews

Due to the high number of systematic reviews which met our inclusion criteria, data extraction was conducted in three stages. Firstly, summary data for each eligible review was extracted by one reviewer and checked by a second using Microsoft Excel (LS, SGS, HL, MN). The summary data extracted from each included review is detailed in

Appendix C: Summary data extracted from all eligible reviews

	Description
A thought	Description
Author, date	
Review title	
Review aim	As reported in the abstract or end of introduction
Type of review	Most common review types included systematic and scoping reviews
Type of primary studies	As described in the review inclusion criteria or results section
included in review	
Description of	This included any theory, rationale or model supporting the
intervention and how it	intervention provided within the background and/or methods
may work	section of the review
Outcome of interest/How	Brief description of outcome of interest (RTW or cost) and how this
RTW measured	was measured
Synthesis method	Method used to synthesise data within the review, including meta-
Synthesis method	analysis, narrative or 'best-evidence' synthesis or descriptive analysis
Queries regarding	Any queries regarding how the population, intervention, outcome or
relevance of review PICO	setting of the review aligned with the inclusion criteria of our
to our umbrella review	umbrella review were identified here. These queries often arose
to our unibrena review	·
	through a lack of/unclear reporting of required detail within the included review
5	
Review	From the methods section of each included review
inclusion/exclusion	
criteria	
Review quality: Is	One criterion from the CEESAT. This item required that all search
approach to searching	terms, Boolean operators ('AND', 'OR' etc.) and wildcards were
clearly defined,	clearly stated so that the exact search is repeatable by a third party
systematic and	AND
transparent?	There was information about the sources searched, together with
	dates of search [but no limitations justified (e.g. language, or
	publication date, no grey literature searches)]
Review quality: Is search	The original item from the CEESAT requires that sources of articles
comprehensive?	searched capture both conventionally published scientific literature
	and grey literature using a combination of databases, search engines
	and specialist websites (may also be informed by stakeholders) or
	limitations are fully justified.
	However, for the purpose of this review we modified these criteria
	to require a minimum of 3 databases AND at least one other.
	Specific searches for grey literature were NOT necessary
Review quality: Does the	This CEESAT item states that an effort should be made to identify
review critically appraise	relevant sources of bias (threats to internal and external validity)
each study?	AND
,	Each type of bias or threat to internal and external validity was
	assessed individually for all included studies and reported on a
	critical appraisal sheet
Review quality: During	The original item from the CEESAT requires that an effort was made
critical appraisal is an	to minimise subjectivity by predefining critical appraisal process in a
effort made to minimise	protocol
subjectivity?	AND
subjectivity:	MIND

	At least two people critically appraised each study but not independently (e.g. second person aware of first person's decision) OR a subset of studies was appraised by at least two people independently and disagreements and process of resolution reported.
	We modified this item: the review did not need to check protocol; did NOT need mention of process for resolving disagreements AS LONG AS it is clearly stated that two reviewers performed appraisal independently
Overall avality reting	High quality = all four quality criteria listed above were met;
Overall quality rating	Moderate = 2-3 of the four quality criteria listed above were met;
	Low = a maximum of one of the four quality criteria listed above
	were met
Relevance of aim of	This encompasses how the aim of the included review relates to the
review to umbrella review	aim and PICO of our umbrella review.
	High = Aim of systematic review directly relevant to our umbrella
	review, with potentially just one query around population (i.e. were
	they employed) or intervention (i.e. was it delivered by a
	multidisciplinary team and in conjunction with the workplace?);
	Medium = Two queries, or aim of study not completely compatible
	with the aims of our review;
	Low = Two to three queries regarding review inclusion criteria
	and/or limited quantity of relevant included primary studies
Number of relevant/total	The number of primary studies included within the review which,
number of included	based on information provided in the review, appeared to meet the
studies	inclusion criteria of our umbrella review. This information was
	extracted for reviews which were of high or medium relevance to
	our umbrella review.
	The total number of included primary studies was also extracted for
	these reviews.

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We used the summary information to categorise systematic reviews as being of high, medium, or

low relevance to the research questions posed based on the following criteria:

High: Aim of systematic review directly relevant to our umbrella review, with potentially just one

query around population (i.e. were they employed) or intervention (i.e. was it delivered by a

multidisciplinary team and in conjunction with the workplace?);

Medium: Two queries and/or aim of study not completely compatible with the aims of our review;

Low: Two to three queries regarding review inclusion criteria and/or limited quantity of relevant

included primary studies.

In the second stage of data extraction, we developed a standardised data extraction form which was

piloted by two reviewers (LS, MN) on a selection (n=5) of included reviews. The data extraction form

was amended following this, to account for revised Quality Appraisal criteria (as described below) and

add further detail regarding the country the review was conducted in vs the countries eligible studies

were conducted in as specified by the review inclusion critiera. This revised data extraction form was

used to support the data extraction of the remaining high/medium relevance systematic reviews. The

following information was extracted from each systematic review:

Age of sample as cited in inclusion criteria;

Country review conducted in;

Country included primary studies conducted in (as reported in inclusion criteria);

Health conditions of sample as cited in inclusion criteria;

Intervention of interest;

Area of work/sector/employer;

Whether review inclusion criteria and/or synthesis strategy considered any of the PROGRESS criteria

(place of residence, race/ethnicity/culture/language, gender/sex, religion, education, socio-economic

status, social capital);27

RTW outcome main findings.

Data extraction was performed by one reviewer (MN, JTC) and checked by a second (LS), with

disagreements being settled through discussion. EPPI-Reviewer software was used to support data

extraction.28

Primary studies

To allow us to more fully address our research questions, we deviated from our protocol and extracted the following data from each relevant primary study:

- Country where study took place;
- Reviews which included the primary study;
- Intervention name and aim;
- Level at which intervention was implemented (individual, group, society, environment);
- Summary of intervention key features;
- Pathway for workers/employees to access the intervention;
- Extent to which workplace involved with delivery of intervention;
- Name of group who receives the intervention;
- Name of group delivering the intervention;
- Method of delivery (e.g. face-to-face, telephone, internet);
- Intervention setting;
- Intensity of intervention;
- Reported effectiveness of intervention on improving RTW;
- Whether study includes other outcome measures focused on employee wellbeing;
- Name of control condition;
- Key features of control condition;
- Condition relating to employees sick leave.

Data extraction for primary studies was also undertaken by one reviewer and checked by a second (LS, MN, JTC, HL, SGS) and supported through use of EPPI-Reviewer software.²⁸

Quality appraisal

Systematic reviews

In a deviation to our protocol, we used two different methods to appraise the quality of include systematic reviews. As described in the protocol, we used the AMSTAR-2 rating to appraise the quality of all included reviews judged to be of high or medium relevance to our research question and we used an abridged version of the CEESAT tool to appraise the quality of reviews judged to be of low relevance.²⁹ This was a pragmatic decision to focus our resources on the reviews that would be presented within the evidence and gap map, whilst still providing the reader with an indication of the quality of the reviews which were less relevant to our research question..

The quality of the systematic reviews rated as high or medium relevance was appraised using the AMSTAR-2 quality appraisal tool for systematic reviews of primary studies of randomised and non-randomised study designs,³⁰ supported by EPPI-Reviewer.²⁸ Quality appraisal was undertaken by one reviewer (MN, JTC) and checked by a second (LS), with disagreements being resolved through discussion.

Reviews were rated as High, Moderate, Low and Critically Low quality, with ratings determined by the following system:

- High: No or one non-critical weakness: the systematic review provides an accurate and comprehensive summary of the results of the available studies that address the question of interest;
- Moderate: More than one non-critical weakness. The systematic review has more than one weakness but no critical flaws;
- Low: One critical flaw with or without non-critical weaknesses: the review has a critical flaw and may not provide an accurate and comprehensive summary of the available studies that address the question of interest;
- Critically Low: More than one critical flaw with or without non-critical weaknesses: the review
 has more than one critical flaw and should not be relied on to provide an accurate and
 comprehensive summary of the available studies.

The developers of the AMSTAR-2 tool consider items 2, 4, 7, 9, 11, 13 and 15 to be 'critical domains' but indicate that authors my choose other items as critical depending on the context of the review.³⁰ We considered items 2, 4, 9, 11 and, 13 of the AMSTAR-2 tool as 'critical domains' in judging review quality. We omitted items 7 and 15, because these items are rarely reported in systematic reviews

beyond those published in the Cochrane Library and can have an unfair impact on the quality rating of systematic reviews published elsewhere.

In a deviation to our protocol, we selected four items from the Collaboration for Environmental Evidence Synthesis Appraisal Tool (CEESAT) to use to provide an indicator of the quality of reviews judged to be of low relevance to the aims of our umbrella review.²⁹ These four criteria were as follows:

- 5. Is approach to searching clearly defined, systematic and transparent?
- 6. Is search comprehensive?
- 7. Does the review critically appraise each study?
- 8. During appraisal is an effort made to minimise subjectivity

The CEESAT is an eight-item checklist which supports an appraisal of methods used by systematic reviews, how transparently these methods are reported and how any limitations in quantity and quality of primary data may influence the synthesis. We used the four items above to generate an overall quality rating for each included systematic review (see Appendix C for definition and Supplementary Materials 1 for proxy quality ratings).

Primary studies

Quality appraisal of the relevant primary studies was conducted by the authors of the systematic reviews the primary studies were included within and is thus not duplicated within our review. As many of the primary studies identified were included within several of the high/medium relevant reviews, it was challenging to assign a single quality appraisal score to each primary study due to the range of quality appraisal tools used and variance in quality scores assigned to the primary studies across different reviews. A full description of the methodology used to identify, data extract, quality appraise and synthesise the primary studies can be found in Appendix D.

Data analysis and presentation

Systematic reviews

The summary data, as described within the ' $\,$

Data extraction and quality appraisal' section, for all eligible systematic reviews were tabulated and described narratively. The data extracted from reviews of High and Medium relevance was then imported into EPPI-Mapper software to create an evidence and gap map.

The main axis of the evidence and gap map was structured according to the health condition that led to sick leave, and the main findings relating to the RTW outcome(s) reported at review level. Each segment of the map indicates the number of reviews relevant to these intersecting categories, grouped according to the quality of the review (Green: High quality, Yellow=Moderate quality, Orange=Low quality, Red=Critically Low quality). Thus, the size and colour of the circles within each segment represent the number and quality of reviews reporting RTW outcomes for interventions conducted with particular health conditions. If a review included workers with different health conditions, then this review appears in multiple places within the map.

Each segment can be clicked upon to view the abstracts of the systematic reviews included in that segment, containing details of the background, methods, results, main findings of the systematic review and links to the systematic review full text. The comments section of the abstract for each review also provides links to the included primary studies relevant to the overall aims of our umbrella review, grouped according to reported RTW outcome result.

The 'About' section at the top of the map describes the context and aim of the evidence and gap map and provides an explanation on how users can make sense of the map. In addition, the content of the map can be changed using the 'Filters' option at the top right-hand side of the map, according to different features of the systematic reviews. Details of the systematic reviews included within the map were tabulated and described narratively within the results section of this report.

Additional post-hoc analysis: Primary studies

To more fully address our research questions, we chose to look more closely at the data extractred from the primary studies which aligned with the inclusion criteria of our umbrella review which were included in High or Medium relevance systematic reviews. We focused on exploring if differences in the composition of the multi-disciplinary OH teams influenced RTW outcome. To do this, we first categorised the staff delivering the interventions into five categories, 'Case Management', 'Musculoskeletal', 'Mental Health', 'Industrial Hygiene' and 'Social Care'.

We then grouped the primary studies according to the number and types of professionals delivering the intervention and narratively compared the composition of the staff teams of interventions which were reported as having a beneficial effect on RTW or cost outcomes to those which did not. For full detail regarding the post-hoc analysis of primary studies, please see Appendix D.

Stakeholder involvement

We worked alongside a variety of stakeholders and advisors to ensure our umbrella review reflects the needs of individuals who will use it. Stakeholders included commissioners and policy makers from the Department of Health and Social Care (DHSC) and the Department of Work and Pensions (DWP), OH personnel (including nurses and occupational physicians) and people with lived experience of accessing OH services themselves and/or supporting employees to access OH services. We actively encouraged stakeholders to suggest changes to our methods and synthesis, but in general people agreed with the approach taken within this review. Details of how stakeholder contributions influenced the review are provided in

Table 2 below.

Table 2: Stakeholder engagement and impact on development of evidence and gap map

Stage of review	Stakeholder [mode of contact, no. people present]	Influence on review process	Specific impact on systematic review
Protocol development	DHSC and DWP [Group meetings/email, > 4] Project co- applicant with lived experience of accessing OH services, both as an employee and as a manager [email]	Stakeholders informed the development of the protocol, including: - Clarifying the aims/objectives of the umbrella review; - Identifying key inclusion criteria; - Identifying key outcomes of interest; - Outlining desired impact of review; - Outlining plan for further stakeholder and PPI engagement.	Collaborative development of umbrella review protocol which was agreed prior to commencement of the review
Screening	DHSC and DWP [Group meetings/email, > 4] Occupational Health personel [Group meeting, 3]	Stakeholders supported the application of review inclusion criteria to systematic reviews where eligibility for inclusion was uncertain. Provided with opportunity to comment on relevance ratings for systematic reviews	
Data extraction	DHSC and DWP [Group meetings, > 4] Occupational Health personel [Group meeting, 3] People with lived experience of accessing OH services as an employee and/or manager [Group meeting, 4 people]	Supported the identification of key data to be extracted from High/Medium relevance systematic reviews	Identification of data regarding intervention characteristics and context of delivery to be extracted. Identified additional outcome data to be collected, particularly wellbeing outcomes

Synthesis/ Presentation of findings	DHSC and DWP [Draft report, email, face to face meeting, 1] Occupational Health personel [Individual meeting, 1]	Commented on accessibility and usefulness of evidence and gap map Highlighted importance of contextual information (i.e. service setting, staffing, employee needs) for understanding the impact,	Priorities of review commissioners informed how the evidence and gap map was structured and the provision of links to the relevant primary studies included within systematic reviews displayed in the evidence and gap map
	People with lived experience of accessing OH services as an employee and/or manager [Group meeting, 4]	content and delivery of intervention	Relabelling of axis in evidence and gap map
Dissemination	People with lived experience of accessing OH services as an employee and/or manager [Group meeting, 4]	Discussed how format of report could be adapated to share with audiences who would be interested in the findings of our umbrella review	Supported the identification of relevant audiences with whom we could share our findings

DHSC=Department of Health and Social Care, DWP=Department of Work and Pensions, OH=Occupational Health, PPI=Patient and Public Involvement

We met with each group of stakeholders separately to ensure they felt comfortable talking about issues relevant to them. Each stakeholder group was reassured that the specific details regarding what was discussed would remain confidential and we requested that they only provide information they felt comfortable sharing. The meetings with individuals with lived experience of accessing, and/or supporting others to access, OH services were arranged by a co-ordinator for the Exeter PenARC Patient Engagement Group (PenPEG), who provided existing members of PenPEG with summary details of this umbrella review and requested people to contact her if they were interested in taking part in two PPI sessions. They then set-up and facilitated the first meeting between four individuals from PenPEG and the lead author of this review (LS). During the first online meeting, the co-ordinator supported members of the public to share their experiences of accessing OH services and facilitated discussion around key topics to inform review progress which had been identified by LS to prior to the meeting. Due to prior working relationship on this project, and others, the second meeting between the lead author if this review and PenPEG members was unfacilitated. In the second online meeting, the reviewer shared the evidence and gap map and asked for feedback on

what they liked and what was unclear. The impact these discussions had on the review is highlighted
in Table 2 above.

Results

The results section is structured as follows:

- Summary of main findings;
- Overview of all eligible systematic reviews (n=89);
- Review characteristics and quality appraisal of High/Medium relevance systematic reviews (n=24);
- Evidence and gap map and narrative description;
- A short summary of the findings from post-hoc analysis conducted with relevant primary studies included within High/Medium reviews;
- Full details regarding post-hoc analysis of primary studies and interventions evaluated within these is provided in Appendices E-G.

Summary of main findings

- Eighty-nine systematic reviews met our eligibility criteria;
- In addition to varying in size and quality, eligible systematic reviews focussed on an array of health conditions and intervention types and thus represent a highly heterogeneous body of evidence;
- Based upon the extent to which the aims/inclusion criteria of these reviews were consistent with the aims and objectives of our umbrella review, 22 were rated as being of 'High' relevance, 6 as 'Medium' relevance and 61 as 'Low' relevance. Two of the systematic reviews rated as being of 'High' relevance and two rated as being of 'Medium' relevance were systematic reviews of reviews. Three of these included systematic reviews which duplicated the systematic reviews identified through other methods, 31-33 and one contained data where it was difficult to determine the relevance to the aims of our umbrella review. As a result, these reviews were not included in our evidence and gap map;
- Twenty-four systematic reviews rated as 'High' and 'Medium' relevance were prioritised for full data extraction. Of these, 10 were rated as High quality on AMSTAR-2, two of Moderate quality and the remainder (n=12) were of Low or Critically Low quality;
- There were between 1 and 20 relevant primary studies within these reviews, with a mean of
 just under 8 per review. Forty-five primary studies feature in multiple reviews
- The highest quantity of systematic review evidence was for interventions targeting employees with musculoskeletal conditions, with nine reviews reported a significant beneficial effect of the intervention. However, only two of these reviews were of High quality;

- Due to the heterogeneity of interventions evaluated within the systematic reviews, it was
 not possible to structure the map according to condition and types of intervention being
 evaluated. Instead, the map is structured by the reason for sick leave and reported impact
 on RTW outcomes as reported at the level of the review, with links to the primary studies
 which contain descriptions of individual interventions provided within each segment.
- The evidence and gap map displaying the main characteristics of the 24 prioritised reviews can be viewed here.

Summary of searches

The bibliographic database searches identified 3582 records. A further 2262 records were identified via alternative search methods, including backwards citation chasing (n=26), website searches (n=984), Google Scholar (n=1000) and Google (n=252). Following the de-duplication process, there were 3757 unique records. At title and abstract screening, 3479 records were excluded leaving 2780 studies to screen at full-text. Of these 191 were excluded for the reasons listed in Figure 1. For a full list of exclusion at full-text, please see Appendix D: Methods for identification, data extraction, quality appraisal and synthesis of primary studies

Identification

One reviewer (LS, JTC) selected the primary studies included in each highly relevant review (as defined below within the '

Data extraction and quality appraisal' section) which, based on the description within the review, appeared relevant to our aims and objectives. The full texts of these articles were then located where possible and screened against the eligibility criteria for population, intervention, and outcome. The selection of these primary studies from the original review screened in full by a second reviewer (MN, SGS, HL). Any disagreements were resolved through discussion. This selection process for primary studies was conducted using Microsoft Excel.

Data extraction

The following data was extracted from each relevant primary study, with selection being informed by the TIDieR checklist:⁶⁸

- Country where study took place;
- Reviews which included the primary study;
- Intervention name and aim;
- Level at which intervention was implemented (individual, group, society, environment);
- Summary of intervention key features;
- Pathway for workers/employees to access the intervention;
- Extent to which workplace involved with delivery of intervention;
- Name of group who receives the intervention;
- Name of group delivering the intervention;
- Method of delivery (e.g. face-to-face, telephone, internet);
- Intervention setting;
- Intensity of intervention;
- Reported effectiveness of intervention on improving RTW;
- Whether study includes other outcome measures focused on employee wellbeing;
- Name of control condition;
- Key features of control condition;
- Condition relating to employee's sick leave.

Data extraction for primary studies was also undertaken by one reviewer and checked by a second (LS, MN, JTC, HL, SGS) and supported through use of EPPI-Reviewer software.²⁸

Quality Appraisal

Quality appraisal of the relevant primary studies was conducted by the authors of the systematic reviews in which they were included and is thus not duplicated within our review. Many of the primary studies identified were included within several of the high/medium relevant reviews, thus it was challenging to assign a single quality appraisal score to each primary study due to the range of quality

appraisal tools used and variance in quality scores assigned to the primary studies across different reviews. Firstly, we standardised the language used to describe the quality of of the primary studies across reviews, with studies described as Low, Moderate, or High quality. We then assigned each of these categories a rating, with High=3, Moderate=2, Low=1. We then calculated a Mean Quality Rating for each primary study by adding up these ratings and dividing by the number of times the primary study was included in one of our prioritised reviews. Systematic reviews which did not report an overall quality score were not included in this calculation.

Data analysis

Data extracted from the primary studies were tabulated and described narratively. To explore if differences in the composition of the multi-disciplinary OH teams influenced RTW outcome, we first categorised the staff delivering the interventions into five categories, as described in **Error!**Reference source not found.8.

Table 8: Primary study intervention categories

Staff Category	Description
Case Management	MDT members of any profession who were explicitly named as being case
	managers within the study, or who were described as nurses, GPs or primary care
	clinicians
Musculoskeletal	Professionals involved with supporting the musculoskeletal health of employees,
	including; non-specified health professionials, rheumatologists, neurologists,
	chiropractors, PTs, OPs, pain management and rehabilitation specialists
Mental Health	Professionals involved with supporting the MH of employees, including non-
	specified MH professionals, BT, psychologists, and psychiatrists
Industrial Hygiene	Professionals involved with supporting the health of the employee within the
	workplace, including OTs, ergonomists, industrial hygieneists, OH specialists and
	vocational rehabilitation consultants
Social care	Professionals involved with supporting employees with their social care needs,
	including social workers, sickness benefits officers and workers compensation
	physicians

BT=Behaviour Therapist, GP=General Practitioner, MDT=Multidisciplinary Team, MH=Mental Health, OP=Occupational Physician, OT=Occupational Therapist, PT=Physiotherapist, RTW=Return to work

The categorisation of primary studies occurred in an iterative fashion. Job roles with similar form and function were grouped together through consultation with a public health nurse (GJMT) and drawing on the lead authors previous experience of working within multi-disciplinary teams as a psychologist. A case manager was seen as a job role rather than a clinical speciality. Following consultation with a public health nurse (GJMT), it was deemed that nurses and primary care clinicians were the most likely to fulfil role (see Table 8).

We then created four groups of primary studies according to the number and types of professional groups delivering the intervention:

Group A: case manager working with staff from two or more other categories;

Group B: case manager working with staff from one other professional category;

Group C: no case manager – staff from two professional groups working together;

Group D: no case manager – staff from one professional group working with staff from the workplace.

Within each category, we also tabulated information regarding reported intervention effectiveness/cost-effectiveness, setting and level of implementation. We then narratively compared the composition of the staff teams of interventions which were reported as having a beneficial effect to the features of the interventions which were reported to have no significant impact on RTW outcomes. Where there was a sufficient number of studies, we also calculated the proportion (percentage) of interventions which contained particular professionals across each group (studies reporting beneficial effect of intervention vs those reporting no effect of intervention).

Stakeholder involvement

Stakeholders from the DHSC and DWP informed the decision to focus on extracting data regarding individuals delivering the interventions from the primary studies. They also provided feedback on the grouping of professionals into categories for the narrative synthesis.

Appendix E: Number and quality of relevant primary studies in prioritised reviews

Table 9: Quality of primary studies

		Reviews		Quality A	Appriasal rat	ing awarded l	y review		
Primary article (author, date)	Included in reviews(n)	reporting Overall QA Score (n)	High quality (n)	Moderate quality (n)	Low quality (n)	Unclear (n)	NOS (n)	NR (n)	Average quality appraisal rating
Haldorsen 1998 ⁵⁸	1	1	0	0	1	0	0	0	1
Haldorsen 2002 ⁶¹	1	1	0	0	1	0	0	0	1
Kaapa 2006 ⁶²	2	1	0	0	1	0	1	0	1
Lindstrom 1992 ⁶³	1	1	0	0	1	0	0	0	1
Purdon 2006 ⁶⁵⁵⁸ (37)37(37)	4	3	0	0	3	0	1	0	1
Schultz 2008 ⁶⁶	1	1	0	0	1	0	0	0	1
Tamminga 2013 ⁶⁷	2	1	0	0	1	0	0	1	1
Bernaards 2011 ⁶⁹	3	2	0	1	1	0	1	0	2
Durand 2000 ⁷⁰	2	2	0	1	1	0	0	0	2
Lagerveld 2012 ⁷¹	2	2	0	1	1	0	0	0	2
Martin 2013 ⁷²	2	2	0	1	1	0	0	0	2
Netterstrom 2013 ⁷³	2	2	0	1	1	0	0	0	2
Noordik 2013 ⁷⁴	5	4	0	2	2	0	1	0	2
Skouen 2006a ⁶⁰	2	2	0	1	1	0	0	0	2
Vlasveld 2012 ⁷⁵	2	2	0	1	1	0	0	0	2
Cheng 2007 ⁷⁶	3	3	0	2	1	0	0	0	2
van den Hout 2003 ⁷⁷	4	3	1	0	2	0	1	0	2
Arnetz 2003 ⁷⁸	8	6	2	2	2	0	1	1	2
de Buck 2005 ⁷⁹	2	1	0	1	0	0	1	0	2
Hees 2013 ⁸⁰	5	3	1	1	1	1	1	0	2
Jensen 2012b ⁸¹	1	1	0	1	0	0	0	0	2
Karrholm 2006 (from Tompa 2007) ⁸²	1	1	0	1	0	0	0	0	2

		Reviews		Quality A	Appriasal rati	ng awarded l	y review		
Primary article (author, date)	Included in reviews(n)	reporting Overall QA Score (n)	High quality (n)	Moderate quality (n)	Low quality (n)	Unclear (n)	NOS (n)	NR (n)	Average quality appraisal rating
Lemstra 2003 ⁸³	2	1	0	1	0	0	1	0	2
Lemstra 2004 ⁸⁴	2	1	0	1	0	0	1	0	2
Linton 1992 ⁸⁵ ;	1	1	0	1	0	0	0	0	2
Loisel 1997 ⁸⁶	9	6	2	2	2	2	0	1	2
Momsen 2016 ⁸⁷	1	1	0	1	0	0	0	0	2
Netterstrom 2010 ⁸⁸	1	1	0	1	0	0	0	0	2
Schene 2007 ⁸⁹	4	2	0	2	0	1	1	0	2
Shultz 2013 ⁹⁰	1	1	0	1	0	0	0	0	2
Skouen 2006b ⁵⁹	1	1	0	1	0	0	0	0	2
Spekle 2010 ⁹¹	1	1	0	1	0	0	0	0	2
van Oostrom 2009 ⁹²	2	2	1	0	1	0	0	0	2
Yassi 1995b ⁹³	4	3	1	1	1	0	1	0	2
Skouen 2002 ⁶¹	3	3	2	0	1	0	0	0	2
Staal 2004 ⁹⁴	3	3	2	0	1	0	0	0	2
Volker 2015 ⁹⁵	5	3	2	0	1	1	1	0	2
van Oostrom 2010 ⁹⁶	6	5	3	1	1	0	0	1	2
Bültmann 2009 ⁹⁷	8	4	2	2	0	2	1	1	3
Goorden 2014 ⁹⁸	2	2	1	1	0	0	0	0	3
Jensen 2005 ⁹⁹	4	4	2	2	0	0	0	0	3
Jensen 2011 ¹⁰⁰	3	2	1	1	0	0	1	0	3
Loisel 2002 ¹⁰¹	4	4	2	2	0	0	0	0	3
Meijer 2006 ¹⁰²	2	2	1	1	0	0	0	0	3
Stapelfeldt 2011 ¹⁰³	2	2	1	1	0	0	0	0	3
Vlasveld 2013 ¹⁰⁴	5	2	1	1	0	1	1	1	3
Jensen 2001 ¹⁰⁵	3	3	2	1	0	0	0	0	3
Lambeek 2010a ¹⁰⁶	8	4	3	1	0	0	3	1	3
Anema 2007 ¹⁰⁷	8	5	4	0	1	1	1	1	3
Bender 2016 ¹⁰⁸	1	1	1	0	0	0	0	0	3

		Reviews		Quality A	Appriasal rat	ing awarded l	by review		
Primary article (author, date)	Included in reviews(n)	reporting Overall QA Score (n)	High quality (n)	Moderate quality (n)	Low quality (n)	Unclear (n)	NOS (n)	NR (n)	Average quality appraisal rating
Busch 2011 ¹⁰⁹	1	1	1	0	0	0	0	0	3
Finnes 2017 ¹¹⁰	3	1	1	0	0	1	1	0	3
Glasscock 2018 ¹¹¹	1	1	1	0	0	0	0	0	3
Jensen 2012a ⁸¹	2	1	1	0	0	0	1	0	3
Karjalainen 2003 ¹¹²	4	4	4	0	0	0	0	0	3
Karjalainen 2004 ¹¹³	2	2	2	0	0	0	0	0	3
Meyer 2005 ¹¹⁴	4	3	3	0	0	0	1	0	3
Moll 2018 ¹¹⁵	1	1	1	0	0	0	0	0	3
Myhre 2014 ¹¹⁶	2	1	1	0	0	1	0	0	3
Ntsiea 2015 ¹¹⁷	1	1	1	0	0	0	0	0	3
Salmononsson 2017 ¹¹⁸	1	1	1	0	0	0	0	0	3
Skisak 2006 ¹¹⁹	2	1	1	0	0	0	1	0	3
Steenstra 2006a ¹²⁰	2	1	1	0	0	0	1	0	3
Steenstra 2006b ¹²¹	2	2	2	0	0	0	0	0	3
Steenstra 2009 ¹²²	1	1	1	0	0	0	0	0	3
Tan 2016 ¹²³	1	1	1	0	0	0	0	0	3
Verbeek 2002 ¹²⁴	6	4	4	0	0	0	1	1	3
Vikane 2017 ¹²⁵	1	1	1	0	0	0	0	0	3
Gice 1989 ¹²⁶	1	0	0	0	0	0	1	0	CD
Kenning 2018 ¹²⁷	1	0	0	0	0	1	0	0	CD
Lambeek 2010b ¹²⁸	1	0	0	0	0	0	1	0	CD
Smedley 2013 ¹²⁹	1	0	0	0	0	1	0	0	CD
Yassi 1995a ¹³⁰	1	0	0	0	0	0	1	0	CD

Blue shaded cell=sibling articles, CD-Could not Determine, N=Number, QA=Quality Appraisal, NOS=No Overall Score provided, NR=Not reported, QA rating awarded by reviewers: 1=Low quality, 2=Moderate quality, 3=High quality

Appendix F: Professionals delivering interventions in primary studies

Table 10: Intervention deliverers - case management with two or more other professional categories

Study [Condition]				Work led by	Case	e Man	nagem	gement Musculoskeletal										vienta Health		I	ndust	rial Hy	/giene	9	Soc	ial Ca	re		
	Effectiveness	Cost-effectiveness	Average QA rating		CM NS	Primary care/GP	Other	Nurse	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	ОР	MH professional	BT/ Psych	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Yassi (1995) ^{93, 130} Canada, [MSK]	Е	CE	2	Nurse				х								х	х					х	х						
Tan (2016) ¹²³ Singapore, [Injury]	E		3	OT			Х		х																	х			
Lambeek (2010) ^{106, 128} Netherlands , [MSK]	Е	CE	3	OP			х	х			х					х						х							
Smedley (2013) ¹²⁹ UK, [Mix]	E	CE*	CD	Nurse or OT			х	х				х				х		х		х	х								
Bultmann (2009) ⁹⁷ Denmark, [MSK]	E	CE	3	Social worker			х							х		х		х		х					х				

Study [Condition]				Work led by	Cas	e Mar	nagem	ent	Musculoskeletal									Menta Health		I	ndust	rial Hy	ygiene	9	Soc	ial Car	·e		
	Effectiveness	Cost-effectiveness	Average QA rating		CM NS	Primary care/GP	Other	Nurse	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	ОР	MH professional	BT/ Psych	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Ntsiea (2015) ¹¹⁷ South Africa, [Stroke]	Е		3	PT and OT			х								х				х								х		
Haldorsen (2002) ⁶¹ Norway [MSK]	M	CE	1	NR		х		х		х						х				х									
Hees (2013) ⁸⁰ Netherlands , [MH]	M		2	ОТ			х											х			х								
Skouen (2002) ⁶¹ Norway [MSK]	М		2	NR		х		х		х						х				х									
Skouen (2006) ^{59, 60} Norway, [MSK]	M		2	NR		х		х		х						х				х									
Karrholm (2006) ⁸² Sweden [MSK]	М	CE	2	OP			Х	Х															Х				Х		

Study [Condition]				Work led by	Cas	e Mar	nagem	ent				M	usculo	skele	tal					Menta Health		ı	ndust	rial Hy	/giene	2	Soc	ial Ca	re
	Effectiveness	Cost-effectiveness	Average QA rating		CM NS	Primary care/GP	Other	Nurse	랖	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	10	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Schultz (2008) ⁶⁶ Canada, [MSK]	М		1	Nurse		х		х										х		x						х			х
Stapelfeldt (2011) ¹⁰³ Denmark, [MSK]	M		3	Case manager NS	х											Х	х					Х					х		
Tamminga (2013) ⁶⁷ Netherlands , [Cancer]	NI	Not CE	1	NS				х	х									х									Х		
Purdon (2006) ⁶⁵ UK, [Mix]	NI		1	NR				х	х		х					х			х	?					?				
Haldorsen (1998) ⁵⁸ Netherlands [MSK]	NI		1	NS		x		x		х						x				x									
Spekle (2010) ⁹¹ Netherlands , [MSK]	NI		2	NR			х																		Х				
Salomonsso n (2017) ¹¹⁸ Sweden, [MH]	NI		3	Psych		x	x														x								x

Study [Condition]				Work led by	Cas	e Mar	nagem	ent				M	usculc	skele	tal					Menta Health		I	ndust	rial Hy	/giene	:	Soc	ial Car	е
	Effectiveness	Cost-effectiveness	Average QA rating		CM NS	Primary care/GP	Other	Nurse	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	07	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Karjalainen (2003;2004) 112, 113	NI	CE	3	NS				х								х									х				
Finland, [MSK]																													
Loisel (2002) ¹⁰¹ Canada, [MSK]	NI		3	OT and/or Psych			х					х						х					х		х				
Moll (2018) ¹¹⁵ Denmark, [MSK]	NI		3	SW, specialist clinical social medicine or OT		х	х						Х			х				х									
Vlasveld (2012; 2013) ^{75, 104} Netherlands , [MH]	NI		2/	Case manager NS	х													х			х								
Bender (2016) ¹⁰⁸ USA, [MH]	NI		3	RTW Co- ordinator	х											х				х	х	х							
de Buck (2005) ⁷⁹ Netherlands , [Rheumatic Disease]	NI		2	Case manager NS	х								х			х		х	х			Х					х		

Study [Condition]				Work led by	Cas	e Mar	nagem	ent				M	usculo	skele	tal					Vlenta Health		I	ndust	rial H	giene	9	Soc	ial Ca	re
	Effectiveness	Cost-effectiveness	Average QA rating		CM NS	Primary care/GP	Other	Nurse	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Jensen (2011) ¹⁰⁰ Denmark, [MSK]	NI		3	Case manager NS	х											х	х					х					х		
Meyer (2005) ¹¹⁴ Netherlands , [MSK]	NI		3	Therapist (NS)		х	х									х	х	х				х					х		
Momsen (2016) ⁸⁷ Denmark, [Mix]	NI		2	SBO		x	x				,					Х		х		х	х				X				
Schultz (2013) ⁹⁰ Canada, [MSK]	NI	CE	2	Nurse		x												х		х						x			x
Vikane (2017) ¹²⁵ Norway, [mTBI]	NI		3	Specialist in rehab medicine		х	х	х		х					х							х					х		
Jensen (2012) ⁸¹ Denmark, [MSK]	Н		3	Case manager NS	х								x			X						х					х		

^{*}no statistical comparison conducted, 1=Low Quality study, 2=Moderate Quality study, 3=High Quality study; BT=Behavioural Therapist, CD=Could not Determine, CM=Case Manager, CE=Cost-effective, Erg=Ergonomist, GP=General Practitioner, H=Harm(control condition more beneficial), HP=Health Professional, QA=Quality Appraisal, M=Mixed, MH=Mental Health, MSK=Musculoskeletal, mTBI=Mild Traumatic Brain Injury, NI=No impact, NR=Not Reported, NS=Not specified, OH=Occupational Health, OM=Occupational Medicine, OP=Occupational Physician, OT=Occupational Therapist, Psych=Psychologist, PT=Physio or physical therapist, RTW=Return to Work, SBO=Sickness Benefits Officer, SW=Social Worker, USA=United States of America, VRS=Vocational Rehabilitation Specialist, WCP=Workers Compensation Physician

Table 11: Intervention deliverers - case management with one other professional category

					Cas	e Mar	nagem	ent				М	usculc	skelet	tal				Me	ntal H	ealth		Indust	rial Hy	/giene		So	cial Ca	are
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	CM NS	Primary care/GP	Other	Nurse	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	ОР	MH professional	BT/ Psych	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Gice (1989) ¹²⁶ NR, [Chronic pain]	E	CE*	CD	NR		x												?							x				
Lemsstra (2004) ⁸⁴ , Canada, [MSK]	Е		2	Manager/ union			x		x																				
Lindstrom (1992) ^{63, 64} Sweden, [MSK]	E		1	PT		x										X													
Netterstrom (2010) ⁸⁸ Denmark, [MH]	E		2	Specialist in OM			x													?	х								
Noordik (2013) ⁷⁴ Netherlands, [MH]	E		2	OP			x													x									
Schene (2007) ⁸⁹ Netherlands, [MH]	E	CE	2	OP			х														x (also part of TAU)	х							

					Cas	e Mar	nagem	ent				М	usculo	skelet	al				Me	ntal He	ealth		Indust	trial Hy	/giene	1	So	cial Ca	re
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	CM NS	Primary care/GP	Other	Nurse	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	ОР	MH professional	BT/ Psych	Psychiatrist	от	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Skisak (2006) ¹¹⁹ USA, [NR]	E	CE	3	Nurses, coroporate case managers			x	x										x											
Staal (2004) ⁹⁴ Netherlands, [MSK]	E		2	OP			x		x							x													
Steenstra (2006; 2009) ^{121, 122} Netherlands, [MSK]	В	Slightly increased cost	3	OH Erg/ OH nurse		x	x	x								x													
Volker (2015) ⁹⁵ Netherlands, [MH]	E		2	OP			x														х								
Anema (2007) ¹⁰⁷ Netherlands, [MSK]	М		3	Erg		x	Х		х	x				x		x		x											
Lemstra (2003) ⁸³ Canada, [MSK]	М	Reduced cost	2	PT		x										х													

					Cas	e Man	agem	ent				М	usculc	skelet	al				Me	ntal H	ealth		Indust	rial Hy	giene		So	cial Ca	ire
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	CM NS	Primary care/GP	Other	Nurse	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	ОР	MH professional	BT/ Psych	Psychiatrist	от	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Goorden (2014) ⁹⁸ Netherlands, [MH]	NI	Not CE	3	OP			x														x								
Kenning (2018) ¹²⁷ UK, [NR]	NI		CD	Case manager NS	x															х									
Myhre (2014) ¹¹⁶ Norway, [MSK]	NI		3	OP			x														х								
Verbeek (2002) ¹²⁴ Netherlands, [MSK]	NI		3	OP		х	x		X							x													

^{*}no statistical comparison conducted, 1=Low Quality study, 2=Moderate Quality study, 3=High Quality study; BT=Behavioural Therapist, CD=Could not Determine, CM=Case Manager, CE=Cost-effective, Erg=Ergonomist, GP=General Practitioner, H=Harm(control condition more beneficial), HP=Health Professional, QA=Quality Appraisal, M=Mixed, MH=Mental Health, MSK=Musculoskeletal, mTBI=Mild Traumatic Brain Injury, NI=No impact, NR=Not Reported, NS=Not specified, OH=Occupational Health, OM=Occupational Medicine, OP=Occupational Physician, OT=Occupational Therapist, Psych=Psychologist, PT=Physio or physical therapist, RTW=Return to Work, SBO=Sickness Benefits Officer, SW=Social Worker, USA=United States of America, VRS=Vocational Rehabilitation Specialist, WCP=Workers Compensation Physician

Table 12: Intervention deliverers - no case management

					Case	Mana	ageme	ent					Muscu	uloskel	etal				Me	ntal Heal	th		Indust	rial H	ygiene	•
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	CM NS	Primary care/GP	Other	Nurse	дн	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	dO	MH professional	BT/ Psych	Psychiatrist	от	Ergonomist	Industrial hygienist	OH/specialist OM	VRC
Jensen (2005) ⁹⁹ Sweden: Jensen 2001 follow up, [MSK]	E		3	NR												x		x		x						
Loisel (1997) ⁸⁶ Canada, [MSK]	E		2	NR							x							х					х			х
Netterstrom (2013) ⁷³ Denmark, [MH]	E		2	NS														х		X	х					
van den Hout (2003) ⁷⁷ Netherlands, [MSK]	E		2	NR												x				х		х				
Jensen (2001) ¹⁰⁵ Sweden, [MSK]	NI		3	NR												x		х		X						

					Case	Mana	ageme	ent		ı	ı		Muscı	ıloskel	etal	ı		Γ	Me	ntal Heal	th		Indust	trial H	ygiene	•
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	CM NS	Primary care/GP	Other	Nurse	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	d0	MH professional	BT/ Psych	Psychiatrist	от	Ergonomist	Industrial hygienist	OH/specialist OM	VRC
Kaapa (2006) ⁶² Finland, [MSK]	NI		1	NR		_				_	<u> </u>	_	_			x	x	х	_	x	1		_	_		
Meijer (2006) ¹⁰² Netherlands, [MSK]	NI	CE	3	NR							х					х				х		x				

1=Low Quality study, 2=Moderate Quality study, 3=High Quality study; BT=Behavioural Therapist, CD=Could not Determine, CM=Case Manager, CE=Cost-effective, E=Effective, Erg=Ergonomist, GP=General Practitioner, H=Harm(control condition more beneficial), HP=Health Professional, QA=Quality Appraisal, M=Mixed, MH=Mental Health, MSK=Musculoskeletal, mTBI=Mild Traumatic Brain Injury, NI=No impact, NR=Not Reported, NS=Not specified, OH=Occupational Health, OM=Occupational Medicine, OP=Occupational Physician, OT=Occupational Therapist, Psych=Psychologist, PT=Physio or physical therapist, RTW=Return to Work, SBO=Sickness Benefits Officer, SW=Social Worker, USA=United States of America, VRS=Vocational Rehabilitation Specialist, WCP=Workers Compensation Physician

Table 13: Intervention deliverers - one professional category and the workplace

							ı	М	usculo	skele	tal				Ment	tal Hea	alth		Industr	ial Hy	giene		Social Care
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	от	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	ws
Cheng (2007) ⁷⁶ Hong Kong, [MSK]	E		2	Job coach															х				
Durand (2001) ⁷⁰ Canada, [MSK]	Е		2	ОТ														x					
Jensen (2012) ⁸¹ Denmark, [MSK]	Е		2	OP										x									
Lagerveld (2012) ⁷¹ Netherlands, [MH]	E	CE*	2	PsychTh											х								
van Oostrom (2009, 2010) ^{92, 96,} ¹³¹ Netherlands, [MH]	Е	Not CE	2	SW or labour expert																			x

						1		М	usculo	skele	tal			ı	Men	tal Hea	alth		Industr	ial Hyg	giene		Social Care
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	от	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW
Finnes (2017) ¹¹⁰ Sweden, [MH]	NI	Not CE	3	2 different therapists	_		•	-	-		•		_		_	х			_	_			•,
Glasscock (2018) ¹¹¹ Denmark, [MH]	NI		3	Psych												х							
Steenstra (2006) ¹²⁰ Netherlands, [MSK]	NI		3	PT								х											
Martin (2013) ⁷² Denmark, [MH]	Н		2	Psych									?			х							

^{*}no statistical comparison conducted, 1=Low Quality study, 2=Moderate Quality study, 3=High Quality study; BT=Behavioural Therapist, CD=Could not Determine, CM=Case Manager, CE=Cost-effective, Erg=Ergonomist, GP=General Practitioner, H=Harm(control condition more beneficial), HP=Health Professional, QA=Quality Appraisal, M=Mixed, MH=Mental Health, MSK=Musculoskeletal, mTBI=Mild Traumatic Brain Injury, NI=No impact, NR=Not Reported, NS=Not specified, OH=Occupational Health, OM=Occupational Medicine, OP=Occupational Physician, OT=Occupational Therapist, Psychologist, PsychTh=Psychotherapist, PT=Physio or physical therapist, RTW=Return to Work, SBO=Sickness Benefits Officer, SW=Social Worker, USA=United States of America, VRS=Vocational Rehabilitation Specialist, WCP=Workers Compensation Physician

Appendix G: Full results – primary studies from included reviews

Primary studies: overview

The process of selecting the primary studies from the prioritised systematic reviews is described in Error! Reference source not found. below. Two-hundred and nine unique articles were identified from the primary studies included in the 24 prioritised systematic reviews. The full-texts of 33 of these articles could not be retrieved, resulting in 175 articles being screened at full-text. Following full-text screening, 105 of these were excluded for the following reasons: population were not employed working-age adults (n=31), intervention being evaluated was not multidisciplinary (n=19), intervention being evaluated did not involve the workplace (n=15), study was not an evaluation of an intervention/did not include a control group (n=25) or study did not evaluate a RTW outcome (n=15) (see Appendix H for reasons for exclusion for individual studies). In total, 73 articles (62 primary studies) were eligible for inclusion.

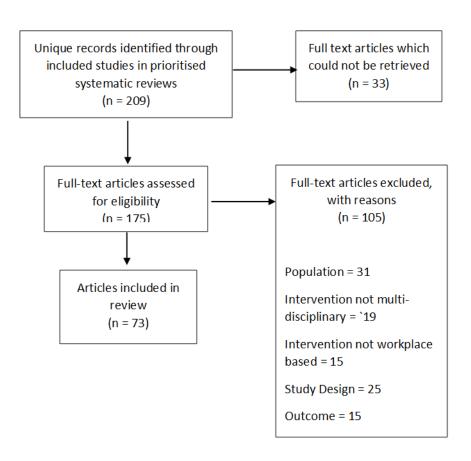


Figure 3: Primary study PRISMA diagram

The majority of these primary studies identified as being relevant to the aims of the umbrella review were conducted in Nordic countries, including the Netherlands (n=18), $^{67, 75, 79, 80, 91, 94, 95, 98, 104, 107, 114, 120-122, 128, 71, 102, 124, 77, 89, 92, 96, 131}$ Denmark(n=12), $^{97, 81, 100, 103, 109, 115, 72-74, 87, 88, 111}$ Sweden (n=6), $^{63, 82, 99, 105, 118, 132}$ Norway (n=4), $^{58, 59, 61, 116, 125}$ and Finland(n=2). $^{62, 112, 113}$ Other countries included Canada (n=8), $^{66, 90, 93, 70, 83, 84, 86, 101}$ the UK (n=2), $^{65, 127}$, the USA (n=2), $^{108, 119}$ and one study each for Singapore, 123 Hong Kong, 76 various countries, 129 and South Africa, 117 with one study not reporting this information. 126

Primary studies: quality

Appendix E outlines the number of systematic reviews each primary study was included within, and the range of quality scores assigned to them. Studies included across several different reviews were often awarded different quality ratings. For the 68 primary articles where an average quality rating could be awarded, seven received a score of 1 (Low quality), ⁵⁸⁻⁶⁷ 31 received a score of 2 (Moderate quality), ^{59-61, 69-96} and 30 articles received a score of 3 (High quality). ^{81, 97-125} A quality rating could not be awarded for 5 articles as none of the reviews in which they were included provided an overall quality score. ^{93, 126, 128, 129}

Primary studies: intervention deliverers

In terms of the number of primary studies contributing to each grouping, no predominant delivery model of multi-disciplinary occupational health services was evident.

Below, we describe the primary studies according to the number and types of categories of professionals involved in delivering the intervention. This resulted in four staff groups, which are described below (also see Error! Reference source not found.):

- 1) **Group A:** A case manager working with staff from two or more other categories;
- 2) **Group B:** A case manager working with staff from one other professional category;
- 3) **Group C:** No case manager two categories of staff working together;
- 4) **Group D:** No case manager Staff from one category working with professionals from the workplace.

Within Group A and B, we have made efforts to relate the characteristics of the intervention deliverers to RTW outcomes. However, these observations should be interpreted with caution due to the small number of studies in some categories/groups and the large range in contextual variables which may influence the relationship between intervention features and outcomes. Hence, in the other two groups which have a smaller number of articles, we have provided a narrative description of the intervention deliverers. Due to the poor description of staff delivering the intervention, two of the included primary studies could not be placed within any of the four groups. ^{69, 85}

Full details of the professionals delivering the intervention and reported effectiveness and cost effectiveness are provided in Error! Reference source not found. Full details regarding the interventions being evaluated can be found in Supplementary Table 2.

Group A: case managers working with staff from two or more other categories

Twenty-six studies evaluated interventions implemented by professionals within the 'Case Management' category and staff from two or more other professional categories. The quality of the articles was as follows: High(n=19), ^{75, 81, 97, 100, 101, 103, 104, 106, 108, 112-115, 117, 118, 123, 125, 128, 129}

Moderate(n=11), ^{59-61, 79, 80, 82, 87, 90, 91, 93} and Low(n=5). ^{58, 61, 65-67} Two articles could not be awarded an average quality rating. ^{129, 130} Employees accessing the interventions were experiencing musculoskeletal difficulties(n=14), ^{58-61, 66, 81, 82, 90, 91, 93, 97, 100, 101, 103, 106, 112-115, 128, 130} mental health difficulties(n=4), ^{75, 80, 104, 108, 118} a mix of conditions/diagnoses (n=3), ^{65, 87, 129} injury(n=1), ¹²³ cancer(n=1). ⁶⁷ mild traumatic brain injury(n=1), ¹²⁵ stroke(n=1), ¹¹⁷ and rheumatic disease(n=1). ⁷⁹

Sixteen studies (23 articles) evaluated the implementation of an intervention which involved professionals within the case management category working with professionals from two other categories. ^{58-61, 65, 67, 75, 80, 82, 91, 93, 101, 104, 106, 112, 113, 115, 118, 123, 128-130} Ten studies (twelve articles) evaluated interventions which included case managers working alongside professionals from more than two other professional categories. ^{66, 79, 81, 87, 90, 97, 100, 108, 114, 117, 125}

Intervention deliverers: studies reporting beneficial effect

Four of the 16 studies evaluating the effectiveness of interventions implemented by case management professionals in conjunction with two other professional categories were reportedly effective in improving RTW.^{93, 106, 123, 128-130} Three of these studies also reported that the intervention was cost-effective, ^{93, 106, 128-130} although one of these did not conduct formal statistical comparison. ¹²⁹ The case management role within these studies was fulfilled by a nurse and/or OT(n=4), ^{93, 129, 130} or Occupational Physician(n=1). ^{106, 128} These case managers worked with professionals from the 'Musculoskeletal' and 'Industrial Hygiene' categories(n=2), ^{93, 106, 123, 128, 130} or 'Musculoskeletal' and 'Mental Health' categories (n=1). ¹²⁹

Two high quality studies which included case managers working with professionals from three or more categories reported their interventions were effective in improving RTW outcomes^{97, 117} with one study reporting the intervention as being cost-effective.⁹⁷ Case managers within these studies were social workers,⁹⁷ and a combination of physiotherapists and OTs.¹¹⁷ Case managers in both studies worked alongside professionals from the 'Musculoskeletal' and 'Mental Health' categories and either 'Industrial Hygiene'⁹⁷ or 'Social care'.¹¹⁷

Overall, professionals from all five categories were represented within the studies delivered by Case Management professionals and three or more other professional categories. Professionals from 'Case management', 'Industrial Hygiene' and 'Mental Health' categories were represented within interventions delivered by Case Management professionals and staff from two other categories, although professionals from 'Industrial Hygiene' and 'Mental Health' did not work together.

Intervention deliverers: studies reporting mixed effect

Three studies where case-management professionals worked with staff from two other categories reported a mixed effect of the intervention on RTW outcomes^{59-61, 80, 82} Two of these studies reported that the intervention was cost effective.^{59-61, 82} Professionals within the 'Case Management' category in these studies included primary care professionals and nurses (n=1),⁵⁹⁻⁶¹ OT(n=1)⁸⁰ and occupational physicians and nurses(n=1)⁸² and they worked alongside individuals from both the categories of 'Industrial Hygiene' and 'Social Care' (n=1),⁸² and 'Musculoskeletal' and 'Mental Health'(n=2).^{59-61, 80}

Two studies where case management professionals worked with more than two other professional categories reported mixed effects of the intervention on RTW outcomes. 66, 103 Professionals within the 'Case management' category included primary care clinicians and nurses 66 or were not specified. These two studies included professionals from each of the other five professional categories, aside from Stapelfeldt et al (2011) who did not involve any mental health professionals. 103

Intervention deliverers: studies reporting no effect

Nine studies evaluating interventions implemented by case managers and two other professional groups reported no impact of the intervention on RTW outcomes, ^{58, 65, 67, 75, 91, 101, 104, 112, 113, 115, 118} with one low quality study reporting that the intervention was not cost-effective and another High quality study stating it was cost-effective. ^{67, 112, 113} Articles were rated as High(n=5^{101, 104, 112, 113, 115, 118} Moderate(n=2^{75, 91}) or Low(n=3^{58, 65, 67} quality. Professionals within the case management role in these studies included; Nurses alone(n=3^{65, 67, 112, 113}), primary care clinicians and nurses(n=1⁵⁸) Social worker and primary care clinicians (n=1¹¹⁵), psychologists and GP (n=1¹¹⁸), OT and/or psychiatrists(n=1¹⁰¹) or were unspecified professionals (n=2). ^{75, 91, 104} Case managers worked with the following professional groups: 'Musculoskeletal' and 'Mental health'(n=4^{58, 65, 75, 104, 115}), Muscloskeletal and 'Industrial hygiene'(n=2^{101, 112, 113}) 'Musculoskeletal' and 'Social care'(n=1⁶⁷), Mental Health and Social care (n=1¹¹⁸) and not reported (n=1⁹¹).

Seven studies of High or Moderate quality implemented by professionals in the 'Case Management' category and three or more other professional categories reported no effect of the intervention on RTW outcomes, ^{79, 87, 90, 100, 108, 114, 125} with one reporting improved effects of the control group over the intervention group. ⁸¹ Professionals working within the 'Case management' category included: Case manager not specified(n=3^{79, 81, 100, 108}), Therapist and primary care clinicians(n=1¹¹⁴), Sickness benefit officer and primary care clinicians(n=1⁸⁷), Nurse (n=1⁹⁰ and Specialist in rehabilitation medicine, primary care clinicians and nurses(n=1¹²⁵). Case Management professionals worked with professionals from the other four staff categories in two studies, ^{79, 90} with individuals from 'Musculoskeletal', 'Mental Health' and 'Industrial Hygiene' in two studies^{87, 108} and staff from 'Musculoskeletal', 'Industrial Hygiene' and 'Social Care' categories in three studies. ^{81, 100, 114, 125}

Table 14: Intervention deliverers - case management and two or more other professional groups

	Ca	se Mai	nageme	ent				N	/lusculo	oskelet	al				Me	ntal He	alth		Indus	trial H	ygiene		So	cial Ca	are
Reported interventi on effect	Case manager NS	Primary care/GP	Other	Nurse	Healthcare professionals	ırologis	Secondary care/ consultant/ specialists	Pain management specialist		Chiropractor	Speech therapist	Physical or physio therapist	hab s	Occupational Physician	Mental health	ehaviour svch	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist	ational rehab	Social worker/specialist clinical social medicine	kness benefits of	Workers compensation physician
Beneficial																						-			
effect			5[8	3[5	1[1		1[1	1[1		1[1	1[1	4[6	1[1	2[3	1[1	2[3	1[1	2[3	1[1]0	1[1	1[1	1[1]0	
n[%]	0[0]	0[0]	3]	0]	7]	0[0]	7]	7]	0[0]	7]	7]	7]	7]	3]	7]	3]	7]	3]	7]	0]	7]	7]	7]	0]	0[0]
No effect	4[2	7[4	7[4		2[1	2[1			2[1			9[5	2[1	7[4	2[1	5[3	4[2	5[3]0	4[2		5[3]0	2[1
n[%]	5]	4]	4]	5[3]	3]	3]	1[6]	1[6]	3]	0[0]	1[6]	6]	3]	4]	3]	1]	5]	1]	1[6]	0]	5]	1[6]	1]	0]	3]

^{*}Calculation based on number of studies reporting this information; GP=General Practitioner, NS=Not specified, OH=Occupational Health, OT=Occupational Therapist, PT

Error! Reference source not found. 14 above indicates that when comparing studies reporting a beneficial effect with studies which report no effect, those reporting no effect were more likely to have case managers where the profession was unspecified or who were primary care clinicians. Studies reporting a beneficial effect of the intervention were more likely to have case managers belonging to one of the other four professional groups.

It should be noted that comparisons between studies do not account for potential confounders which may influence the reported effectiveness of an intervention in a given population group. Such confounders could include the size of the study, duration of time on sick-leave before receipt of intervention, definition of RTW and time point/s at which RTW outcome measured. In addition, we have not conducted statistical comparison for these results and thus no confidence interval data is available to us. Thus, we cannot state if any of the reported differences between groups are statistically significant.

Summary

It was challenging to identify any clear patterns relating staff groupings relating to the reported effectiveness of the intervention.

Group B: case manager working with staff from one other category

Seventeen studies (18 articles) evaluated interventions delivered by case managers and one other professional group. ^{74, 78, 83, 84, 88, 89, 94, 95, 98, 107, 116, 119, 120, 122, 124, 126, 127} Six of these studies were High quality, ^{98, 119, 120, 122} 107, ^{116, 124} 8 of Moderate quality, ^{74, 78, 83, 84, 88} 89, ^{94, 95}) 1 of Low quality ^{63, 64} and two could not be given an average quality rating. ^{126, 127} Eight of the studies evaluated interventions aimed at employees with musculoskeletal problems, ^{63, 64, 78, 94, 106, 107, 116, 121, 122, 124, 128} 5 with mental health difficulties, ^{74, 88, 89, 95, 98} 1 with chronic pain, ¹²⁶ and 2 studies did not specify the reason for sickleave. ^{119, 127}

Intervention deliverers: summary across all studies

The mean number of professionals within the Case Management category was 1.3 (range 1-4, mode: 1). The professional roles of people within the Case Management category were as follows: not specified($n=1^{127}$) GP (n=6 Gice $^{63, 64, 83, 84, 107, 121, 122, 124, 126}$), nurse ($n=1^{120}$). For studies which explicitly named a member of a specific professional group (n=12), the role of case manager was taken on by the following individuals: manager from employing organisation or union representative($n=3^{78, 83, 84, 109}$), specialist in occupational medicine ($n=1^{88}$), Occupational Physician ($n=7^{74, 89, 94, 95, 98, 116, 124}$), Ergonomist ($n=2^{107, 121, 122}$) and nurse($n=1^{119}$).

Overall, the most common group of professionals for staff in the Case Management group to work with were those in the 'Musculoskeletal' category ($n=6^{63, 64, 83, 84, 94, 107, 119, 121, 122, 124}$), 'Mental Health' ($n=6^{74, 88, 95, 98, 116, 127}$) or 'Industrial Hygiene' ($n=3^{78, 89, 126}$) categories. These broadly reflect the reason for employee sick-leave as described above.

Within the 'Musculoskeletal' category, the most common professions represented were healthcare professionals (4 studies^{83, 84, 94, 107, 124}) Neurologists (n=1¹⁰⁷), Chiropractors (n=1¹⁰⁷), PT (n=5^{63, 64, 83, 94, 107, 121, 122}) and OP (n=2^{107, 119}). Within the 'Mental Health' category, 2 studies involved Behavioural Therapists with delivering the intervention, ^{74, 127} and four studies involved a psychiatrist. ^{88, 89, 95, 98, 116}. Professionals in the 'Industrial Hygiene' category included Occupational Therapists (2 studies{Arnetz, 2003 #46}) Ergnonomists (1 study⁷⁸) and Occupational Health specialists not otherwise specified (1 study¹²⁶).

Intervention deliverers: studies reporting beneficial effect

Eleven studies of predominantly Moderate quality reported a significant beneficial effect of the intervention being evaluated on RTW outcomes. ^{74, 78, 84, 88, 89, 94, 95, 119, 121, 122, 126} Four of these studies also indicated that these interventions were cost-effective, ^{78, 89, 119, 126} although one of these did not conduct any formal statistical comparison. ¹²⁶ One study indicated the intervention, while effective, could be delivered at a slightly higher cost than the control intervention. ^{121, 122} Error! Reference source not found. ¹⁵ below illustrates that in studies which explicitly included a case manager, the

role was predominantly fulfilled by professionals from the other four professional categories including OPs ($n=4^{74, 89, 94, 95}$), Ergnomists ($n=1, ^{121, 122}$), specialist in occupational medicine (n=1 ⁸⁸) and PTs ($n=1^{63, 64}$), but also included Nurses /corporate case managers($n=1^{119}$) and case managers from employing organisation and/or union ($n=2^{78, 84}$). Other additional professionals included within this category included nurse($n=1^{121, 122}$) and GP/Primary care clinicians($n=3^{63, 64, 121, 122, 126}$). The mean number of professionals within the 'Case Management' category was 1.35(range, 1-3, mode 1). Case managers most commonly worked with professionals from the 'Musculoskeletal'($n=5^{63, 64, 83, 84, 94, 119, 121, 122}$), 'Mental Health' ($n=3^{74, 88, 95}$) and 'Industrial Hygiene'($n=3^{78, 89, 126}$) categories.

Intervention deliverers: studies reporting mixed effects

Two studies, one moderate quality^{83, 84} and one High¹⁰⁷ reported mixed effects of the intervention on RTW outcomes, with one indicating the intervention could be provided at slightly reduced costs compared to the control condition.⁸³ Case Managers were reported to be Ergnomists¹⁰⁷ or GPs,⁸³ who worked alongside professionals from the 'Musculoskeletal' category in both studies.

Intervention deliverers: studies reporting no effect

Four predominantly High quality studies reported no significant benefit of the intervention, ^{98, 116, 124, 127} with 1 of these studies indicating that the intervention was not cost-effective. ⁹⁸ Where interventions reported a named case managers, the role was fulfilled predominantly OPs(n=3^{98, 116, 124}), with the mean number of professionals within the 'Case Management category being 1.25 (range 1-2, mode 1). One study included professionals from the 'Musculoskeletal' category, ¹²⁴ whilst the other three involved professionals from the 'Mental Health' category. Only one study targeted employees with mental health difficulties, ⁹⁸ the others included employees with musculoskeletal difficulties(n=2^{116, 124}) or condition was not specified. ¹²⁷

Overall, it is difficult to identify any differences between the groups of staff delivering interventions, which were reported to have a beneficial effect on RTW outcomes versus those reported to have no impact. **Error! Reference source not found.** provides further detail regarding the professionals delivering the interventions across these two groups.

Table 15: Intervention deliverers - case management and one other professional category

		ase Ma	nageme	nt				N	/luscul	oskelet	tal				М	ental He	alth		Indust	trial Hy	giene		So	cial Ca	ire
Reported effect of intervent ion	Case manager NS	Primary care/GP	Other	Nurse	Healthcare professionals	Neurologist	ary ca	consultant/specialists Pain management	specialist Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	a i Fu	Mental health	ororessional Behaviour therapist/ Psych	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist	<u>_</u>	Social worker/specialist	Sickness benefits officer	Workers compensation on the sician
Beneficia I effect	1[9.	3[2	8[7	2[1	2[1	0[]0]0]0]0]0	2[1]0	1[]0		2[1	2[1	1[]0	1[]0]0]0	0[
n[%]]	7]	3]	8]	8]	0]	0]	0]	0]	0]	0]	8]	0]	9]	0]	1[9]	8]	8]	9]	0]	9]	0]	0]	0]	0]
No effect	1[2	1[2	3[7		1[2]0]0]0]0]0]0	1[2]0]0	0[1[2	2[5]0	0[]0]0]0]0]0
n[%]	5]	5]	5]	0[0]	5]	0]	0]	0]	0]	0]	0]	5]	0]	0]	0]	5]	0]	0[0]	0]	0]	0]	0]	0]	0]	0]

Summary

Whilst the quality of the evidence was classified as Moderate to High, there was no clear relationship between the profession of the Case Manager, professional groups who worked with the Case Manager or the composition of these professional groups and the reported effectiveness or cost-effectiveness of the intervention with regard to RTW outcomes.

Group C: No case management – two categories of staff working together

Six studies (eight articles) evaluated interventions where there was no specified case manager leading the intervention. $^{62, 73, 77, 86, 99, 102, 105, 109}$ The average quality appraisal ratings awarded by reviewers were High (n=2 $^{99, 102, 105, 109}$), Moderate (n=3 $^{73, 77, 86}$) and Low(n=1 62). The majority of the interventions were intended for employees with musculoskeletal difficulties, with one intervention aimed at individuals with mental health difficulties.

Intervention deliverers: overall summary

Four of the interventions being evaluated included individuals from two professional categories.^{62, 73, 86, 99, 105, 109} The most common combination of professional categories were 'Musculoskeletal' and 'Mental Health' (n=3^{62, 73, 99, 105, 109}). One study reporting a significant beneficial effect of the intervention included individuals working across 'Musculoskeletal' and 'Industrial hygiene' staff categories.⁸⁶ Two studies, one reporting a beneficial effect of the intervention⁷⁷ and the other no effect¹⁰² included individuals across 'Musculoskeletal', 'Mental Health' and 'Industrial Hygiene' categories.

Within the 'Musculoskeletal' category, most common staff included physiotherapists (n=4^{62, 73, 86, 99, 105, 109}) and Occupational Physicians (n=3^{62, 73, 86, 99, 105, 109}) The number of professionals within this category ranged from 1⁷³ to 3.⁶² All except one study⁸⁶ included at least one professional from the 'Mental Health' category, with the most common being a behavioural therapist or psychologist(n=5^{62, 73, 77, 99, 102, 105, 109}). In addition to a behavioural therapist/psychologist, one study also involved a psychiatrist.⁷³ Within the 'Industrial Hygiene' category, two studies included an occupational therapist^{77, 102} and one included an ergonomist and a vocational rehabilitation consultant.⁸⁶ The small number of studies within this group precludes additional comparison across studies reporting a beneficial effect of the intervention with those that did not.

Intervention deliverers: studies reporting beneficial effect

Four studies (five articles) reported a significant beneficial effect of the intervention on RTW outcomes. One High quality study indicated that the intervention was cost-effective. ¹⁰⁹ Two of these articles represented three ⁹⁹ and ten year ¹⁰⁹ follow ups of an original study, which showed no significant difference between intervention and control groups over an eighteen month period. ¹⁰⁵

Two studies involved professionals from the 'Musculoskeletal' and 'Mental Health' categories working together, 73, 109 one study involved those 'Musculoskeletal' and 'Industrial Hygiene' professionals 86 and one study involved professional from all three of these categories. 77

Intervention deliverers: studies reporting no effect

Two further studies indicated no significant effect of the intervention. One High quality study involved professionals from across the 'Musculoskeletal', 'Mental Health' and 'Industrial Hygiene' working together and indicated no significant cost increase compared to the control group. The other study was of low quality and was delivered by professionals from the 'Musculoskeletal' and 'Mental Health' categories.

Summary

The predominant staff category within this grouping was 'Musculoskeletal' which reflects the reason for sick leave for the employees within the studies themselves. Within individual studies, it was most common for staff from the 'Musculoskeletal' category to work with those from either the 'Mental Health' or 'Industrial Hygiene' categories, although again it is not possible to establish a clear link between different staff groupings and the reported effectiveness/cost-effectiveness of the intervention.

Group D: No case management - staff from one category working with professionals in the workplace

Eight studies evaluated an intervention where members from one professional category liaised with the workplace to support employees to RTW. ^{70, 72, 76, 81, 92, 96, 110, 111, 120, 131} Three studies were of High quality, ^{110, 111, 120} and 5 studies were of Moderate quality. ^{70, 72, 76, 81, 92, 96, 131} Four of the interventions were intended to support individuals with musculoskeletal problems ^{70, 76, 81, 120} and the other four individuals with mental health difficulties. ^{72, 92, 96, 110, 111, 131}

Intervention deliverers: studies reporting beneficial effect

Four Moderate quality studies reported significant benefits of the intervention for employees with Musculoskeletal difficulties. ^{70, 76, 81, 92, 96, 131} These interventions utilised a RTW rehabilitation approach, where a professional (OT, OP, Job coach, SW or labour expert) liaised closely with the employee and supervisor to identify barriers to return to work and/or identify suitable work tasks to enable a graded return to work, with 1 study also integrated ergonomic advice and techniques. ⁷⁶ This style of intervention was not cost-effective as measured by one study. ¹³¹

Intervention deliverers: studies reporting no effect

Three High quality studies reported no significant impact of the intervention on RTW outcomes. 110, 111, 120 These interventions encompassed psychological therapies for mental health difficulties with a

workplace component^{110, 111} or a gradually increasing exercise programme for employees with musculoskeletal problems¹²⁰ and were mainly aimed at the individual employee, with limited involvement of the workplace. Finnes et al (2017) reported that the addition of three joint meetings between employee and supervisor at work to an ACT intervention was not cost-effective.¹¹⁰ One study evaluating the effects of a RTW plan reported benefits in favour of the control condition.⁷² In contrast to the studies reporting a benefit of the intervention as described above, which were delivered in workplace or hospital settings, this intervention was primarily delivered in the jobcentre by a psychologist following a MDT assessment, with some contact with the workplace.⁷²

Appendix H: List of excluded . Eighty-nine systematic reviews met our eligibility criteria for inclusion in this review.

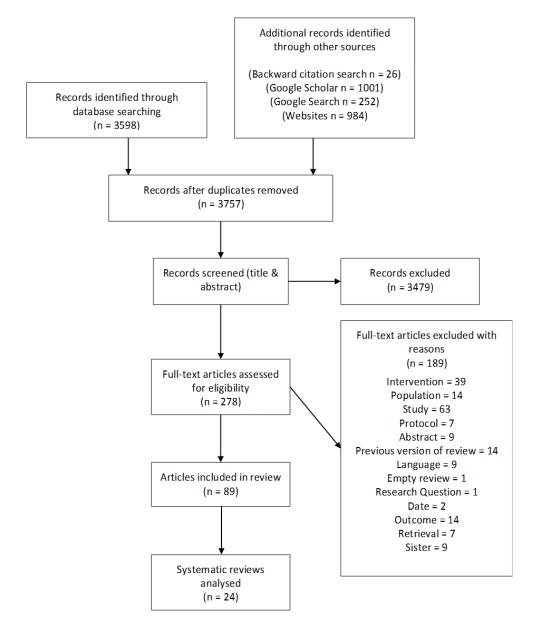


Figure 1: PRISMA diagram showing study selection process for systematic reviews with a return to work outcome

Twenty of these 89 systematic reviews were rated as being of 'High' relevance, 6 as 'Medium' relevance and 61 as 'Low' relevance based upon the extent to which the aims/inclusion criteria of these reviews were consistent with our aims and objectives. Summary data for all 89 eligible systematic reviews can be found in Supplementary Materials 1.

Publication characteristics

Table 3 contains details of the 24 included systematic reviews of primary studies rated as being of 'High' or 'Medium' relevance to our aims and objectives. The earliest of the reviews was published in 2005³⁵ with 12 published since 2016.³⁶⁻⁴⁷ Reviews were conducted by teams from 10 different

countries, with five publications coming from The Netherlands, ^{44, 46, 48-50} four from Canada, ^{35, 39, 51, 52} three from the UK, ^{38, 53, 54} two from each of Norway, ^{55, 56} Denmark, ^{21, 43} and Australia, ^{40, 45} and one each from Sweden, ³⁶ Ireland, ³⁷ Japan, ⁴¹ Belgium, ⁴² Switzerland, ⁴⁶ and between Canada and Switzerland⁵⁷ Regarding geographical restrictions imposed as part of the inclusion criteria in included reviews, only Oakman and colleague enforced any. ⁴⁵ They required studies to be conducted in countries with disability support schemes that provide support for individuals regardless of cause, or, for countries with cause-based systems, where the primary reason for work absence was considered a workplace injury or illness, and participants were receiving support through a cause-based workers' compensation system.

Participant characteristics

All 24 reviews were concerned with adults of working age, with this stipulated to be from as young as 16 years old^{38, 48, 57} up to 70 years old.⁴⁰ Of the health conditions studied, the reviews by Gensby, Lefever, NICE, Odeen, Schandelmaier, Tompa, van Vilsteren and Vogel cast a wide net, seeking studies of participants with a wide range of conditions.^{21, 38, 42, 47, 50, 52, 56, 57} Of those that were more focused, there were nine reviews with a focus on workers with musculoskeletal conditions and/or chronic pain^{35, 37, 45, 48, 49, 51, 53-55} and three that looked exclusively at mental health conditions.^{39, 43, 44} There was almost no information provided about the industry or work sector in which the primary studies had been conducted, with only Brewer and colleagues mentioning some exclusions.⁵¹ It was assumed that any industry or workplace would be of interest in the remaining reviews.

The systematic review conducted by NICE³⁸ considered race/ethnicity/culture/language, gender/sex, and socio-economic status in their synthesis; Nieuwenhuijsen and colleagues⁴⁴ considered the influence of gender/sex in their synthesis; and Schaafsma and colleagues had inclusion criteria relating to gender/sex.⁴⁸ Aside from these three reviews, the PROGRESS criteria did not appear in the inclusion criteria or synthesis strategy for any review. ²⁷

Intervention characteristics

Interventions were categorised as staff-specific in 2 reviews.^{36, 57} In the paper by Axen and colleagues, there was a specific requirement for interventions to involve occupational health services staff, while Schandelmaier and colleagues required interventions to primarily involve a return-to-work coordinator.

Eight reviews sought specific types of intervention.^{37, 39, 40, 42, 47-49, 51} Brewer and colleagues sought injury prevention and loss control programmes (policies, procedures and practices to protect workers, meet regulatory requirements, reduce adverse consequences of worker injuries, and manage costs);⁵¹ Cochrane and colleagues were interested in any biopsychosocial interventions;³⁷

Gaillard et al sought interventions aiming to change work-related factors;³⁹ Heathcote and colleagues looked for any intervention targeting worker resilience;⁴⁰ Lefever and colleagues sought biopsychosocial disability management programmes;⁴² Schaafsma et al included physical conditioning programmes;⁴⁸ van Geen et al were interested in multidisciplinary back training programmes (based on bio-psycho-social principles to support patients manage their lower back pain);⁴⁹ and Vogel and colleagues included any return-to-work coordination programmes.⁴⁷

Quality, relevance, and findings

The quality of systematic reviews is presented in further detail below within the

Study	Interventions	Synthesis	Summary statement on cost-effectiveness
	evaluated [Condition]	methods*	
Carroll	Interventions involving	Narrative	Evidence of positive effect: Economic evaluations indicated that
201053	workplace [BP]		interventions with a workplace component are likely to be more
			cost effective than those without
Cochrane	Interventions	Descriptive	Mixed evidence: Methodological differences in terms of the
2017 ³⁷	containing two or more		interventions, health systems and the types of economic analyses
	elements of		make it difficult to make direct comparisons across the trials. Three
	biopsychosocial model		trials reported cost savings in health service costs and limiting
	delivered as co-		productivity losses and also by reducing the number of patients
	ordinated programme		transitioning to long-term disabilityFive trials reported no overall
	[MSK]		benefits in terms of cost savings
Franche	Workplace based	Best-	Evidence of positive effect: strong evidence that work disability
200535	return-to-work	evidence	duration is significantly reduced by work accommodation offers and
	interventions	synthesis	contact between healthcare provider and workplace; and moderate
	[MSK/Other pain]		evidence that it is reduced by interventions which include early
			contact with worker by workplace, ergonomic work site visits, and
			presence of a RTW coordinator. For these five intervention
			components, there was moderate evidence that they reduce costs
			associated with work disability duration
Gaillard	Mental health	Best-	Evidence of positive effect: Strong evidence of positive economic
202039	interventions with	evidence	results for RTW interventions from employer and societal
	work-focused	synthesis	perspective. Interventions could take different forms: structured
	components [MH]		guidance with individualized support to implement problem-solving
			treatment/elaborate an action plan, which could be accompanied by
			CBT; training for managers to enhance RTW communication with
			employees & internet-based module with occupational physicians
			guidance. Not enough studies in the other categories combining the
			type of prevention (primary, secondary or tertiary) with the
			economic perspective (employers', societal, employees', healthcare
			system's) to produce evidence concerning the economic balance of interventions
Lefever	Disability Management	Descriptive/	No supporting evidence: Not much evidence that Disability
2018 ⁴²	[Disability]	Narrative	Management is cost-effective
NICE 2019 ³⁸	Interventions,	MA/narrativ	Evidence of mixed-effect: The committee noted the lack of health
	programmes, policies	e/	economic literature directly applicable to the UK. And even though i
	or strategies that aim	,	was mixed, they were mindful that overall it suggested interventions
	to increase RTW [MH,		for people on sick leave due to musculoskeletal disorders including
	MSK, Other]		back pain or common mental health conditions to support them to
			return to work
			could be cost effective
Oakman	Workplace	GRADE,	Evidence of mixed-effect: Individually focused interventions may
201645	interventions (focused	narrative	make little or no difference to cost benefit. Multilevel focused
	,		interventions will probably increase cost benefit

	on individual or multi- level) [MSK]		
Palmer 2012 ⁵⁴	Interventions in community/ workplace settings to reduce sickness absence/job loss [MSK]	Descriptive, narrative	Inconclusive/weak evidence: No study clearly proved or disproved a positive return on investment. No cost-benefit analyses established statistically significant net economic benefits
Tompa 2008 ⁵²	Disability Management Interventions [Mixed]	Best- evidence synthesis	Evidence of positive effect: Credible evidence supporting the financial benefits of disability management interventions for one industry cluster and several intervention components and features

^{*}Pertaining to synthesis of cost-outcomes; BP=Back pain, CBT-Cognitive-Behavioural Therapy, MA=Meta-analysis, MSK=Musculoskeletal difficulties, RTW=Return to Work

Systematic review quality section. There were 10 High quality reviews, and two of Moderate quality, meaning that half of the reviews were of Low or Critically Low quality. There were between 1^{49} and 20^{38} relevant primary studies within these reviews, with a mean of 7.4 per review. A number of primary studies feature in multiple reviews (see

Appendix E: Number and quality of relevant primary studies in prioritised reviews). The High quality review with the largest number of relevant primary studies was that conducted by NICE, ³⁸ which featured 20 relevant studies, and deemed that the available evidence was too weak and inconclusive to draw any findings about their impact on RTW outcomes. Similarly, the second and third largest High quality reviews, which contained 10⁴⁸ and 12⁵⁰ relevant studies respectively, found 'Inconclusive/Weak evidence' or 'Mixed' findings.

Of the 15 reviews to report a positive effect of interventions on RTW outcomes or cost-effectiveness, 35, 37, 39-44, 46, 49, 51-53, 55, 57 five were of High quality, 39, 40, 44, 46, 57 and two were of Moderate quality. 37, 43

In addition to possessing a variety of quality ratings and sizes, the reviews featured an array of health conditions and intervention types, and thus represent a highly heterogeneous body of evidence.

Of the 24 reviews prioritised for inclusion in the evidence and gap map, nine included cost-effectiveness outcomes (see Table 4 below). ^{35, 37-39, 42, 45, 52-54} Four of these reviews indicated that the interventions provided value for money, ^{35, 39, 52, 53} although the comparison of interest within one review was workplace based interventions versus non-workplace based, so the findings are not relevant to our research question. ⁵³ With the exception of one, ³⁸ synthesis methods were usually descriptive or narrative in nature as the heterogeneity of the included reviews precluded statistical methods of analysis.

Table 3: Characteristics of included systematic reviews:

First author (year) [country where conducted]	Age	Health conditions	Intervention category	Area of work/ sector/ employer	Quality Rating	Number of relevant includes (articles/ studies)	RTW Outcome finding
Gaillard (2020) ³⁹ [Canada]	Other (working age adults)	Anxiety, Depression, common mental disorders	Specific – programme: work related factors	NR	High	5/5	Positive effect
Gensby (2012) ²¹ [Denmark]	Adults unspecified	Anxiety, Arthritis, Cancer, Depression, Multiple Sclerosis, Stress or burnout, Stroke, Traumatic Brain Injury, Traumatic Physical Injury, Musculoskeletal, Other (neurological illness, fatigue, somatic illness, eye strain)	Specific - setting	NR	High	6/4	Inconclusive/ weak evidence
Heathcote (2019) ⁴⁰ [Australia]	18-70	Traumatic Brain Injury, Traumatic Physical Injury, Musculoskeletal	Specific – programme: worker resilience	NR	High	4/4	Positive effect
NICE (2019) ³⁸ [UK]	16+	Anxiety, Depression, Stress or burnout, Musculoskeletal, anything causing long term sickness absence	Broad	NR	High	20/20	Inconclusive/ weak evidence
Nieuwenhuijsen (2020) ⁴⁴ [Netherlands]	17+	Depression	Broad	Any	High	6/6	Positive effect
Schaafsma (2013) ⁴⁸ [Netherlands]	16+	Musculoskeletal	Specific – programme: physical conditioning	NR	High	12/10	Inconclusive/ weak evidence

First author (year) [country where conducted]	Age	Health conditions	Intervention category	Area of work/ sector/ employer	Quality Rating	Number of relevant includes (articles/ studies)	RTW Outcome finding
Schandelmaier (2012) ⁵⁷ [Switzerland, Canada]	16-65	Other (any recorded disability status)	Specific – staff: involve RTW co-ordinator	NR	High	3/3	Positive effect
van Vilsteren (2015) ⁵⁰ [Netherlands]	18-65	Anxiety, Depression, Musculoskeletal, Other (mental health problems, other health conditions)	Specific - setting	NR	High	12/12	Mixed effect
Verhoef (2020) [Netherlands]	18-65	Arthritis, Chronic Pain, Stress or Burnout, Stroke, Musculoskeletal, Traumatic Brain Injury, Other (chronic physical or somatic diseases, HIV/AIDS, spinal cord injury)	Broad	NR	High	6/6	Positive effect
Vogel (2017) ⁴⁷ [Switzerland]	16-65	Other (not stated)	Specific – programme: RTW co-ordination	NR	High	7/7	No effect
Cochrane (2017) ³⁷ [Ireland]	18+	Chronic Pain, Musculoskeletal. Excluded inflammatory conditions	Specific – programme: biopsychosocial	NR	Moderate	9/9	Positive effect
Mikkelsen (2018) ⁴³ [Denmark]	Adults unspecified	Anxiety, Depression, Stress or burnout, Other (adjustment disorders, personality disorders, somatoform disorders)	Broad	NR	Moderate	12/12	Positive effect

First author (year) [country where conducted]	Age	Health conditions	Intervention category	Area of work/ sector/ employer	Quality Rating	Number of relevant includes (articles/ studies)	RTW Outcome finding
Tompa (2007/2008) ⁵² [Canada]	Adults unspecified	Other (not stated)	Broad	NR	Moderate	11/8	Positive effect
Brewer (2007) ⁵¹ [Canada]	18+	Musculoskeletal, work-related injuries and illnesses	Specific – programme: injury prevention/loss control	Multiple, except agricultural workers, migrant workers, tele-workers, home offices/workers, military installations, commercial fishing	Low	6/6	Positive effect
Lefever (2018) ⁴² [Belgium]	NR	Other (all disabilities)	Specific – programme: biopsychosocial DMP	NR	Low	4/4	Positive effect
Odeen (2013) ⁵⁶ [Norway]	18+	Other (not stated)	Broad	NR	Low	5/5	Mixed effect
Axen (2020) [Sweden]	Adults unspecified	Anxiety, Depression, Stress or Burnout, Other (common mental disorders, incorporating depression, anxiety, adjustment disorders, insomnia and stress-related ill health)	Specific – staff: involve OH services	NR	Critically Low	9/7	No effect
Carroll (2010) ⁵³ [UK]	Adults unspecified	Musculoskeletal	Specific - setting	NR	Critically Low	8/8	Positive effect

First author (year) [country where conducted]	Age	Health conditions	Intervention category	Area of work/ sector/ employer	Quality Rating	Number of relevant includes (articles/ studies)	RTW Outcome finding
Franche (2005) ³⁵ [Canada]	Adults unspecified	Chronic pain, musculoskeletal	Broad	NR	Critically Low	6/5	Positive effect
Kojimahara (2020) ⁴¹ [Japan]	NR	Musculoskeletal, mental health disorders	Broad	NR	Critically Low	9/9	Positive effect
Neverdal (2015) ⁵⁵ [Norway]	Adults unspecified	Musculoskeletal	Specific - setting	NR	Critically Low	7/7	Positive effect
Oakman (2016) ⁴⁵ [Australia]	Adults unspecified	Musculoskeletal	Broad	NR	Critically Low	7/6	Inconclusive/ weak evidence
Palmer (2012) ⁵⁴ [UK]	Other (working age adults)	Musculoskeletal	Broad	NR	Critically Low	19/14	Inconclusive/ weak evidence
van Geen (2007) ⁴⁹ [Netherlands]	18-65	Musculoskeletal	Specific – programme: MDT back training	NR	Critically Low	1/1	Positive effect

MDT=Multi-disciplinary Team, NR=Not reported, OH=Occupational Health, RTW=Return to Work

Table 4: Cost-effectiveness outcomes in prioritised systematic reviews

Study	Interventions	Synthesis	Summary statement on cost-effectiveness
	evaluated [Condition]	methods*	
Carroll	Interventions involving	Narrative	Evidence of positive effect : Economic evaluations indicated that
201053	workplace [BP]		interventions with a workplace component are likely to be more
			cost effective than those without
Cochrane 2017 ³⁷	Interventions	Descriptive	Mixed evidence: Methodological differences in terms of the
201757	containing two or more elements of		interventions, health systems and the types of economic analyses make it difficult to make direct comparisons across the trials. Three
	biopsychosocial model		trials reported cost savings in health service costs and limiting
	delivered as co-		productivity losses and also by reducing the number of patients
	ordinated programme		transitioning to long-term disabilityFive trials reported no overall
	[MSK]		benefits in terms of cost savings
Franche	Workplace based	Best-	Evidence of positive effect: strong evidence that work disability
200535	return-to-work	evidence	duration is significantly reduced by work accommodation offers and
	interventions	synthesis	contact between healthcare provider and workplace; and moderate
	[MSK/Other pain]		evidence that it is reduced by interventions which include early
			contact with worker by workplace, ergonomic work site visits, and
			presence of a RTW coordinator. For these five intervention
			components, there was moderate evidence that they reduce costs associated with work disability duration
Gaillard	Mental health	Best-	Evidence of positive effect: Strong evidence of positive economic
2020 ³⁹	interventions with	evidence	results for RTW interventions from employer and societal
	work-focused	synthesis	perspective. Interventions could take different forms: structured
	components [MH]	,	guidance with individualized support to implement problem-solving
			treatment/elaborate an action plan, which could be accompanied by
			CBT; training for managers to enhance RTW communication with
			employees & internet-based module with occupational physicians
			guidance. Not enough studies in the other categories combining the
			type of prevention (primary, secondary or tertiary) with the
			economic perspective (employers', societal, employees', healthcare system's) to produce evidence concerning the economic balance of
			interventions
Lefever	Disability Management	Descriptive/	No supporting evidence: Not much evidence that Disability
201842	[Disability]	Narrative	Management is cost-effective
NICE 2019 ³⁸	Interventions,	MA/narrativ	Evidence of mixed-effect: The committee noted the lack of health
	programmes, policies	e/	economic literature directly applicable to the UK. And even though it
	or strategies that aim		was mixed, they were mindful that overall it suggested interventions
	to increase RTW [MH,		for people on sick leave due to musculoskeletal disorders including
	MSK, Other]		back pain or common mental health conditions to support them to
			return to work could be cost effective
Oakman	Workplace	GRADE,	Evidence of mixed-effect: Individually focused interventions may
2016 ⁴⁵	interventions (focused	narrative	make little or no difference to cost benefit. Multilevel focused
	on individual or multi-		interventions will probably increase cost benefit
	level) [MSK]		, ,
Palmer	Interventions in	Descriptive,	Inconclusive/weak evidence: No study clearly proved or disproved a
201254	community/ workplace	narrative	positive return on investment. No cost-benefit analyses established
	settings to reduce		statistically significant net economic benefits
	sickness absence/job		
T	loss [MSK]	Dt	Eddown discribing the Co. 1911 111
Tompa 2008 ⁵²	Disability Management	Best-	Evidence of positive effect: Credible evidence supporting the financial benefits of disability management interventions for one
200852	Interventions [Mixed]	evidence	industry cluster and several intervention components and features
	1	synthesis	madadi y didater and several intervention components and leatures

^{*}Pertaining to synthesis of cost-outcomes; BP=Back pain, CBT-Cognitive-Behavioural Therapy, MA=Meta-analysis, MSK=Musculoskeletal difficulties, RTW=Return to Work

Systematic review quality

Table 55 provides a breakdown of AMSTAR-2 ratings for each included systematic review. Scores are provided for each item on the AMSTAR-2 checklist, alongside an overall rating. Of the 24 systematic reviews, 10 were allocated a rating of 'High' quality, ^{21, 38-40, 44, 46-48, 50, 57} 2 of 'Moderate' quality, ^{37, 43} 3 of 'Low' quality^{42, 52, 56} and 9 of 'Critically Low' quality. ^{35, 36, 41, 45, 49, 51, 53-55}

To be rated as 'Critically Low' quality, more than one critical flaw must be observed. Critical items were numbers 2, 4, 9, 11 and 13. By far the most commonly failed item was item 2, with 8 of the 9 Critically Low rated reviews not having a protocol. 35, 36, 45, 49, 51, 53-55

Across the 24 reviews, only two provided a justification for the study designs they chose to include, ^{21, 39} only four reported funding sources in their included studies, ^{38, 39, 44, 47} and only 10 provided details or references of excluded studies. It is also notable that there was no evidence of duplicate study selection (n=7 studies^{41, 49, 51-55}) or data extraction (n=5 studies^{36, 41, 45, 49, 55}) being performed. These were not critical domains on the AMSTAR-2 item, but it is reassuring to note that all of the reviews with a score of Moderate or High quality mentioned performing both study selection and data extraction in duplicate.

Table 5: AMSTAR-2 ratings for the 24 systematic reviews included in evidence and gap map

Study	1. PICO components	2. Protocol	3. Study design explanation	4. Comprehensive search strategy	5. Duplicate study selection	6. Duplicate data extraction	7. Details of excluded studies	8. Description of included studies	9a. Risk of Bias (RoB) assessment (RCTs)	9b. RoB assessment (NRSIs)	10. Funding sources	11a. RCTs Meta-analysis	11b. NRSIs Meta-analysis (MA)	12. MA: RoB in individual studies	13. RoB: discussion of results	14. Heterogeneity	15. Publication bias	16. Reports conflicts of interest	Overall rating
Axen (2020) ³⁶	Yes	No	No	Yes	Yes	No	No	Yes	No	No	No	NA	NA	NA	No	No	NA	Yes	Critically low
Brewer (2007) ⁵¹	Yes	No	No	Yes	No	Yes	No	Yes	No	Yes	No	NA	NA	NA	Yes	Yes	NA	No	Critically low
Carroll (2010) ⁵³	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	NA	NA	NA	Yes	Yes	NA	No	Critically low
Cochrane (2017) ³⁷	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	NA	No	Yes	NA	No	Yes	Yes	No	Yes	Moderate
NICE (2019) ³⁸	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	No	Yes	High
Franche (2005) ³⁵	Yes	No	No	No	Yes	Yes	No	Yes	No	No	No	NA	NA	NA	Yes	Yes	NA	No	Critically low
Gaillard (2020) ³⁹	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	Yes	Yes	NA	Yes	High

Study	1. PICO components	2. Protocol	3. Study design explanation	4. Comprehensive search strategy	5. Duplicate study selection	6. Duplicate data extraction	7. Details of excluded studies	8. Description of included studies	9a. Risk of Bias (RoB) assessment (RCTs)	9b. RoB assessment (NRSIs)	10. Funding sources	11a. RCTs Meta-analysis	11b. NRSIs Meta-analysis (MA)	12. MA: RoB in individual studies	13. RoB: discussion of results	14. Heterogeneity	15. Publication bias	16. Reports conflicts of interest	Overall rating
Gensby (2012) ²¹	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	NA	NA	NA	Yes	Yes	NA	Yes	High
Heathcote	. 65		. 00	. 00		. 55		. 65	. 65	. 65					. 00	. 65		. 55	
(2019)40	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	NA	No	Yes	NA	Yes	Yes	Yes	Yes	Yes	High
Kojimahara (2020) ⁴¹	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes	No	Yes	NA	No	Yes	No	Yes	Yes	Critically low
Lefever (2018) ⁴²	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	NA	NA	NA	No	Yes	NA	Yes	Low
Mikkelsen (2018) ⁴³	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Moderate
Neverdal (2015) ⁵⁵	Yes	No	No	No	No	No	No	Yes	Yes	NA	No	NA	NA	NA	Yes	Yes	NA	No	Critically low
Nieuwenhuij sen (2020) ⁴⁴	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	High
Oakman (2016) ⁴⁵	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	NA	NA	NA	Yes	Yes	NA	Yes	Critically low

Study	1. PICO components	2. Protocol	3. Study design explanation	4. Comprehensive search strategy	5. Duplicate study selection	6. Duplicate data extraction	7. Details of excluded studies	8. Description of included studies	9a. Risk of Bias (RoB) assessment (RCTs)	9b. RoB assessment (NRSIs)	10. Funding sources	11a. RCTs Meta-analysis	11b. NRSIs Meta-analysis (MA)	12. MA: RoB in individual studies	13. RoB: discussion of results	14. Heterogeneity	15. Publication bias	16. Reports conflicts of interest	Overall rating
Odeen (2013) ⁵⁶	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	NA	No	NA	NA	NA	Yes	Yes	NA	Yes	Low
Palmer (2012) ⁵⁴	Yes	No	No	Yes	No	Yes	No	Yes	Yes	Yes	No	NA	NA	NA	Yes	Yes	Yes	Yes	Critically low
Schaafsma (2013) ⁴⁸	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	NA	No	Yes	NA	Yes	Yes	Yes	Yes	Yes	High
Schandelmai er (2012) ⁵⁷	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	NA	No	Yes	NA	Yes	Yes	Yes	No	Yes	High
Tompa (2008) ⁵²	Yes	Yes	No	No	No	Yes	No	No	Yes	Yes	No	NA	NA	NA	Yes	Yes	NA	No	Low
van Geen (2007) ⁴⁹	Yes	No	No	No	No	No	No	Yes	Yes	NA	No	NA	NA	NA	Yes	Yes	NA	Yes	Critically low
van Vilsteren (2015) ⁵⁰	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	NA	No	Yes	NA	Yes	Yes	Yes	Yes	Yes	High

Study	1. PICO components	2. Protocol	3. Study design explanation	4. Comprehensive search strategy	5. Duplicate study selection	6. Duplicate data extraction	7. Details of excluded studies	8. Description of included studies	9a. Risk of Bias (RoB) assessment (RCTs)	9b. RoB assessment (NRSIs)	10. Funding sources	11a. RCTs Meta-analysis	11b. NRSis Meta-analysis (MA)	12. MA: RoB in individual studies	13. RoB: discussion of results	14. Heterogeneity	15. Publication bias	16. Reports conflicts of interest	Overall rating
Verhoef (2020) ⁴⁶	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	NA	No	Yes	NA	Yes	Yes	Yes	Yes	Yes	High
Vogel (2017) ⁴⁷	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	High

NA=Not applicable; Y=Yes=Partial Yes; RCT=Randomised controlled trial; NRSI=Non-randomised studies of interventions

Systematic review evidence: evidence and gap map

The interactive evidence and gap map presenting the 24 reviews can be found here: https://eppi.ioe.ac.uk/cms/Portals/35/Maps/MN Exeter Feb22.html.

Figure 2 provides a graphical representation of the 24 systematic reviews presented within the evidence and gap map. Due to the heterogeneity of interventions evaluated within the systematic reviews, it was not possible to structure the map according to condition and types of intervention being evaluated. Instead, the map is structured by the reason for sick leave and reported impact on RTW outcomes as reported at the level of the review, with links to the primary studies which contain descriptions of individual interventions provided within each segment.

Figure 2 indicates that the highest quantity of systematic review evidence was for interventions targeting employees with musculoskeletal conditions. For interventions with individuals with musculoskeletal disorders, nine reviews reported a significant beneficial effect of the intervention. However, only two of these reviews were of High quality, ^{40, 46} with one appraised as Moderate quality, ³⁷ one as Low quality ⁵¹ and five as Critically low quality. ^{35, 41, 49, 53, 55} The next largest group of evidence was for reviews reporting inconclusive or weak evidence with respect to intervention effectiveness (n=5), three were of High quality ^{21, 38, 48} and two were of Critically-Low quality. ^{45, 54}

The quantity of systematic review evidence across the other 13 conditions were as follows: Other $(n=13^{21, 36, 38, 39, 41-43, 46, 47, 50, 52, 56, 57})$, Depression $(n=7^{21, 36, 38, 39, 43, 44, 50})$, Anxiety $(n=6^{21, 36, 38, 39, 43, 50})$, Stress/burnout $(n=5 \text{ Axen }^{21, 36, 38, 43, 46})$, Chronic pain $(n=3^{35, 37, 46})$, TBI $(n=3^{21, 40, 46})$, Traumatic physical injury $(n=2^{21, 40})$, Stroke $(n=2^{21, 46})$, Arthiritis $(n=2^{21, 46})$, Cancer $(n=1^{21})$, Multiple sclereosis $(n=1^{21})$. No systematic review evidence met our inclusion critieria for Cardiac or Dermatological conditions.

In general, systematic review evidence was predominantly split between those reporting a beneficial effect of the interventions being evaluated on RTW outcomes and those reporting inconclusive/weak evidence.

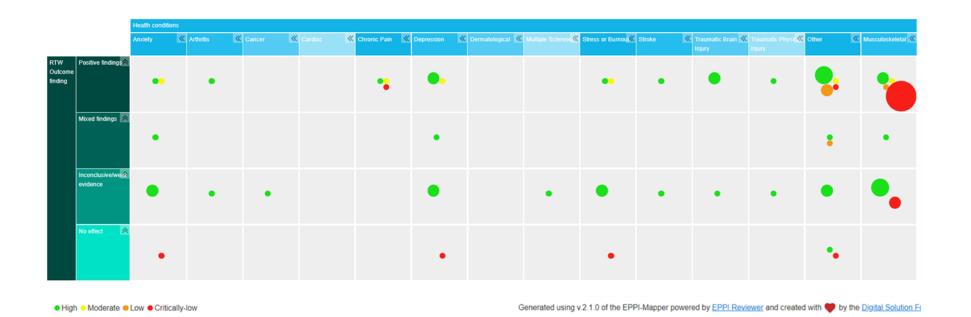


Figure 2: Evidence and gap map - 24 High/Medium relevance systematic reviews

Additional post-hoc analysis

Below we present a summary of the primary study evidence. For full details, please see Appendices E-G.

- Sixty-two studies (73 relevant articles) were identified from the list of included studies within the 24 prioritised reviews;
- For the 68 primary articles where an average quality rating could be awarded, seven received a score of 1 (Low quality), ⁵⁸⁻⁶⁷ 31 received a score of 2 (Moderate quality), and 30 articles received a score of 3 (High quality);
- In terms of the number of primary studies contributing to each grouping, no predominant delivery model of multi-disciplinary occupational health services was evident;
- We sorted these primary studies into four groups according to the number and type of
 categories of professional staff who worked together to deliver an intervention. Categories
 of staff included 'Case Management', 'Musculoskeletal', 'Mental Health', 'Industrial Hygiene'
 and 'Social Care' professionals. The four staff groupings were as follows:
 - i) **Group A:** A case manager working with staff from two or more other categories;
 - ii) Group B: A case manager working with staff from one other professional category;
 - iii) **Group C:** No case manager two categories of staff working together;
 - iv) **Group D:** No case manager Staff from one category working with professionals from the workplace.
- For interventions within **Group A**, we were unable to identify any clear patterns in staff groupings relating to the reported effectiveness of the intervention, although there is tentative evidence to suggest that these types of interventions are cost-effective;
- For interventions within Group B, there was no clear relationship between the profession of the Case Manager, professional groups who worked with the Case Manager or the composition of these professional groups and the reported effectiveness or costeffectiveness of the intervention with regard to RTW outcomes;
- For interventions within **Group C**, the predominant staff category grouping was 'Musculoskeletal' which reflects the reason for sick leave for the employees within the studies themselves. It was most common for staff from the 'Musculoskeletal' category to work with those from either the 'Mental Health' or 'Industrial Hygiene' categories, although again it is not possible to establish a clear link between different staff groupings and the reported effectiveness/cost-effectiveness of the intervention.

Discussion

In this umbrella review, we aimed to identify, critically appraise, and describe the systematic review evidence relating to the effectiveness and cost-effectiveness of multi-disciplinary OH interventions in promoting RTW for employees on sick leave. Our first research question aimed to identify which multi-disciplinary deliverary models for OH sevices were effective for whom. We found a substantial body of systematic review evidence relating to the effectiveness of multi-disciplinary OH interventions to promote RTW, with 24 (of 89) rated as of particular relevance to our research questions. However, half of these reviews were of Low or Critically Low quality.

In addition to being of unreliable quality, the systematic review evidence covered a highly heterogeneous array of health conditions and interventions. Because of this we were unable to identify specific interventions which were effective for different populations at review level. Instead, we produced an evidence and gap map to graphically represent the quality, quantity and basic features of the 24 most relevant systematic reviews. A visual examination of this map reveals a cluster of evidence on the effectiveness of OH interventions to promote RTW for people with musculoskeletal issues but numerous health conditions for which there are no high-quality systematic reviews. Nine of the systematic reviews evaluated cost-effectiveness outcomes. Most reviews were driven by the aim of treating specific conditions, rather than evaluating specific interventions, which contributed to the heterogeneity of review findings. However, the 'Other' category highlights reviews which included a population with various health conditions. The map also provides details of and links to all the relevant primary studies within each systematic review according to the direction of effect on RTW outcomes. The map is intended as an interactive resource and we suggest that readers navigate the evidence and gap map, accessed here (https://eppi.ioe.ac.uk/cms/Portals/35/Maps/MN_Exeter_Feb22.html), and browse publications of interest.

Our second research question sought to understand the characteristics of effective multi-disciplinary delivery models for OH services. As discussed above, we were not able to do this at review level due to the heterogeneity of the primary studies included within them. To better understand the evidence within the systematic reviews, we identified the most relevant primary studies and described them in terms of the professionals involved with delivering the interventions being evaluated and outcomes (see Appendices D-G). Of the 547 articles included in the 24 most relevant reviews, we identified 73 primary studies, that evaluated interventions directly relevant to our research questions. The 73 primary studies were of predominantly high to moderate quality and conducted in countries where access to and type of provision of occupational health services is similar to that within the UK. Overall, we could not establish a clear link between the professional

groups working together and the reported effectiveness of the intervention. However, tentative observations indicate that it was more typical for staff from the 'Musculoskeletal' category to work alongside 'Mental Health' and/or 'Industrial Hygiene' professionals, although this may just reflect the frequency of certain conditions relating to sick leave. However, this finding should be interpreted with extreme caution due to the heterogeneous and incomplete nature of the primary studies, as acknowledged further below.

Our third and final research question was concerned with which multi-disciplinary models of OH service delivery were cost-effective. The number of primary studies reporting cost-effectiveness outcomes was limited and findings varied across intervention categories, making it difficult to generate firm conclusions. However, there is some evidence to suggest that interventions administered by case-management professionals and two or three other professional categories are cost-effective.

To our knowledge, this umbrella review is the first to focus on which staff groups may be linked to the effectiveness of multi-disciplinary work-based interventions. This is in line with the review published by Gensby et al.²¹ which examined the effectiveness of workplace disability management programs in supporting RTW. They determined that it was not possible to draw conclusions regarding which program components were associated with increased effectiveness, but proposed a a taxonomy to guide future evaluation of WPDM programmes.²¹

Strengths and limitations

We used a comprehensive search strategy to identify published and unpublished systematic review evidence relevant to our aims, across a wide range of health conditions and interventions. Our evidence and gap map prioritised the most relevant of these systematic reviews, displaying the evidence in an accessible manner which highlights the quantity, quality and key characteristics of these systematic reviews and enables evidence users to find systematic review evidence to meet their needs. The map highlights the primary evidence within these systematic reviews which align with the aims and objectives of the umbrella review, grouped according to the reported finding regarding RTW and cost outcomes. This allows the map user to 'drill down' from systematic review level and access links to the primary studies particularly relevant to their requirements. We have also catalogued the professionals delivering the interventions, linking these to effectiveness outcomes where possible.

Where details of interventions were sufficiently reported, the systematic reviews often included a range of interventions within one broad category and, as a result, the features of these interventions tended to differ greatly from one another. In addition, the aims of the systematic reviews which met

our eligibility criteria did not always align directly with the aims of our umbrella review, reducing the quantity of available evidence which was relevant to our aims, although the prioritisation of systematic reviews for the evidence and gap map did help mitigate this.

Our intention was to use the findings of systematic reviews to address our research questions. However, whilst our scoping revealed a large number of existing relevant systematic reviews, the methodological quality of the systematic reviews, the lack of detail in reporting and the heterogeneity of included systematic reviews made it difficult to identify multi-disciplinary interventions which supported RTW for specific populations. This meant we were required to examine and evaluate the primary studies included within these reviews. Our method of prioritising the systematic reviews from which we would screen potentially eligible primary studies and identifying the primary studies to screen at full text, relied upon the description of the interventions provided by the systematic review authors. Whilst this was a time-effective method which allowed us to gather more details regarding features of the interventions evaluated within reviews, it is possible some relevant primary studies were not screened. This, in addition to the use of a systematic review filter during our searches, mean that the primary studies included in this review do not represent an exhaustive list of primary studies which evaluate the effectiveness of multidisciplinary, work based OH interventions on RTW/cost-effectiveness outcomes. To identify these primary studies would require a series of separate, more focused, systematic reviews focused on identifying primary studies.

Whilst the average quality ratings awarded to primary studies were mainly High to Moderate, the variability in quality appraisal tools used and quality appraisal scores given to a single study across the prioritised systematic reviews, could vary considerably. This heterogeneity made it difficult to summarise findings across different quality domains for individual studies. In some instances, this variability made it challenging to award an average quality rating, which may influence the confidence that can be placed in the findings of this umbrella review.

The extent to which intervention features were described within the primary studies themselves also varied. It was particularly difficult to determine if features of the intervention were carried out at the workplace and the extent to which employee's supervisors, colleagues or other workplace representatives were involved. This made it challenging for reviewers to identify the professionals involved with delivering the intervention. The context in which the intervention was delivered was sometimes difficult to determine as details of the name and size of specific employers were often not reported, although some interventions included employees from several employers within one region.

The difficulty in determining the context in which interventions were delivered and the absence of formal statistical comparison as part of this review means that potential confounders which may influence intervention effects across primary studies have not been considered. This, and the small number of studies within certain groups, mean we cannot determine whether any observed differences between groups are clinically and/or statistically significant. Hence, although we were able to categorise interventions at the level of the primary study to tentatively explore potential links between intervention deliverers and RTW outcomes, we were unable to create a taxonomy of effective interventions.

Implications of this review for policy, research and practise

This umbrella review has highlighted the bodies of systematic review evidence which relate to the effectiveness and/or cost-effectiveness of OH interventions in supporting RTW. This evidence may be useful for supporting policy makers and commissioners of services to determine which OH interventions may be most useful for supporting different population groups in different contexts. OH professionals may find the content of the evidence and gap map useful in identifying systematic review evidence to support their practice.

The evidence and gap map also identifies where systematic review evidence in this area is lacking, or where existing evidence is of poor quality. These may represent areas where it may be particularly useful to conduct further systematic reviews. For example, little to no systematic review evidence which met our inclusion criteria was found for cardiac conditions, cancer, stroke and dermatological conditions.

This umbrella review also highlights the primary studies within these reviews which are specifically relevant to our research aims and objectives. A series of smaller, more specific, systematic reviews, including a search focused on identifying primary studies, quality appraisal and full synthesis, could be conducted using these studies as a starting point/basis to determine the confidence which can be placed in the descriptive findings of this review.

The commissioning of a systematic review to establish if there is any qualitative evidence which seeks to understand the experiences of employees and employers with regard to occupational health interventions provided within their workplace, may help identify features of Occupational Health interventions which are most valued and those which are perceived as unhelpful. This could potentially offer the opportunity to link data from reviews of quantitative and qualitative evidence using a qualitative comparative analysis, to investigate if the intervention features perceived by employees/employers as helpful in supporting RTW are linked with the effectiveness of the intervention.

Dissemination strategy

The report and interactive evidence and gap mapgrey was shared with our stakeholders from the Department of Work and Pensions and Department of Health and Social Care, who were directly involved in the commissioning of this report. Our report findings will be summarised within a briefing paper, to be shared with other government and policy professionals to whom this umbrella review may be relevant. We plan on writing up and sharing the findings of this umbrella review within journal articles aimed at systematic review methodologists and health and social care professionals with an interest in Occupational Health.

Conclusions

This umbrella review provides an overview of the systematic review evidence regarding the effectiveness and cost-effectiveness of occupational health interventions to support employed adults to return to work. This evidence is presented in an interactive evidence-and-gap map to allow users to access and view the evidence most suited to their needs. The heterogeneity of the systematic review evidence, and primary studies contained within, prevented us from being able to create a taxonomy of effective interventon features or professional groups.

Acknowledgements

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Thank you to the members of the PenARC Patient Engagement group for the benefits of their insight and experience.

Appendix A: Protocol deviations

Search strategy

Only the reference lists of systematic reviews that met our inclusion criteria and were judged by two independent reviewers to be highly relevant (see 'Inclusion criteria' section) to the aims and objectives of our review were checked for additional systematic reviews. This was a pragmatic decision, informed by the high number of systematic reviews eligible for inclusion in this review. Whilst this means any relevant systematic reviews within the reference lists of studies rated as Medium or Low relevance will not have been identified, the impact of this will have been mitigated somewhat through our extensive search strategies, including grey literature sources. Two independent reviewers applied the criteria used to identify highly relevant reviews as described in the inclusion criteria section (LS, MN, HL, SGS).

Application of inclusion criteria

Determining whether a systematic review met our inclusion criteria was often not straightforward. The review inclusion criteria were often broader than the aims of our umbrella review, which meant that some of the primary studies included within a single review could be relevant to the aims of our research, whilst others could not. In addition, the information required to determine if the review, and/or the primary studies it included, met the inclusion for our umbrella review was often not fully reported at the level of the review. Examples of the uncertainties we had regarding whether the review met our inclusion criteria are provided in Table 6 below.

Table 6: Queries regarding inclusion criteria of included reviews

PICO criteria	Potential uncertainties						
Population	Was theere population employed prior to						
	receiving occupational health support?						
	Was theere population aged 16 or above?						
Intervention	Was the intervention delivered in conjunction						
	with workplace?						
	Was the intervention delivered by an MDT?						
Comparator	N/A						
Outcome	Was a RTW outcome measured						
Other	Did the review conduct an adequate synthesis						
	of primary studies?						

MDT=Multidisciplinary Team, N/A=Not applicable, RTW=Return to Work

During the study selection process, we were over-inclusive, including all systematic reviews that appeared to meet the eligibility criteria but tagged each review with the uncertainties encountered in applying the criteria.

Data extraction

We conducted data extraction in three stages.

In the first stage, summary data for each eligible review was extracted by one reviewer and checked by a second using Microsoft Excel (LS, SGS, HL, MN). The summary data extracted from each included review is detailed in

Appendix C: Summary data extracted from all eligible reviews

	Description
Author data	Description
Author, date Review title	
	As a constant the above as a set of the advantage
Review aim	As reported in the abstract or end of introduction
Type of review	Most common review types included systematic and scoping reviews
Type of primary studies	As described in the review inclusion criteria or results section
included in review	
Description of	This included any theory, rationale or model supporting the
intervention and how it	intervention provided within the background and/or methods
may work	section of the review
Outcome of interest/How	Brief description of outcome of interest (RTW or cost) and how this
RTW measured	was measured
Synthesis method	Method used to synthesise data within the review, including meta-
•	analysis, narrative or 'best-evidence' synthesis or descriptive analysis
Queries regarding	Any queries regarding how the population, intervention, outcome or
relevance of review PICO	setting of the review aligned with the inclusion criteria of our
to our umbrella review	umbrella review were identified here. These queries often arose
	through a lack of/unclear reporting of required detail within the
	included review
Review	From the methods section of each included review
inclusion/exclusion	Trom the methods section of each moladed review
criteria	
Review quality: Is	One criterion from the CEESAT. This item required that all search
approach to searching	terms, Boolean operators ('AND', 'OR' etc.) and wildcards were
	clearly stated so that the exact search is repeatable by a third party
clearly defined,	AND
systematic and transparent?	There was information about the sources searched, together with
transparent:	dates of search [but no limitations justified (e.g. language, or
Davier week	publication date, no grey literature searches)]
Review quality: Is search	The original item from the CEESAT requires that sources of articles
comprehensive?	searched capture both conventionally published scientific literature
	and grey literature using a combination of databases, search engines
	and specialist websites (may also be informed by stakeholders) or
	limitations are fully justified.
	However for the number of this review we diffed these artists
	However, for the purpose of this review we modified these criteria
	to require a minimum of 3 databases AND at least one other.
Daviena en eller Describ	Specific searches for grey literature were NOT necessary
Review quality: Does the	This CEESAT item states that an effort should be made to identify
review critically appraise	relevant sources of bias (threats to internal and external validity)
each study?	AND
	Each type of bias or threat to internal and external validity was
	assessed individually for all included studies and reported on a
	critical appraisal sheet
Review quality: During	The original item from the CEESAT requires that an effort was made
critical appraisal is an	to minimise subjectivity by predefining critical appraisal process in a
effort made to minimise	protocol
subjectivity?	AND

	-
	At least two people critically appraised each study but not independently (e.g. second person aware of first person's decision) OR a subset of studies was appraised by at least two people independently and disagreements and process of resolution reported.
	We modified this item: the review did not need to check protocol; did NOT need mention of process for resolving disagreements AS LONG AS it is clearly stated that two reviewers performed appraisal independently
Overall quality rating	High quality = all four quality criteria listed above were met; Moderate = 2-3 of the four quality criteria listed above were met; Low = a maximum of one of the four quality criteria listed above were met
Relevance of aim of review to umbrella review	This encompasses how the aim of the included review relates to the aim and PICO of our umbrella review.
	High = Aim of systematic review directly relevant to our umbrella review, with potentially just one query around population (i.e. were they employed) or intervention (i.e. was it delivered by a multidisciplinary team and in conjunction with the workplace?);
	Medium = Two queries, or aim of study not completely compatible with the aims of our review;
	Low = Two to three queries regarding review inclusion criteria and/or limited quantity of relevant included primary studies
Number of relevant/total number of included studies	The number of primary studies included within the review which, based on information provided in the review, appeared to meet the inclusion criteria of our umbrella review. This information was extracted for reviews which were of high or medium relevance to our umbrella review.
	The total number of included primary studies was also extracted for these reviews.

In a deviation from our protocol, due to the diversity of the systematic reviews which met our inclusion criteria, some of which were not closely aligned with our aims and research questions, we then categorised reviews as being of high, medium, or low relevance to the research questions using the following information:

- Aim of systematic review
- Number of uncertainties tagged against the review
- Proportion of primary studies within each review that met the inclusion criteria for our review

And awarded a relevance rating to each systematic review, as outlined below:

- High: Aim of systematic review directly relevant to our umbrella review, with up to one uncertainty against the inclusion criteria;
- Medium: Aim of systematic review not completely compatible with the aims of our review, with two uncertainties against the inclusion criteria;
- Low: Aim of systematic review not completely compatible with the aims of our review with two-three uncertainties against the inclusion criteria and/or limited number of relevant included primary studies.

Further detail of this process is provided in Supplementary Materials 1.

In the second stage of data extraction, we focussed on reviews with high and medium relevance in order to populate the evidence and gap map. No further data was extracted from reviews judged to be of low relevance to our research questions and these reviews were excluded from the evidence and gap map.

We developed a standardised data extraction form which was piloted by two reviewers (LS, MN) on a selection (n=5) of included reviews. The data extraction form was amended following this, to account for revised Quality Appraisal criteria (as described below) and to add further detail regarding the country the review was conducted in addition to the countries eligible studies were conducted in as specified by the review inclusion critiera. The following information was extracted from each systematic review:

- Age of sample as cited in inclusion criteria;
- Country review conducted in;
- Country included primary studies conducted in (as reported in inclusion criteria);
- Health conditions of sample as cited in inclusion criteria;

- Intervention of interest;
- Area of work/sector/employer;
- Whether review inclusion criteria and/or synthesis strategy considered any of the PROGRESS criteria (place of residence, race/ethnicity/culture/language, gender/sex, religion, education, socio-economic status, social capital);²⁷
- RTW outcome main findings.

Data extraction was performed by one reviewer (MN, JTC) and checked by a second (LS), with disagreements being settled through discussion. EPPI-Reviewer software was used to support data extraction.²⁸ In the third and final stage of data extraction, due to the often poor reporting of the characteristics of the included studies within the systematic reviews, where necessary we sought additional methodological detail from the primary studies. The process of conducting screening and data extraction for the primary studies is outlined in Appendix D.

Quality appraisal

Our protocol states our intention to quality appraise all the systematic reviews eligible for inclusion in our umbrella review. However, due to the high number of systematic reviews eligible for inclusion, we proceeded with full data extraction for only those reviews rated as "High" or "Medium" relevance (defined above). This only excluded low relevance reviews and is unlikely to have impacted on the findings.

To provide an indicator of the quality of low-relevance reviews we selected four items from the Collaboration for Environmental Evidence Synthesis Appraisal Tool (CEESAT):²⁹

- 9. Is approach to searching clearly defined, systematic and transparent?
- 10. Is search comprehensive?
- 11. Does the review critically appraise each study?
- 12. During appraisal is an effort made to minimise subjectivity

The CEESAT is an eight-item checklist which supports an appraisal of methods used withinby systematic reviews, how transparently these methods are reported and how any limitations in quantity and quality of primary data may influence the synthesis. Administering the whole checklist to each of our included studies reviews was infeasible. Instead, we used the four items above to develop to generate an overall quality rating for each included systematic review (see Supplementary Materials 1 for proxy quality ratings). Full quality appraisal was undertaken for systematic reviews which were of high or moderate relevance to the aims of our umbrella review, the process of which is described within the methods section of the main report.

Appendix B: Search report

Bibliographic database searches

Database: Cochrane Database of Systematic Reviews

Host: Cochrane Library

Issue: Issue 6 of 12, June 2021 Date Searched: 28/6/2021

Searcher: SB Hits: 112

```
Strategy:
#1
        (return* near/3 work*):ti,ab,kw
#2
        ("back to work"):ti,ab,kw
#3
        ((return* near/3 (occupation* or employ*))):ti,ab,kw
#4
        MeSH descriptor: [Return to Work] this term only
#5
        ((reentry or re entry or reenter* or "re enter*") near/3 work*):ti,ab,kw
#6
        ((reentry or re entry or reenter* or "re enter*") near/3 (occupation* or employ*)):ti,ab,kw
#7
        ((barrier* or facilitator*) near/2 (employ* or occupation* or work*)):ti,ab,kw
#8
        ("vocational rehabilitation"):ti,ab,kw
#9
        ("work rehabilitation"):ti,ab,kw
#10
        ("occupational rehabilitation"):ti,ab,kw (Word variations have been searched)
#11
        MeSH descriptor: [Rehabilitation, Vocational] this term only
#12
        "disability management":ti,ab,kw
        1-#12
#13
#14
        (sick* near/2 (leave or absence)):ti,ab,kw
#15
        MeSH descriptor: [Sick Leave] this term only
#16
        "case management":ti,ab,kw
#16
        #14 or #15 or #16
```

(occupational near/2 (health or medicine or therap*)):ti,ab,kw

MeSH descriptor: [Occupational Health] this term only

MeSH descriptor: [Occupational Therapy] this term only

{or #17-#19}

#17

#18

#19

#20

#21 #16 AND #20

#22 #13 OR #21

Notes: date limited 2001 to date of search

Database: Business Source Complete

Host: EBSCO Issue: n/a

Date Searched: 28/6/2021

Searcher: SB Hits: 37 Strategy:

- 1. TI ((return* OR back) N2 work*) OR AB ((return* OR back) N2 work*)
- 2. TI (return* N2 (occupation* or employ*)) OR AB (return* N2 (occupation* or employ*))
- 3. DE "RETURN to work programs"
- 4. TI ((reentry or re entry or reenter* or "re enter*") N2 work*) OR AB ((reentry or re entry or reenter* or "re enter*") N2 work*)
- 5. TI ((reentry or re entry or reenter* or "re enter*") N2 (occupation* or employ*)) OR AB ((reentry or re entry or reenter* or "re enter*") N2 (occupation* or employ*))
- 6. TI ((barrier* or facilitator*) N1 (employ* or occupation* or work*)) OR AB ((barrier* or facilitator*) N1 (employ* or occupation* or work*))
- 7. TI "vocational rehabilitation" OR AB "vocational rehabilitation"
- 8. TI ((work OR occupational) NO rehabilitation) OR AB ((work OR occupational) NO rehabilitation)
- 9. TI "disability management" OR AB "disability management"
- 10. DE "VOCATIONAL rehabilitation" OR DE "EMPLOYMENT of blind people" OR DE "EMPLOYMENT of deaf people" OR DE "SHELTERED workshops" OR DE "SUPPORTED employment"
- 11. S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10
- 12. TI ((sick* N1 (leave or absence)) OR "case management") OR AB ((sick* N1 (leave or absence)) OR "case management")
- 13. DE "SICK leave"
- 14. S12 OR S13
- 15. TI (occupational N1 (health or medicine or therap*)) OR AB (occupational N1 (health or medicine or therap*))
- 16. DE "OCCUPATIONAL health services" OR DE "EMPLOYEE health promotion" OR DE "OCCUPATIONAL medicine"
- 17. S15 OR S16
- 18. S14 AND S17
- 19. S11 OR S18
- 20. TI ((cochrane or cost or effectiveness or implementation or rapid or systematic or "state of the art" or umbrella) N1 (overview* or review* or synthes*)) OR AB ((cochrane or cost or effectiveness or implementation or rapid or systematic or "state of the art" or umbrella) N1 (overview* or review* or synthes*))
- 21. TI ("meta analy*" or metaanaly* or metasynthe* or "meta synthe*") OR AB ("meta analy*" or metaanaly* or metasynthe* or "meta synthe*")
- 22. TI "review* of reviews" OR AB "review* of reviews"
- 23. S20 OR S21 OR S22
- 24. S19 AND S23

Notes: Date limited 2001 to date of search

Database: CINAHL Host: EBSCO Issue: n/a

Date Searched: 28/6/2021

Searcher: SB Hits: 671 Strategy:

- 1. TI ((return* OR back) N2 work*) OR AB ((return* OR back) N2 work*)
- 2. TI (return* N2 (occupation* or employ*)) OR AB (return* N2 (occupation* or employ*))
- 3. (MH "Job Re-Entry")
- 4. TI ((reentry or re entry or reenter* or "re enter*") N2 work*) OR AB ((reentry or re entry or reenter* or "re enter*") N2 work*)
- 5. TI ((reentry or re entry or reenter* or "re enter*") N2 (occupation* or employ*)) OR AB ((reentry or re entry or reenter* or "re enter*") N2 (occupation* or employ*))
- 6. TI ((barrier* or facilitator*) N1 (employ* or occupation* or work*)) OR AB ((barrier* or facilitator*) N1 (employ* or occupation* or work*))
- 7. TI "vocational rehabilitation" OR AB "vocational rehabilitation"
- 8. TI ((work OR occupational) NO rehabilitation) OR AB ((work OR occupational) NO rehabilitation)
- 9. TI "disability management" OR AB "disability management"
- 10. (MH "Rehabilitation, Vocational+")
- 11. S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10
- 12. TI ((sick* N1 (leave or absence)) OR case management) OR AB ((sick* N1 (leave or absence)) OR "case management")
- 13. (MH "Sick Leave")
- 14. S12 OR S13
- 15. TI (occupational N1 (health or medicine or therap*)) OR AB (occupational N1 (health or medicine or therap*))
- 16. (MH "Occupational Health+")
- 17. S15 OR S16
- 18. S14 AND S17
- 19. S11 OR S18
- 20. TI ((cochrane or cost or effectiveness or implementation or rapid or systematic or "state of the art" or umbrella) N1 (overview* or review* or synthes*)) OR AB ((cochrane or cost or effectiveness or implementation or rapid or systematic or "state of the art" or umbrella) N1 (overview* or review* or synthes*))
- 21. TI ("meta analy*" or metaanaly* or metasynthe* or "meta synthe*") OR AB ("meta analy*" or metaanaly* or metasynthe* or "meta synthe*")
- 22. TI "review* of reviews" OR AB "review* of reviews"
- 23. S20 OR S21 OR S22
- 24. S19 AND S23

Notes: date limited 2001 to date of search

Database: EconLit Host: EBSCO Issue: n/a

Date Searched: 28/6/2021

Searcher: SB Hits: 1 Strategy:

- 1. TI ((return* OR back) N2 work*) OR AB ((return* OR back) N2 work*)
- 2. TI (return* N2 (occupation* or employ*)) OR AB (return* N2 (occupation* or employ*))
- 3. TI ((reentry or re entry or reenter* or "re enter*") N2 work*) OR AB ((reentry or re entry or reenter* or "re enter*") N2 work*)
- 4. TI ((reentry or re entry or reenter* or "re enter*") N2 (occupation* or employ*)) OR AB ((reentry or re entry or reenter* or "re enter*") N2 (occupation* or employ*))
- 5. TI ((barrier* or facilitator*) N1 (employ* or occupation* or work*)) OR AB ((barrier* or facilitator*) N1 (employ* or occupation* or work*))
- 6. TI "vocational rehabilitation" OR AB "vocational rehabilitation"
- 7. TI ((work OR occupational) NO rehabilitation) OR AB ((work OR occupational) NO rehabilitation)
- 8. TI "disability management" OR AB "disability management"
- 9. S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8
- 10. TI ((sick* N1 (leave or absence)) OR "case management") OR AB ((sick* N1 (leave or absence)) OR "case management")
- 11. TI (occupational N1 (health or medicine or therap*)) OR AB (occupational N1 (health or medicine or therap*))
- 12. S10 AND S11
- 13. S9 OR S12
- 14. TI ((cochrane or cost or effectiveness or implementation or rapid or systematic or "state of the art" or umbrella) N1 (overview* or review* or synthes*)) OR AB ((cochrane or cost or effectiveness or implementation or rapid or systematic or "state of the art" or umbrella) N1 (overview* or review* or synthes*))
- 15. TI ("meta analy*" or metaanaly* or metasynthe* or "meta synthe*") OR AB ("meta analy*" or metaanaly* or metasynthe* or "meta synthe*")
- 16. TI "review* of reviews" OR AB "review* of reviews"
- 17. S14 OR S15 OR S16
- 18. S13 AND S17

Database: Epistemonikos

Host: www.epistemonikos.org/en/

Issue: n/a

Date Searched: 28/6/2021

Searcher: SB Hits: 291 Strategy:

- 1. "return to work"
- 2. return AND (occupation OR employ*)

- 3. (title:((rentry OR "re entry" OR "re enter" AND (work OR employ* OR occupation*))) OR abstract:((rentry OR "re entry" OR "re enter" AND (work OR employ* OR occupation*))))
- 4. (title:("vocational rehabilitation") OR abstract:("vocational rehabilitation"))
- 5. #1 OR #2 OR #3 OR #4

Notes: Date limited 2001 to 2021 and Systematic Reviews

Database: Health Management Information Consortium (HMIC)

Host: Ovid

Issue: 1979 to May 2021 Date Searched: 28/6/2021

Searcher: SB Hits: 19 Strategy:

- 1. (return* adj3 work*).tw.
- 2. "back to work".tw.
- 3. (return* adj3 (occupation* or employ*)).tw.
- 4. ((reentry or re entry or reenter* or "re enter*") adj3 work*).tw.
- 5. ((reentry or re entry or reenter* or "re enter*") adj3 (occupation* or employ*)).tw.
- 6. ((barrier* or facilitator*) adj2 (employ* or occupation* or work*)).tw.
- 7. "vocational rehabilitation".tw.
- 8. "work rehabilitation".tw.
- 9. "occupational rehabilitation".tw.
- 10. "disability management".tw
- 11. or/1-10
- 12. (sick* adj2 (leave or absence)).tw.
- 13. "case management".tw
- 14. 12 or 13
- 15. (occupational adj2 (health or medicine or therap*)).tw.
- 16. 14 and 15
- 17. 11 or 16
- 18. ((cochrane or cost or effectiveness or implementation or rapid or systematic or "state of the art" or umbrella) adj2 (overview* or review* or synthes*)).tw.
- 19. ("meta analy*" or metaanaly* or metasynthe* or "meta synthe*").tw.
- 20. "review* of reviews".tw.
- 21. or/18-20
- 22. 17 and 21

Database: MEDLINE

Host: Ovid

Issue: 1946 to June 25, 2021 Date Searched: 28/6/2021

Searcher: SB Hits: 1125 Strategy:

1. (return* adj3 work*).tw.

- 2. "back to work".tw.
- 3. (return* adj3 (occupation* or employ*)).tw.
- 4. Return to Work/
- 5. ((reentry or re entry or reenter* or "re enter*") adj3 work*).tw.
- 6. ((reentry or re entry or reenter* or "re enter*") adj3 (occupation* or employ*)).tw.
- 7. ((barrier* or facilitator*) adj2 (employ* or occupation* or work*)).tw.
- 8. "vocational rehabilitation".tw.
- 9. "work rehabilitation".tw.
- 10. "occupational rehabilitation".tw.
- 11. Rehabilitation, Vocational/
- 12. "disability management".tw
- 13. or/1-12
- 14. (sick* adj2 (leave or absence)).tw.
- 15. "case management".tw
- 16. Sick Leave/
- 17. or/14-16
- 18. (occupational adj2 (health or medicine or therap*)).tw.
- 19. Occupational Health/
- 20. Occupational Medicine/
- 21. Occupational Therapy/
- 22. or/18-21
- 23. 17 and 22
- 24. 13 or 23
- 25. ((cochrane or cost or effectiveness or implementation or rapid or systematic or "state of the art" or umbrella) adj2 (overview* or review* or synthes*)).tw.
- 26. ("meta analy*" or metaanaly* or metasynthe* or "meta synthe*").tw.
- 27. "review* of reviews".tw.
- 28. systematic review.pt.
- 29. meta-analysis.pt.
- 30. or/25-29
- 31. 24 and 30

Notes: date limited 2001 to date of search

Database: Science Citation Index; Social Citation Index; Conference Proceedings

Host: Web of Science

Issue: n/a
Date Searched:
Searcher: SB
Hits: 1326
Strategy:

- 1. TOPIC: ((return* or back) near/2 work*)
- 2. TOPIC: (return* near/2 (occupation* or employ*))
- 3. TOPIC: ((reentry or "re entry" or reenter* or "re enter*") near/2 work*)
- 4. TOPIC: ((reentry or "re entry" or reenter* or "re enter*") near/2 (occupation* or employ*))
- 5. TOPIC: ((barrier* or facilitator*) near/1 (employ* or occupation* or work*))

- 6. TOPIC: ("vocational rehabilitation")
- 7. TOPIC: ("work rehabilitation")
- 8. TOPIC: ("occupational rehabilitation")
- 9. TOPIC:("disability management")
- 10. #9 OR #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #2 OR #1
- 11. TOPIC: (sick* near/1 (leave or absence))
- 12. TOPIC:("case management")
- 13. TOPIC: (occupational near/1 (health or medicine or therap*))
- 14. (#11 OR #12) AND #13
- 15. TS=((cochrane or cost or effectiveness or implementation or rapid or systematic or "state of the art" or umbrella) near/1 (overview* or review* or synthes*))
- 16. TOPIC: ("meta analy*" or metaanaly* or metasynthe* or "meta synthe*")
- 17. TOPIC: ("review* of reviews")
- 18. #17 OR #16 OR #15
- 19. #14 OR #10
- 20. #18 AND #19

Notes: Date limited 2001 to date of search

Table 7: Number of unique and de-duplicated records retrieved

Database	Results
Cochrane Database of Systematic Reviews	112
Business Source Complete	37
CINAHL	671
EconLit	1
Epistemonikos	291
HMIC	19
MEDLINE	1125
SCI; SSCI; CP	1326
Total records retrieved	3582
Duplicate records	1603
Unique records retrieved	1979

Web searches

Search engines

Resource: Google Scholar

URL: https://scholar.google.co.uk/

Date Searched: 6/7/2021

Searcher: SB Hits: 1000 Strategy:

Keyword field: ("return to work" OR "vocational rehabilitation")

Title field: ("systematic review" OR "evidence synthesis")

Notes: date limited 2001-2021; searched via Harzing's Publish or Perish; de-duplicated against bibliographic database results (total unique results = 518)

Resources: Google Search URL: <u>www.google.co.uk</u> Date Searched: 13/7/2021

Searcher: SB Strategy:

"return to work" ("multi disciplinary" OR multidisciplinary) (report OR review) 315 hits

"vocational rehabilitation" ("multi disciplinary" OR multidisciplinary) (report OR review) 312 hits

Notes: we used the settings menu to change the number of results per page to 100 and screened to the last page of results.

Websites

Website: Campbell Collaboration

URL: https://www.campbellcollaboration.org/better-evidence.html

Date Searched: 15/7/2021

Searcher: SB Strategy:

Search 1: return to work 7 hits

Search 2: occupational health 2 hits

Search 3: vocational rehabilitation 2 hits

Notes: Search carried out in full-text keyword search box. All results exported to Endnote. 2

duplicates deleted.

Resource: Health and Safety Executive

URL: https://www.hse.gov.uk/
Date Searched: 7/7/2021

Searcher: SB Strategies:

Website searches:

"return to work" 16 hits (publications tab)

100 hits (research tab)

"vocational rehabilitation" 0 hits (publications tab)

26 hits (research tab)

Website searches via Google Search:

"return to work" (report OR review) site:hse.gov.uk/

276 hits (screened first 100 which repeated the results retrieved by the website

searches)

"vocational rehabilitation" (report OR review) site:hse.gov.uk/ 68 hits

Notes: Google searches were set up to retrieve 100 results per page.

Resource: HSE Solutions
URL: https://www.hsl.gov.uk/
Date Searched: 7/7/2021

Searcher: SB Strategies:

Website searches:

"return to work" 15 hits (search limited to Exact phrase)

"vocational rehabilitation" 1 hit (search limited Exact phrase)

Website searches via Google Search:

"return to work" (report OR review) site:hsl.gov.uk/ 22 hits

"vocational rehabilitation" (report OR review) site:hsl.gov.uk/ 2 hits

Resource: NHS Health at Work Network URL: https://www.nhshealthatwork.co.uk/

Date Searched: 7/7/2021

Searcher: SB Strategy:

Website searches

"return to work" 0 hits

"vocational rehabilitation" 0 hits

Website searches via Google Search:

"return to work" (report OR review) site:nhshealthatwork.co.uk 117 hits

"vocational rehabilitation" (report OR review) site:nhshealthatwork.co.uk 11 hits

Resource: Society of Occupational Medicine

URL: https://www.som.org.uk/
Date Searched: 7/7/2021

Searcher: SB Strategy:

Website searches:

"return to work" 58 hits

"vocational rehabilitation" 10 hits

Website searches via Google Search:

"return to work" (report OR review) site:som.org.uk 106 hits

"vocational rehabilitation" (report OR review) site:som.org.uk 14 hits

Resource: Faculty of Occupational Health Nursing

URL: https://www.fohn.org.uk/
Date Searched: 7/7/2021

Searcher: SB Strategy:

Website searches:

"return to work" 5 hits

"vocational rehabilitation" 0 hits

Website searches via Google Search:

"return to work" (report OR review) site: fohn.org.uk/ 79 hits

"vocational rehabilitation" (report OR review) site: fohn.org.uk/ 78 hits

Resource: Council for Work and Health

URL: https://www.councilforworkandhealth.org.uk/

Date Searched: Searcher: Strategy:

Website searches:

Browsed Projects and Resources tabs

Website searches via Google Search:

"return to work" (report OR review) site: councilforworkandhealth.org.uk/ 81 hits

"vocational rehabilitation" (report OR review) site: councilforworkandhealth.org.uk/ 64 hits

Appendix C: Summary data extracted from all eligible reviews

	Description
A thought	Description
Author, date	
Review title	
Review aim	As reported in the abstract or end of introduction
Type of review	Most common review types included systematic and scoping reviews
Type of primary studies	As described in the review inclusion criteria or results section
included in review	
Description of	This included any theory, rationale or model supporting the
intervention and how it	intervention provided within the background and/or methods
may work	section of the review
Outcome of interest/How	Brief description of outcome of interest (RTW or cost) and how this
RTW measured	was measured
Synthesis method	Method used to synthesise data within the review, including meta-
Synthesis method	analysis, narrative or 'best-evidence' synthesis or descriptive analysis
Queries regarding	Any queries regarding how the population, intervention, outcome or
relevance of review PICO	setting of the review aligned with the inclusion criteria of our
to our umbrella review	umbrella review were identified here. These queries often arose
to our unibrena review	·
	through a lack of/unclear reporting of required detail within the included review
5	
Review	From the methods section of each included review
inclusion/exclusion	
criteria	
Review quality: Is	One criterion from the CEESAT. This item required that all search
approach to searching	terms, Boolean operators ('AND', 'OR' etc.) and wildcards were
clearly defined,	clearly stated so that the exact search is repeatable by a third party
systematic and	AND
transparent?	There was information about the sources searched, together with
	dates of search [but no limitations justified (e.g. language, or
	publication date, no grey literature searches)]
Review quality: Is search	The original item from the CEESAT requires that sources of articles
comprehensive?	searched capture both conventionally published scientific literature
	and grey literature using a combination of databases, search engines
	and specialist websites (may also be informed by stakeholders) or
	limitations are fully justified.
	However, for the purpose of this review we modified these criteria
	to require a minimum of 3 databases AND at least one other.
	Specific searches for grey literature were NOT necessary
Review quality: Does the	This CEESAT item states that an effort should be made to identify
review critically appraise	relevant sources of bias (threats to internal and external validity)
each study?	AND
,	Each type of bias or threat to internal and external validity was
	assessed individually for all included studies and reported on a
	critical appraisal sheet
Review quality: During	The original item from the CEESAT requires that an effort was made
critical appraisal is an	to minimise subjectivity by predefining critical appraisal process in a
effort made to minimise	protocol
subjectivity?	AND
subjectivity:	MIND

	At least two people critically appraised each study but not independently (e.g. second person aware of first person's decision) OR a subset of studies was appraised by at least two people independently and disagreements and process of resolution reported. We modified this item: the review did not need to check protocol; did NOT need mention of process for resolving disagreements AS LONG AS it is clearly stated that two reviewers performed appraisal independently
Overall quality rating	High quality = all four quality criteria listed above were met; Moderate = 2-3 of the four quality criteria listed above were met; Low = a maximum of one of the four quality criteria listed above were met
Relevance of aim of review to umbrella review	This encompasses how the aim of the included review relates to the aim and PICO of our umbrella review.
	High = Aim of systematic review directly relevant to our umbrella review, with potentially just one query around population (i.e. were they employed) or intervention (i.e. was it delivered by a multidisciplinary team and in conjunction with the workplace?); Medium = Two queries, or aim of study not completely compatible with the aims of our review; Low = Two to three queries regarding review inclusion criteria
	and/or limited quantity of relevant included primary studies
Number of relevant/total number of included studies	The number of primary studies included within the review which, based on information provided in the review, appeared to meet the inclusion criteria of our umbrella review. This information was extracted for reviews which were of high or medium relevance to our umbrella review.
	The total number of included primary studies was also extracted for these reviews.

Appendix D: Methods for identification, data extraction, quality appraisal and synthesis of primary studies

Identification

One reviewer (LS, JTC) selected the primary studies included in each highly relevant review (as defined below within the '

Data extraction and quality appraisal' section) which, based on the description within the review, appeared relevant to our aims and objectives. The full texts of these articles were then located where possible and screened against the eligibility criteria for population, intervention, and outcome. The selection of these primary studies from the original review screened in full by a second reviewer (MN, SGS, HL). Any disagreements were resolved through discussion. This selection process for primary studies was conducted using Microsoft Excel.

Data extraction

The following data was extracted from each relevant primary study, with selection being informed by the TIDieR checklist:⁶⁸

- Country where study took place;
- Reviews which included the primary study;
- Intervention name and aim;
- Level at which intervention was implemented (individual, group, society, environment);
- Summary of intervention key features;
- Pathway for workers/employees to access the intervention;
- Extent to which workplace involved with delivery of intervention;
- Name of group who receives the intervention;
- Name of group delivering the intervention;
- Method of delivery (e.g. face-to-face, telephone, internet);
- Intervention setting;
- Intensity of intervention;
- Reported effectiveness of intervention on improving RTW;
- Whether study includes other outcome measures focused on employee wellbeing;
- Name of control condition;
- Key features of control condition;
- Condition relating to employee's sick leave.

Data extraction for primary studies was also undertaken by one reviewer and checked by a second (LS, MN, JTC, HL, SGS) and supported through use of EPPI-Reviewer software.²⁸

Quality Appraisal

Quality appraisal of the relevant primary studies was conducted by the authors of the systematic reviews in which they were included and is thus not duplicated within our review. Many of the primary studies identified were included within several of the high/medium relevant reviews, thus it was challenging to assign a single quality appraisal score to each primary study due to the range of quality

appraisal tools used and variance in quality scores assigned to the primary studies across different reviews. Firstly, we standardised the language used to describe the quality of of the primary studies across reviews, with studies described as Low, Moderate, or High quality. We then assigned each of these categories a rating, with High=3, Moderate=2, Low=1. We then calculated a Mean Quality Rating for each primary study by adding up these ratings and dividing by the number of times the primary study was included in one of our prioritised reviews. Systematic reviews which did not report an overall quality score were not included in this calculation.

Data analysis

Data extracted from the primary studies were tabulated and described narratively. To explore if differences in the composition of the multi-disciplinary OH teams influenced RTW outcome, we first categorised the staff delivering the interventions into five categories, as described in **Error!**Reference source not found.8.

Table 8: Primary study intervention categories

Staff Category	Description
Case Management	MDT members of any profession who were explicitly named as being case
	managers within the study, or who were described as nurses, GPs or primary care
	clinicians
Musculoskeletal	Professionals involved with supporting the musculoskeletal health of employees,
	including; non-specified health professionials, rheumatologists, neurologists,
	chiropractors, PTs, OPs, pain management and rehabilitation specialists
Mental Health	Professionals involved with supporting the MH of employees, including non-
	specified MH professionals, BT, psychologists, and psychiatrists
Industrial Hygiene	Professionals involved with supporting the health of the employee within the
	workplace, including OTs, ergonomists, industrial hygieneists, OH specialists and
	vocational rehabilitation consultants
Social care	Professionals involved with supporting employees with their social care needs,
	including social workers, sickness benefits officers and workers compensation
	physicians

BT=Behaviour Therapist, GP=General Practitioner, MDT=Multidisciplinary Team, MH=Mental Health, OP=Occupational Physician, OT=Occupational Therapist, PT=Physiotherapist, RTW=Return to work

The categorisation of primary studies occurred in an iterative fashion. Job roles with similar form and function were grouped together through consultation with a public health nurse (GJMT) and drawing on the lead authors previous experience of working within multi-disciplinary teams as a psychologist. A case manager was seen as a job role rather than a clinical speciality. Following consultation with a public health nurse (GJMT), it was deemed that nurses and primary care clinicians were the most likely to fulfil role (see Table 8).

We then created four groups of primary studies according to the number and types of professional groups delivering the intervention:

Group A: case manager working with staff from two or more other categories;

Group B: case manager working with staff from one other professional category;

Group C: no case manager – staff from two professional groups working together;

Group D: no case manager – staff from one professional group working with staff from the workplace.

Within each category, we also tabulated information regarding reported intervention effectiveness/cost-effectiveness, setting and level of implementation. We then narratively compared the composition of the staff teams of interventions which were reported as having a beneficial effect to the features of the interventions which were reported to have no significant impact on RTW outcomes. Where there was a sufficient number of studies, we also calculated the proportion (percentage) of interventions which contained particular professionals across each group (studies reporting beneficial effect of intervention vs those reporting no effect of intervention).

Stakeholder involvement

Stakeholders from the DHSC and DWP informed the decision to focus on extracting data regarding individuals delivering the interventions from the primary studies. They also provided feedback on the grouping of professionals into categories for the narrative synthesis.

Appendix E: Number and quality of relevant primary studies in prioritised reviews

Table 9: Quality of primary studies

		Reviews		Quality A	Appriasal rat	ing awarded	by review		_
Primary article (author, date)	Included in reviews(n)	reporting Overall QA Score (n)	High quality (n)	Moderate quality (n)	Low quality (n)	Unclear (n)	NOS (n)	NR (n)	Average quality appraisal rating
Haldorsen 1998 ⁵⁸	1	1	0	0	1	0	0	0	1
Haldorsen 2002 ⁶¹	1	1	0	0	1	0	0	0	1
Kaapa 2006 ⁶²	2	1	0	0	1	0	1	0	1
Lindstrom 1992 ⁶³	1	1	0	0	1	0	0	0	1
Purdon 2006 ⁶⁵⁵⁸ (37)37(37)	4	3	0	0	3	0	1	0	1
Schultz 2008 ⁶⁶	1	1	0	0	1	0	0	0	1
Tamminga 2013 ⁶⁷	2	1	0	0	1	0	0	1	1
Bernaards 2011 ⁶⁹	3	2	0	1	1	0	1	0	2
Durand 2000 ⁷⁰	2	2	0	1	1	0	0	0	2
Lagerveld 2012 ⁷¹	2	2	0	1	1	0	0	0	2
Martin 2013 ⁷²	2	2	0	1	1	0	0	0	2
Netterstrom 2013 ⁷³	2	2	0	1	1	0	0	0	2
Noordik 2013 ⁷⁴	5	4	0	2	2	0	1	0	2
Skouen 2006a ⁶⁰	2	2	0	1	1	0	0	0	2
Vlasveld 2012 ⁷⁵	2	2	0	1	1	0	0	0	2
Cheng 2007 ⁷⁶	3	3	0	2	1	0	0	0	2
van den Hout 2003 ⁷⁷	4	3	1	0	2	0	1	0	2
Arnetz 2003 ⁷⁸	8	6	2	2	2	0	1	1	2
de Buck 2005 ⁷⁹	2	1	0	1	0	0	1	0	2
Hees 2013 ⁸⁰	5	3	1	1	1	1	1	0	2
Jensen 2012b ⁸¹	1	1	0	1	0	0	0	0	2
Karrholm 2006 (from Tompa 2007) ⁸²	1	1	0	1	0	0	0	0	2

		Reviews		Quality A	Appriasal rat	ing awarded	by review		_
Primary article (author, date)	Included in reviews(n)	reporting Overall QA Score (n)	High quality (n)	Moderate quality (n)	Low quality (n)	Unclear (n)	NOS (n)	NR (n)	Average quality appraisal rating
Lemstra 2003 ⁸³	2	1	0	1	0	0	1	0	2
Lemstra 2004 ⁸⁴	2	1	0	1	0	0	1	0	2
Linton 1992 ⁸⁵ ;	1	1	0	1	0	0	0	0	2
Loisel 1997 ⁸⁶	9	6	2	2	2	2	0	1	2
Momsen 2016 ⁸⁷	1	1	0	1	0	0	0	0	2
Netterstrom 2010 ⁸⁸	1	1	0	1	0	0	0	0	2
Schene 2007 ⁸⁹	4	2	0	2	0	1	1	0	2
Shultz 2013 ⁹⁰	1	1	0	1	0	0	0	0	2
Skouen 2006b ⁵⁹	1	1	0	1	0	0	0	0	2
Spekle 2010 ⁹¹	1	1	0	1	0	0	0	0	2
van Oostrom 2009 ⁹²	2	2	1	0	1	0	0	0	2
Yassi 1995b ⁹³	4	3	1	1	1	0	1	0	2
Skouen 2002 ⁶¹	3	3	2	0	1	0	0	0	2
Staal 2004 ⁹⁴	3	3	2	0	1	0	0	0	2
Volker 2015 ⁹⁵	5	3	2	0	1	1	1	0	2
van Oostrom 2010 ⁹⁶	6	5	3	1	1	0	0	1	2
Bültmann 2009 ⁹⁷	8	4	2	2	0	2	1	1	3
Goorden 2014 ⁹⁸	2	2	1	1	0	0	0	0	3
Jensen 2005 ⁹⁹	4	4	2	2	0	0	0	0	3
Jensen 2011 ¹⁰⁰	3	2	1	1	0	0	1	0	3
Loisel 2002 ¹⁰¹	4	4	2	2	0	0	0	0	3
Meijer 2006 ¹⁰²	2	2	1	1	0	0	0	0	3
Stapelfeldt 2011 ¹⁰³	2	2	1	1	0	0	0	0	3
Vlasveld 2013 ¹⁰⁴	5	2	1	1	0	1	1	1	3
Jensen 2001 ¹⁰⁵	3	3	2	1	0	0	0	0	3
Lambeek 2010a ¹⁰⁶	8	4	3	1	0	0	3	1	3
Anema 2007 ¹⁰⁷	8	5	4	0	1	1	1	1	3
Bender 2016 ¹⁰⁸	1	1	1	0	0	0	0	0	3

		Reviews		Quality A	Appriasal rat	ing awarded	by review		_
Primary article (author, date)	Included in reviews(n)	reporting Overall QA Score (n)	High quality (n)	Moderate quality (n)	Low quality (n)	Unclear (n)	NOS (n)	NR (n)	Average quality appraisal rating
Busch 2011 ¹⁰⁹	1	1	1	0	0	0	0	0	3
Finnes 2017 ¹¹⁰	3	1	1	0	0	1	1	0	3
Glasscock 2018 ¹¹¹	1	1	1	0	0	0	0	0	3
Jensen 2012a ⁸¹	2	1	1	0	0	0	1	0	3
Karjalainen 2003 ¹¹²	4	4	4	0	0	0	0	0	3
Karjalainen 2004 ¹¹³	2	2	2	0	0	0	0	0	3
Meyer 2005 ¹¹⁴	4	3	3	0	0	0	1	0	3
Moll 2018 ¹¹⁵	1	1	1	0	0	0	0	0	3
Myhre 2014 ¹¹⁶	2	1	1	0	0	1	0	0	3
Ntsiea 2015 ¹¹⁷	1	1	1	0	0	0	0	0	3
Salmononsson 2017 ¹¹⁸	1	1	1	0	0	0	0	0	3
Skisak 2006 ¹¹⁹	2	1	1	0	0	0	1	0	3
Steenstra 2006a ¹²⁰	2	1	1	0	0	0	1	0	3
Steenstra 2006b ¹²¹	2	2	2	0	0	0	0	0	3
Steenstra 2009 ¹²²	1	1	1	0	0	0	0	0	3
Tan 2016 ¹²³	1	1	1	0	0	0	0	0	3
Verbeek 2002 ¹²⁴	6	4	4	0	0	0	1	1	3
Vikane 2017 ¹²⁵	1	1	1	0	0	0	0	0	3
Gice 1989 ¹²⁶	1	0	0	0	0	0	1	0	CD
Kenning 2018 ¹²⁷	1	0	0	0	0	1	0	0	CD
Lambeek 2010b ¹²⁸	1	0	0	0	0	0	1	0	CD
Smedley 2013 ¹²⁹	1	0	0	0	0	1	0	0	CD
Yassi 1995a ¹³⁰	1	0	0	0	0	0	1	0	CD

Blue shaded cell=sibling articles, CD-Could not Determine, N=Number, QA=Quality Appraisal, NOS=No Overall Score provided, NR=Not reported, QA rating awarded by reviewers: 1=Low quality, 2=Moderate quality, 3=High quality

Appendix F: Professionals delivering interventions in primary studies

Table 10: Intervention deliverers - case management with two or more other professional categories

Study [Condition]				Work led by	Case	e Man	nagem											vienta Health		I	ndust	rial Hy	/giene	9	Soc	ial Ca	re		
	Effectiveness	Cost-effectiveness	Average QA rating		CM NS	Primary care/GP	Other	Nurse	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	ОР	MH professional	BT/ Psych	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Yassi (1995) ^{93, 130} Canada, [MSK]	Е	CE	2	Nurse				х								х	х					х	х						
Tan (2016) ¹²³ Singapore, [Injury]	E		3	OT			Х		х																	х			
Lambeek (2010) ^{106, 128} Netherlands , [MSK]	Е	CE	3	OP			х	х			х					х						х							
Smedley (2013) ¹²⁹ UK, [Mix]	E	CE*	CD	Nurse or OT			х	х				х				х		х		х	х								
Bultmann (2009) ⁹⁷ Denmark, [MSK]	E	CE	3	Social worker			х							х		х		х		х					х				

Study [Condition]				Work led	Cas	e Mar	nagem	He									vienta Health		ı	ndust	rial Hy	/giene	9	Soc	ial Ca	re			
	Effectiveness	Cost-effectiveness	Average QA rating		CM NS	Primary care/GP	Other	Nurse	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	0D	MH professional	BT/ Psych	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Ntsiea (2015) ¹¹⁷ South Africa, [Stroke]	E		3	PT and OT			х								х				х								х		
Haldorsen (2002) ⁶¹ Norway [MSK]	M	CE	1	NR		х		х		х						х				х									
Hees (2013) ⁸⁰ Netherlands , [MH]	M		2	ОТ			х											х			х								
Skouen (2002) ⁶¹ Norway [MSK]	M		2	NR		х		х		х						х				х									
Skouen (2006) ^{59, 60} Norway, [MSK]	M		2	NR		х		х		х						х				x									
Karrholm (2006) ⁸² Sweden [MSK]	М	CE	2	OP			Х	Х															Х				Х		

Study [Condition]				Work led by	Cas	e Mar	nagem	ent				M	usculo	skele	tal					Menta Health		ı	ndust	rial Hy	ygiene	9	Soc	ial Ca	re
	Effectiveness	Cost-effectiveness	Average QA rating		CM NS	Primary care/GP	Other	Nurse	Ŧ	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	07	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Schultz (2008) ⁶⁶ Canada, [MSK]	M		1	Nurse		х		х										x		x						x			х
Stapelfeldt (2011) ¹⁰³ Denmark, [MSK]	M		3	Case manager NS	х											х	х					Х					Х		
Tamminga (2013) ⁶⁷ Netherlands , [Cancer]	NI	Not CE	1	NS				х	х									х									X		
Purdon (2006) ⁶⁵ UK, [Mix]	NI		1	NR				х	х		Х					х			х	?					?				
Haldorsen (1998) ⁵⁸ Netherlands [MSK]	NI		1	NS		х		х		х						х				х									
Spekle (2010) ⁹¹ Netherlands , [MSK]	NI		2	NR			х																		х				
Salomonsso n (2017) ¹¹⁸ Sweden, [MH]	NI		3	Psych		х	х														x								х

Study [Condition]				Work led by	Cas	e Mar	nagem	ent				М	usculo	skele	tal					Menta Health		ı	ndust	rial Hy	/giene	2	Soc	ial Car	e
	Effectiveness	Cost-effectiveness	Average QA rating		CM NS	Primary care/GP	Other	Nurse	끂	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	0P	MH professional	BT/ Psych	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Karjalainen (2003;2004)	NI	CE	3	NS				х								Х									х				
Finland, [MSK]																													
Loisel (2002) ¹⁰¹ Canada, [MSK]	NI		3	OT and/or Psych			х					х						х					х		х				
Moll (2018) ¹¹⁵ Denmark, [MSK]	NI		3	SW, specialist clinical social medicine or OT		х	х						х			х				х									
Vlasveld (2012; 2013) ^{75, 104} Netherlands , [MH]	NI		2/3	Case manager NS	х													х			х								
Bender (2016) ¹⁰⁸ USA, [MH]	NI		3	RTW Co- ordinator	х											х				х	х	х							
de Buck (2005) ⁷⁹ Netherlands , [Rheumatic Disease]	NI		2	Case manager NS	х								х			х		х	х			х					х		

Study [Condition]				Work led by	Cas	e Mai	nagem	nent				M	usculo	skele	tal					Menta Health		l	Indust	rial H	ygiene	:	Soc	ial Ca	re
	Effectiveness	Cost-effectiveness	Average QA rating		CM NS	Primary care/GP	Other	Nurse	壬	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Jensen (2011) ¹⁰⁰ Denmark, [MSK]	NI		3	Case manager NS	х											х	х					х					х		
Meyer (2005) ¹¹⁴ Netherlands , [MSK]	NI		3	Therapist (NS)		х	х									x	х	х				х					x		
Momsen (2016) ⁸⁷ Denmark, [Mix]	NI		2	SBO		х	х				,					х		х		х	Х				х				
Schultz (2013) ⁹⁰ Canada, [MSK]	NI	CE	2	Nurse		х												х		х						х			х
Vikane (2017) ¹²⁵ Norway, [mTBI]	NI		3	Specialist in rehab medicine		х	х	х		х					х							х					х		
Jensen (2012) ⁸¹ Denmark, [MSK]	Н		3	Case manager NS	X								Х			х						х					х		

^{*}no statistical comparison conducted, 1=Low Quality study, 2=Moderate Quality study, 3=High Quality study; BT=Behavioural Therapist, CD=Could not Determine, CM=Case Manager, CE=Cost-effective, Erg=Ergonomist, GP=General Practitioner, H=Harm(control condition more beneficial), HP=Health Professional, QA=Quality Appraisal, M=Mixed, MH=Mental Health, MSK=Musculoskeletal, mTBI=Mild Traumatic Brain Injury, NI=No impact, NR=Not Reported, NS=Not specified, OH=Occupational Health, OM=Occupational Medicine, OP=Occupational Physician, OT=Occupational Therapist, Psych=Psychologist, PT=Physio or physical therapist, RTW=Return to Work, SBO=Sickness Benefits Officer, SW=Social Worker, USA=United States of America, VRS=Vocational Rehabilitation Specialist, WCP=Workers Compensation Physician

Table 11: Intervention deliverers - case management with one other professional category

					Cas	e Mar	agem	ent				М	usculo	skelet	:al				Me	ntal H	ealth		Indust	rial Hy	/giene		So	cial Ca	re
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	SN MO	Primary care/GP	Other	Nurse	dН	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	ОР	MH professional	BT/ Psych	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Gice (1989) ¹²⁶ NR, [Chronic pain]	E	CE*	CD	NR		x												?							x				
Lemsstra (2004) ⁸⁴ , Canada, [MSK]	Е		2	Manager/ union			x		х																				
Lindstrom (1992) ^{63, 64} Sweden, [MSK]	E		1	PT		X										x													
Netterstrom (2010) ⁸⁸ Denmark, [MH]	E		2	Specialist in OM			x														х								
Noordik (2013) ⁷⁴ Netherlands, [MH]	E		2	OP			x													х									
Schene (2007) ⁸⁹ Netherlands, [MH]	E	CE	2	OP			х														x (also part of TAU)	х							

					Cas	se Mar	nagem	ent				М	usculc	skelet	al				Me	ntal H	ealth	ı	Indust	trial Hy	giene)	So	cial Ca	re
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	CM NS	Primary care/GP	Other	Nurse	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	ОР	MH professional	BT/ Psych	Psychiatrist	от	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Skisak (2006) ¹¹⁹ USA, [NR]	Е	CE	3	Nurses, coroporate case managers			x	х										x											
Staal (2004) ⁹⁴ Netherlands, [MSK]	E		2	OP			x		x							x													
Steenstra (2006; 2009) ^{121, 122} Netherlands, [MSK]	E	Slightly increased cost	3	OH Erg/ OH nurse		x	x	x								x													
Volker (2015) ⁹⁵ Netherlands, [MH]	E		2	OP			x														х								
Anema (2007) ¹⁰⁷ Netherlands, [MSK]	М		3	Erg		x	Х		х	x				Х		х		x											
Lemstra (2003) ⁸³ Canada, [MSK]	M	Reduced cost	2	PT		х										х													

					Cas	e Man	agem	ent				М	usculc	skelet	al				Me	ntal H	ealth		Indust	rial Hy	giene	1	So	cial Ca	ire
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	SN MO	Primary care/GP	Other	Nurse	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	ОР	MH professional	BT/ Psych	Psychiatrist	от	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP
Goorden (2014) ⁹⁸ Netherlands, [MH]	NI	Not CE	3	OP			x														х								
Kenning (2018) ¹²⁷ UK, [NR]	NI		CD	Case manager NS	x															X									
Myhre (2014) ¹¹⁶ Norway, [MSK]	NI		3	OP			x														х								
Verbeek (2002) ¹²⁴ Netherlands, [MSK]	NI		3	OP		х	х		x							х													

^{*}no statistical comparison conducted, 1=Low Quality study, 2=Moderate Quality study, 3=High Quality study; BT=Behavioural Therapist, CD=Could not Determine, CM=Case Manager, CE=Cost-effective, Erg=Ergonomist, GP=General Practitioner, H=Harm(control condition more beneficial), HP=Health Professional, QA=Quality Appraisal, M=Mixed, MH=Mental Health, MSK=Musculoskeletal, mTBI=Mild Traumatic Brain Injury, NI=No impact, NR=Not Reported, NS=Not specified, OH=Occupational Health, OM=Occupational Medicine, OP=Occupational Physician, OT=Occupational Therapist, Psych=Psychologist, PT=Physio or physical therapist, RTW=Return to Work, SBO=Sickness Benefits Officer, SW=Social Worker, USA=United States of America, VRS=Vocational Rehabilitation Specialist, WCP=Workers Compensation Physician

Table 12: Intervention deliverers - no case management

					Case	Mana	ageme	ent					Muscu	uloskel	etal				Me	ntal Heal	th		Indust	rial H	/giene	:
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	CM NS	Primary care/GP	Other	Nurse	дн	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	dO	MH professional	BT/ Psych	Psychiatrist	от	Ergonomist	Industrial hygienist	OH/specialist OM	VRC
Jensen (2005) ⁹⁹ Sweden: Jensen 2001 follow up, [MSK]	E		3	NR												x		x		x						
Loisel (1997) ⁸⁶ Canada, [MSK]	E		2	NR							х							х					x			x
Netterstrom (2013) ⁷³ Denmark, [MH]	E		2	NS														х		х	Х					
van den Hout (2003) ⁷⁷ Netherlands, [MSK]	E		2	NR												x				х		х				
Jensen (2001) ¹⁰⁵ Sweden, [MSK]	NI		3	NR												x		X		X						

					Case	Mana	ageme	ent		ı	ı		Muscı	ıloskel	etal	ı		Γ	Me	ntal Heal	th		Indust	trial H	ygiene	•
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	CM NS	Primary care/GP	Other	Nurse	НР	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	d0	MH professional	BT/ Psych	Psychiatrist	от	Ergonomist	Industrial hygienist	OH/specialist OM	VRC
Kaapa (2006) ⁶² Finland, [MSK]	NI		1	NR		_				_	<u> </u>	_	_			x	x	х	_	x	1		_	_		
Meijer (2006) ¹⁰² Netherlands, [MSK]	NI	CE	3	NR							х					х				х		x				

1=Low Quality study, 2=Moderate Quality study, 3=High Quality study; BT=Behavioural Therapist, CD=Could not Determine, CM=Case Manager, CE=Cost-effective, E=Effective, Erg=Ergonomist, GP=General Practitioner, H=Harm(control condition more beneficial), HP=Health Professional, QA=Quality Appraisal, M=Mixed, MH=Mental Health, MSK=Musculoskeletal, mTBI=Mild Traumatic Brain Injury, NI=No impact, NR=Not Reported, NS=Not specified, OH=Occupational Health, OM=Occupational Medicine, OP=Occupational Physician, OT=Occupational Therapist, Psych=Psychologist, PT=Physio or physical therapist, RTW=Return to Work, SBO=Sickness Benefits Officer, SW=Social Worker, USA=United States of America, VRS=Vocational Rehabilitation Specialist, WCP=Workers Compensation Physician

Table 13: Intervention deliverers - one professional category and the workplace

								М	usculo	oskele	tal			ı	Ment	tal Hea	alth		Industr	ial Hy	giene		Social Care
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	dН	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	MS
Cheng (2007) ⁷⁶ Hong Kong, [MSK]	E		2	Job coach															х				
Durand (2001) ⁷⁰ Canada, [MSK]	E		2	ОТ														х					
Jensen (2012) ⁸¹ Denmark, [MSK]	Е		2	OP										х									
Lagerveld (2012) ⁷¹ Netherlands, [MH]	E	CE*	2	PsychTh											х								
van Oostrom (2009, 2010) ^{92, 96,} ¹³¹ Netherlands, [MH]	Е	Not CE	2	SW or labour expert																			х

								М	usculo	skele	tal				Men	tal Hea	alth		Industr	ial Hy	giene		Social Care
Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	윺	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW
Finnes (2017) ¹¹⁰ Sweden, [MH]	NI	Not CE	3	2 different therapists	_			-	_		•	_	_		_	х	_		_	_			
Glasscock (2018) ¹¹¹ Denmark, [MH]	NI		3	Psych												х							
Steenstra (2006) ¹²⁰ Netherlands, [MSK]	NI		3	PT								х											
Martin (2013) ⁷² Denmark, [MH]	Н		2	Psych									?			х							

^{*}no statistical comparison conducted, 1=Low Quality study, 2=Moderate Quality study, 3=High Quality study; BT=Behavioural Therapist, CD=Could not Determine, CM=Case Manager, CE=Cost-effective, E=Effective, Erg=Ergonomist, GP=General Practitioner, H=Harm(control condition more beneficial), HP=Health Professional, QA=Quality Appraisal, M=Mixed, MH=Mental Health, MSK=Musculoskeletal, mTBI=Mild Traumatic Brain Injury, NI=No impact, NR=Not Reported, NS=Not specified, OH=Occupational Health, OM=Occupational Medicine, OP=Occupational Physician, OT=Occupational Therapist, Psychologist, PsychTh=Psychotherapist, PT=Physio or physical therapist, RTW=Return to Work, SBO=Sickness Benefits Officer, SW=Social Worker, USA=United States of America, VRS=Vocational Rehabilitation Specialist, WCP=Workers Compensation Physician

Appendix G: Full results – primary studies from included reviews

Primary studies: overview

The process of selecting the primary studies from the prioritised systematic reviews is described in Error! Reference source not found. below. Two-hundred and nine unique articles were identified from the primary studies included in the 24 prioritised systematic reviews. The full-texts of 33 of these articles could not be retrieved, resulting in 175 articles being screened at full-text. Following full-text screening, 105 of these were excluded for the following reasons: population were not employed working-age adults (n=31), intervention being evaluated was not multidisciplinary (n=19), intervention being evaluated did not involve the workplace (n=15), study was not an evaluation of an intervention/did not include a control group (n=25) or study did not evaluate a RTW outcome (n=15) (see Appendix H for reasons for exclusion for individual studies). In total, 73 articles (62 primary studies) were eligible for inclusion.

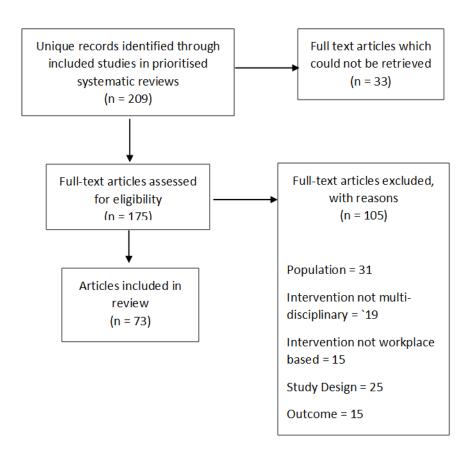


Figure 3: Primary study PRISMA diagram

The majority of these primary studies identified as being relevant to the aims of the umbrella review were conducted in Nordic countries, including the Netherlands (n=18), $^{67, 75, 79, 80, 91, 94, 95, 98, 104, 107, 114, 120-122, 128 71, 102, 124 77, 89, 92, 96, 131}$ Denmark(n=12), 97 81, 100, 103, 109, 115 72-74, 87, 88, 111 Sweden (n=6), $^{63, 82, 99, 105, 118, 132}$ Norway (n=4), $^{58, 59, 61, 116, 125}$ and Finland(n=2). $^{62, 112, 113}$ Other countries included Canada (n=8), $^{66, 90, 93 70, 83, 84, 86, 101}$ the UK (n=2), $^{65, 127}$, the USA (n=2), $^{108, 119}$ and one study each for Singapore, 123 Hong Kong, 76 various countries, 129 and South Africa, 117 with one study not reporting this information. 126

Primary studies: quality

Appendix E outlines the number of systematic reviews each primary study was included within, and the range of quality scores assigned to them. Studies included across several different reviews were often awarded different quality ratings. For the 68 primary articles where an average quality rating could be awarded, seven received a score of 1 (Low quality), ⁵⁸⁻⁶⁷ 31 received a score of 2 (Moderate quality), ^{59-61, 69-96} and 30 articles received a score of 3 (High quality). ^{81, 97-125} A quality rating could not be awarded for 5 articles as none of the reviews in which they were included provided an overall quality score. ^{93, 126, 128, 129}

Primary studies: intervention deliverers

In terms of the number of primary studies contributing to each grouping, no predominant delivery model of multi-disciplinary occupational health services was evident.

Below, we describe the primary studies according to the number and types of categories of professionals involved in delivering the intervention. This resulted in four staff groups, which are described below (also see Error! Reference source not found.):

- 5) **Group A:** A case manager working with staff from two or more other categories;
- 6) **Group B:** A case manager working with staff from one other professional category;
- 7) **Group C:** No case manager two categories of staff working together;
- 8) **Group D:** No case manager Staff from one category working with professionals from the workplace.

Within Group A and B, we have made efforts to relate the characteristics of the intervention deliverers to RTW outcomes. However, these observations should be interpreted with caution due to the small number of studies in some categories/groups and the large range in contextual variables which may influence the relationship between intervention features and outcomes. Hence, in the other two groups which have a smaller number of articles, we have provided a narrative description of the intervention deliverers. Due to the poor description of staff delivering the intervention, two of the included primary studies could not be placed within any of the four groups. ^{69, 85}

Full details of the professionals delivering the intervention and reported effectiveness and cost effectiveness are provided in **Error! Reference source not found.**. Full details regarding the interventions being evaluated can be found in Supplementary Table 2.

Group A: case managers working with staff from two or more other categories

Twenty-six studies evaluated interventions implemented by professionals within the 'Case Management' category and staff from two or more other professional categories. The quality of the articles was as follows: High(n=19), ^{75, 81, 97, 100, 101, 103, 104, 106, 108, 112-115, 117, 118, 123, 125, 128, 129}

Moderate(n=11), ^{59-61, 79, 80, 82, 87, 90, 91, 93} and Low(n=5). ^{58, 61, 65-67} Two articles could not be awarded an average quality rating. ^{129, 130} Employees accessing the interventions were experiencing musculoskeletal difficulties(n=14), ^{58-61, 66, 81, 82, 90, 91, 93, 97, 100, 101, 103, 106, 112-115, 128, 130} mental health difficulties(n=4), ^{75, 80, 104, 108, 118} a mix of conditions/diagnoses (n=3), ^{65, 87, 129} injury(n=1), ¹²³ cancer(n=1). ⁶⁷ mild traumatic brain injury(n=1), ¹²⁵ stroke(n=1), ¹¹⁷ and rheumatic disease(n=1). ⁷⁹ Sixteen studies (23 articles) evaluated the implementation of an intervention which involved professionals within the case management category working with professionals from two other categories. ^{58-61, 65, 67, 75, 80, 82, 91, 93, 101, 104, 106, 112, 113, 115, 118, 123, 128-130} Ten studies (twelve articles) evaluated interventions which included case managers working alongside professionals from more than two other professional categories. ^{66, 79, 81, 87, 90, 97, 100, 108, 114, 117, 125}

Intervention deliverers: studies reporting beneficial effect

Four of the 16 studies evaluating the effectiveness of interventions implemented by case management professionals in conjunction with two other professional categories were reportedly effective in improving RTW.^{93, 106, 123, 128-130} Three of these studies also reported that the intervention was cost-effective, ^{93, 106, 128-130} although one of these did not conduct formal statistical comparison. ¹²⁹ The case management role within these studies was fulfilled by a nurse and/or OT(n=4), ^{93, 129, 130} or Occupational Physician(n=1). ^{106, 128} These case managers worked with professionals from the 'Musculoskeletal' and 'Industrial Hygiene' categories(n=2), ^{93, 106, 123, 128, 130} or 'Musculoskeletal' and 'Mental Health' categories (n=1). ¹²⁹

Two high quality studies which included case managers working with professionals from three or more categories reported their interventions were effective in improving RTW outcomes^{97, 117} with one study reporting the intervention as being cost-effective.⁹⁷ Case managers within these studies were social workers,⁹⁷ and a combination of physiotherapists and OTs.¹¹⁷ Case managers in both studies worked alongside professionals from the 'Musculoskeletal' and 'Mental Health' categories and either 'Industrial Hygiene'⁹⁷ or 'Social care'.¹¹⁷

Overall, professionals from all five categories were represented within the studies delivered by Case Management professionals and three or more other professional categories. Professionals from 'Case management', 'Industrial Hygiene' and 'Mental Health' categories were represented within interventions delivered by Case Management professionals and staff from two other categories, although professionals from 'Industrial Hygiene' and 'Mental Health' did not work together.

Intervention deliverers: studies reporting mixed effect

Three studies where case-management professionals worked with staff from two other categories reported a mixed effect of the intervention on RTW outcomes^{59-61, 80, 82} Two of these studies reported that the intervention was cost effective.^{59-61, 82} Professionals within the 'Case Management' category in these studies included primary care professionals and nurses (n=1),⁵⁹⁻⁶¹ OT(n=1)⁸⁰ and occupational physicians and nurses(n=1)⁸² and they worked alongside individuals from both the categories of 'Industrial Hygiene' and 'Social Care' (n=1),⁸² and 'Musculoskeletal' and 'Mental Health'(n=2).^{59-61, 80}

Two studies where case management professionals worked with more than two other professional categories reported mixed effects of the intervention on RTW outcomes. 66, 103 Professionals within the 'Case management' category included primary care clinicians and nurses 66 or were not specified. These two studies included professionals from each of the other five professional categories, aside from Stapelfeldt et al (2011) who did not involve any mental health professionals. 103

Intervention deliverers: studies reporting no effect

Nine studies evaluating interventions implemented by case managers and two other professional groups reported no impact of the intervention on RTW outcomes, ^{58, 65, 67, 75, 91, 101, 104, 112, 113, 115, 118} with one low quality study reporting that the intervention was not cost-effective and another High quality study stating it was cost-effective. ^{67, 112, 113} Articles were rated as High(n=5^{101, 104, 112, 113, 115, 118} Moderate(n=2^{75, 91}) or Low(n=3^{58, 65, 67} quality. Professionals within the case management role in these studies included; Nurses alone(n=3^{65, 67, 112, 113}), primary care clinicians and nurses(n=1⁵⁸) Social worker and primary care clinicians (n=1¹¹⁵), psychologists and GP (n=1¹¹⁸), OT and/or psychiatrists(n=1¹⁰¹) or were unspecified professionals (n=2). ^{75, 91, 104} Case managers worked with the following professional groups: 'Musculoskeletal' and 'Mental health'(n=4^{58, 65, 75, 104, 115}), Muscloskeletal and 'Industrial hygiene'(n=2^{101, 112, 113}) 'Musculoskeletal' and 'Social care'(n=1⁶⁷), Mental Health and Social care (n=1¹¹⁸) and not reported (n=1⁹¹).

Seven studies of High or Moderate quality implemented by professionals in the 'Case Management' category and three or more other professional categories reported no effect of the intervention on RTW outcomes, ^{79, 87, 90, 100, 108, 114, 125} with one reporting improved effects of the control group over the intervention group. ⁸¹ Professionals working within the 'Case management' category included: Case manager not specified(n=3^{79, 81, 100, 108}), Therapist and primary care clinicians(n=1¹¹⁴), Sickness benefit officer and primary care clinicians(n=1⁸⁷), Nurse (n=1⁹⁰ and Specialist in rehabilitation medicine, primary care clinicians and nurses(n=1¹²⁵). Case Management professionals worked with professionals from the other four staff categories in two studies, ^{79, 90} with individuals from 'Musculoskeletal', 'Mental Health' and 'Industrial Hygiene' in two studies^{87, 108} and staff from 'Musculoskeletal', 'Industrial Hygiene' and 'Social Care' categories in three studies. ^{81, 100, 114, 125}

Table 14: Intervention deliverers - case management and two or more other professional groups

	Ca	ise Mai	nagem	ent				N	/luscul	oskelet	al				Me	ntal He	ealth		Indus	trial H	ygiene		So	cial Ca	are
Reported interventi on effect	Case manager NS	Primary care/GP	Other	Nurse	Healthcare professionals	rologis	Secondary care/ consultant/specialists	Pain management specialist	Rheumatologists	Chiropractor	Speech therapist	Physical or physio therapist	hab	Occupational Physician	Mental health	havi	r sychiatrist Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist	ial rehab	Social worker/specialist	Sickness benefits officer	Workers compensation physician
Beneficial																									
effect			5[8	3[5	1[1		1[1	1[1		1[1	1[1	4[6	1[1	2[3	1[1	2[3	1[1	2[3	1[1]0	1[1	1[1	1[1]0	
n[%]	0[0]	0[0]	3]	0]	7]	0[0]	7]	7]	0[0]	7]	7]	7]	7]	3]	7]	3]	7]	3]	7]	0]	7]	7]	7]	0]	0[0]
No effect	4[2	7[4	7[4		2[1	2[1			2[1			9[5	2[1	7[4	2[1	5[3	4[2	5[3]0	4[2		5[3]0	2[1
n[%]	5]	4]	4]	5[3]	3]	3]	1[6]	1[6]	3]	0[0]	1[6]	6]	3]	4]	3]	1]	5]	1]	1[6]	0]	5]	1[6]	1]	0]	3]

^{*}Calculation based on number of studies reporting this information; GP=General Practitioner, NS=Not specified, OH=Occupational Health, OT=Occupational Therapist, PT

Error! Reference source not found. 14 above indicates that when comparing studies reporting a beneficial effect with studies which report no effect, those reporting no effect were more likely to have case managers where the profession was unspecified or who were primary care clinicians. Studies reporting a beneficial effect of the intervention were more likely to have case managers belonging to one of the other four professional groups.

It should be noted that comparisons between studies do not account for potential confounders which may influence the reported effectiveness of an intervention in a given population group. Such confounders could include the size of the study, duration of time on sick-leave before receipt of intervention, definition of RTW and time point/s at which RTW outcome measured. In addition, we have not conducted statistical comparison for these results and thus no confidence interval data is available to us. Thus, we cannot state if any of the reported differences between groups are statistically significant.

Summary

It was challenging to identify any clear patterns relating staff groupings relating to the reported effectiveness of the intervention.

Group B: case manager working with staff from one other category

Seventeen studies (18 articles) evaluated interventions delivered by case managers and one other professional group. ^{74, 78, 83, 84, 88, 89, 94, 95, 98, 107, 116, 119, 120, 122, 124, 126, 127} Six of these studies were High quality, ^{98, 119, 120, 122} ^{107, 116, 124} 8 of Moderate quality, ^{74, 78, 83, 84, 88} ^{89, 94, 95}) 1 of Low quality^{63, 64} and two could not be given an average quality rating. ^{126, 127} Eight of the studies evaluated interventions aimed at employees with musculoskeletal problems, ^{63, 64, 78, 94, 106, 107, 116, 121, 122, 124, 128} 5 with mental health difficulties, ^{74, 88, 89, 95, 98} 1 with chronic pain, ¹²⁶ and 2 studies did not specify the reason for sickleave. ^{119, 127}

Intervention deliverers: summary across all studies

The mean number of professionals within the Case Management category was 1.3 (range 1-4, mode: 1). The professional roles of people within the Case Management category were as follows: not specified($n=1^{127}$) GP (n=6 Gice $^{63, 64, 83, 84, 107, 121, 122, 124, 126}$), nurse ($n=1^{120}$). For studies which explicitly named a member of a specific professional group (n=12), the role of case manager was taken on by the following individuals: manager from employing organisation or union representative($n=3^{78, 83, 84, 119}$), specialist in occupational medicine ($n=1^{88}$), Occupational Physician ($n=7^{74, 89, 94, 95, 98, 116, 124}$), Ergonomist ($n=2^{107, 121, 122}$) and nurse($n=1^{119}$).

Overall, the most common group of professionals for staff in the Case Management group to work with were those in the 'Musculoskeletal' category ($n=6^{63, 64, 83, 84, 94, 107, 119, 121, 122, 124}$), 'Mental Health' ($n=6^{74, 88, 95, 98, 116, 127}$) or 'Industrial Hygiene' ($n=3^{78, 89, 126}$) categories. These broadly reflect the reason for employee sick-leave as described above.

Within the 'Musculoskeletal' category, the most common professions represented were healthcare professionals (4 studies^{83, 84, 94, 107, 124}) Neurologists (n=1¹⁰⁷), Chiropractors (n=1¹⁰⁷), PT (n=5^{63, 64, 83, 94, 107, 121, 122}) and OP (n=2^{107, 119}). Within the 'Mental Health' category, 2 studies involved Behavioural Therapists with delivering the intervention, ^{74, 127} and four studies involved a psychiatrist. ^{88, 89, 95, 98, 116.}

Professionals in the 'Industrial Hygiene' category included Occupational Therapists (2 studies{Arnetz, 2003 #46}) Ergnonomists (1 study⁷⁸) and Occupational Health specialists not otherwise specified (1 study¹²⁶).

Intervention deliverers: studies reporting beneficial effect

Eleven studies of predominantly Moderate quality reported a significant beneficial effect of the intervention being evaluated on RTW outcomes. ^{74, 78, 84, 88, 89, 94, 95, 119, 121, 122, 126} Four of these studies also indicated that these interventions were cost-effective, ^{78, 89, 119, 126} although one of these did not conduct any formal statistical comparison. ¹²⁶ One study indicated the intervention, while effective, could be delivered at a slightly higher cost than the control intervention. ^{121, 122} Error! Reference source not found. ¹⁵ below illustrates that in studies which explicitly included a case manager, the

role was predominantly fulfilled by professionals from the other four professional categories including OPs ($n=4^{74, 89, 94, 95}$), Ergnomists ($n=1, ^{121, 122}$), specialist in occupational medicine (n=1 ⁸⁸) and PTs ($n=1^{63, 64}$), but also included Nurses /corporate case managers($n=1^{119}$) and case managers from employing organisation and/or union ($n=2^{78, 84}$). Other additional professionals included within this category included nurse($n=1^{121, 122}$) and GP/Primary care clinicians($n=3^{63, 64, 121, 122, 126}$). The mean number of professionals within the 'Case Management' category was 1.35(range, 1-3, mode 1). Case managers most commonly worked with professionals from the 'Musculoskeletal'($n=5^{63, 64, 83, 84, 94, 119, 121, 122}$), 'Mental Health' ($n=3^{74, 88, 95}$) and 'Industrial Hygiene'($n=3^{78, 89, 126}$) categories.

Intervention deliverers: studies reporting mixed effects

Two studies, one moderate quality^{83, 84} and one High¹⁰⁷ reported mixed effects of the intervention on RTW outcomes, with one indicating the intervention could be provided at slightly reduced costs compared to the control condition.⁸³ Case Managers were reported to be Ergnomists¹⁰⁷ or GPs,⁸³ who worked alongside professionals from the 'Musculoskeletal' category in both studies.

Intervention deliverers: studies reporting no effect

Four predominantly High quality studies reported no significant benefit of the intervention, ^{98, 116, 124, 127} with 1 of these studies indicating that the intervention was not cost-effective. ⁹⁸ Where interventions reported a named case managers, the role was fulfilled predominantly OPs(n=3^{98, 116, 124}), with the mean number of professionals within the 'Case Management category being 1.25 (range 1-2, mode 1). One study included professionals from the 'Musculoskeletal' category, ¹²⁴ whilst the other three involved professionals from the 'Mental Health' category. Only one study targeted employees with mental health difficulties, ⁹⁸ the others included employees with musculoskeletal difficulties(n=2^{116, 124}) or condition was not specified. ¹²⁷

Overall, it is difficult to identify any differences between the groups of staff delivering interventions, which were reported to have a beneficial effect on RTW outcomes versus those reported to have no impact. **Error! Reference source not found.** provides further detail regarding the professionals delivering the interventions across these two groups.

Table 15: Intervention deliverers - case management and one other professional category

		ase Ma	nageme	nt				N	/luscul	oskelet	tal				М	ental He	alth		Indus	trial Hy	/giene		Sc	ocial Ca	are
Reported effect of intervent ion	Case manager NS	Primary care/GP	Other	Nurse	Healthcare professionals	Neurologist	Secondary care/	consultant/specialists Pain management	Specialist Rheumatologists	Chiropractor	Speech therapist	Physio / PT	b specialist	ccupation	ntal he	ororessional Behaviour therapist/ Psych	Psychiatrist	ОТ	Ergonomist	Industrial hygienist	OH/specialist	Vocational rehab	Social worker/specialist	kness benefits off	Workers compensation bhvsician
Beneficia I effect	1[9.	3[2	8[7	2[1	2[1	0[]0]0]0]0]0	2[1]0	1[]0		2[1	2[1	1[0[1[0[0[0[]0
n[%]]	7]	3]	8]	8]	0]	0]	0]	0]	0]	0]	8]	0]	9]	0]	1[9]	8]	8]	9]	0]	9]	0]	0]	0]	0]
No effect	1[2	1[2	3[7	1010	1[2]0]0]0]0]0]0	1[2]0]0]0	1[2	2[5	[0]0]0]0]0]0]0]0]0
n[%]	5]	5]	5]	0[0]	5]	0]	0]	0]	0]	0]	0]	5]	0]	0]	0]	5]	0]	0[0]	0]	0]	0]	0]	0]	0]	0]

Summary

Whilst the quality of the evidence was classified as Moderate to High, there was no clear relationship between the profession of the Case Manager, professional groups who worked with the Case Manager or the composition of these professional groups and the reported effectiveness or cost-effectiveness of the intervention with regard to RTW outcomes.

Group C: No case management – two categories of staff working together

Six studies (eight articles) evaluated interventions where there was no specified case manager leading the intervention. $^{62, 73, 77, 86, 99, 102, 105, 109}$ The average quality appraisal ratings awarded by reviewers were High (n=2 $^{99, 102, 105, 109}$), Moderate (n=3 $^{73, 77, 86}$) and Low(n=1 62). The majority of the interventions were intended for employees with musculoskeletal difficulties, with one intervention aimed at individuals with mental health difficulties.

Intervention deliverers: overall summary

Four of the interventions being evaluated included individuals from two professional categories.^{62, 73, 86, 99, 105, 109} The most common combination of professional categories were 'Musculoskeletal' and 'Mental Health' (n=3^{62, 73, 99, 105, 109}). One study reporting a significant beneficial effect of the intervention included individuals working across 'Musculoskeletal' and 'Industrial hygiene' staff categories.⁸⁶ Two studies, one reporting a beneficial effect of the intervention⁷⁷ and the other no effect¹⁰² included individuals across 'Musculoskeletal', 'Mental Health' and 'Industrial Hygiene' categories.

Within the 'Musculoskeletal' category, most common staff included physiotherapists (n=4^{62, 73, 86, 99, 105, 109}) and Occupational Physicians (n=3^{62, 73, 86, 99, 105, 109}) The number of professionals within this category ranged from 1⁷³ to 3.⁶² All except one study⁸⁶ included at least one professional from the 'Mental Health' category, with the most common being a behavioural therapist or psychologist(n=5^{62, 73, 77, 99, 102, 105, 109}). In addition to a behavioural therapist/psychologist, one study also involved a psychiatrist.⁷³ Within the 'Industrial Hygiene' category, two studies included an occupational therapist^{77, 102} and one included an ergonomist and a vocational rehabilitation consultant.⁸⁶ The small number of studies within this group precludes additional comparison across studies reporting a beneficial effect of the intervention with those that did not.

Intervention deliverers: studies reporting beneficial effect

Four studies (five articles) reported a significant beneficial effect of the intervention on RTW outcomes. One High quality study indicated that the intervention was cost-effective. ¹⁰⁹ Two of these articles represented three ⁹⁹ and ten year ¹⁰⁹ follow ups of an original study, which showed no significant difference between intervention and control groups over an eighteen month period. ¹⁰⁵

Two studies involved professionals from the 'Musculoskeletal' and 'Mental Health' categories working together, 73, 109 one study involved those 'Musculoskeletal' and 'Industrial Hygiene' professionals 86 and one study involved professional from all three of these categories. 77

Intervention deliverers: studies reporting no effect

Two further studies indicated no significant effect of the intervention. One High quality study involved professionals from across the 'Musculoskeletal', 'Mental Health' and 'Industrial Hygiene' working together and indicated no significant cost increase compared to the control group. The other study was of low quality and was delivered by professionals from the 'Musculoskeletal' and 'Mental Health' categories.

Summary

The predominant staff category within this grouping was 'Musculoskeletal' which reflects the reason for sick leave for the employees within the studies themselves. Within individual studies, it was most common for staff from the 'Musculoskeletal' category to work with those from either the 'Mental Health' or 'Industrial Hygiene' categories, although again it is not possible to establish a clear link between different staff groupings and the reported effectiveness/cost-effectiveness of the intervention.

Group D: No case management - staff from one category working with professionals in the workplace

Eight studies evaluated an intervention where members from one professional category liaised with the workplace to support employees to RTW. ^{70, 72, 76, 81, 92, 96, 110, 111, 120, 131} Three studies were of High quality, ^{110, 111, 120} and 5 studies were of Moderate quality. ^{70, 72, 76, 81, 92, 96, 131} Four of the interventions were intended to support individuals with musculoskeletal problems ^{70, 76, 81, 120} and the other four individuals with mental health difficulties. ^{72, 92, 96, 110, 111, 131}

Intervention deliverers: studies reporting beneficial effect

Four Moderate quality studies reported significant benefits of the intervention for employees with Musculoskeletal difficulties. ^{70, 76, 81, 92, 96, 131} These interventions utilised a RTW rehabilitation approach, where a professional (OT, OP, Job coach, SW or labour expert) liaised closely with the employee and supervisor to identify barriers to return to work and/or identify suitable work tasks to enable a graded return to work, with 1 study also integrated ergonomic advice and techniques. ⁷⁶ This style of intervention was not cost-effective as measured by one study. ¹³¹

Intervention deliverers: studies reporting no effect

Three High quality studies reported no significant impact of the intervention on RTW outcomes. 110, 111, 120 These interventions encompassed psychological therapies for mental health difficulties with a

workplace component^{110, 111} or a gradually increasing exercise programme for employees with musculoskeletal problems¹²⁰ and were mainly aimed at the individual employee, with limited involvement of the workplace. Finnes et al (2017) reported that the addition of three joint meetings between employee and supervisor at work to an ACT intervention was not cost-effective.¹¹⁰ One study evaluating the effects of a RTW plan reported benefits in favour of the control condition.⁷² In contrast to the studies reporting a benefit of the intervention as described above, which were delivered in workplace or hospital settings, this intervention was primarily delivered in the jobcentre by a psychologist following a MDT assessment, with some contact with the workplace.⁷²

Appendix H: List of excluded articles

Table 16: Reasons for exclusion - systematic reviews

Paper	Reason
Aanesen, F., Berg, R., Lochting, I., Tingulstad, A., Eik, H., Storheim, K., Oiestad, B. E. (2021). Motivational Interviewing and Return to Work for People with Musculoskeletal Disorders: A Systematic Mapping Review. Journal of occupational rehabilitation, 31(1), 63-71. doi:https://dx.doi.org/10.1007/s10926-020-09892-0	WP
Aas, R. W., Tuntland, H., Holte, K. A., Røe, C., Lund, T., Marklund, S., & Moller, A. (2011). Workplace interventions for neck pain in workers. Cochrane database of systematic reviews, (4)	MD
Abidin, M., Yunus, F. W., Rasdi, H. F. M., & Kadar, M. Employment programmes for schizophrenia and other severe mental illness in psychosocial rehabilitation: a systematic review. British Journal of Occupational Therapy. doi:10.1177/0308022620980683	Рор
Ahola, K., Toppinen-Tanner, S., & Seppanen, J. (2017). Interventions to alleviate burnout symptoms and to support return to work among employees with burnout: Systematic review and meta-analysis. Burnout Research, 4, 1-11. doi:10.1016/j.burn.2017.02.001	Study
Alexander, L., & Cooper, K. (2019). Vocational rehabilitation for emergency services personnel: a scoping review. JBI database of systematic reviews and implementation reports, 17(10), 1999-2019. doi:https://dx.doi.org/10.11124/JBISRIR-2017-003747	Not SR
Alexander, L., Cooper, K., Mitchell, D., & MacLean, C. (2017). Effectiveness of vocational rehabilitation on work participation in adults with musculoskeletal disorders: an umbrella review protocol. JBI database of systematic reviews and implementation reports, 15(6), 1518-1521. doi:https://dx.doi.org/10.11124/JBISRIR-2016-003133	Protocol
Algeo, N., Bennett, K., & Connolly, D. (2021). Rehabilitation interventions to support return to work for women with breast cancer: a systematic review and meta-analysis: researchsquare.com.	WP
Amatya, B., Khan, F., & Galea, M. (2019). Rehabilitation for people with multiple sclerosis: an overview of Cochrane Reviews. The Cochrane database of systematic reviews, 1, CD012732. doi:https://dx.doi.org/10.1002/14651858.CD012732.pub2	WP
Ansoleaga, E., Garrido, P., Dominguez, C., Castillo, S., Lucero, C., Tomicic, A., & Martinez, C. (2015). [Return to work enablers for workers with work-related mental illness]. Facilitadores del reintegro laboral en trabajadores con patologia mental de origen laboral: una revision sistematica., 143(1), 85-95. doi:https://dx.doi.org/10.4067/S0034-98872015000100011	Lang
Austvoll-Dahlgren, A., Forsetlund, L., Munthe-Kaas, H. M., & Kirkehei, I. (2018). Effects of Support and Follow-Up Interventions for People with Severe Mental Illness.	Рор
Bethge, M. (2017). [Work-Related Medical Rehabilitation]. Medizinisch-beruflich orientierte Rehabilitation., 56(1), 14-21. doi:https://dx.doi.org/10.1055/s-0042-118579	Lang
Bisung, E., Elliott, S. J., & Clarke, A. E. (2018). Non-pharmacological interventions for enhancing the working life of patients with lupus: a systematic review. Lupus, 27(10), 1755-1756. doi:https://dx.doi.org/10.1177/0961203318777119	Not SR
Bjork, M., Gerdle, B., Liedberg, G., Svanholm, F., Solmi, M., Thompson, T., Dragioti, E. (2020). Interventions to facilitate return to work in adults with chronic non-malignant pain: a protocol for a systematic review and network meta-analysis. BMJ open, 10(11), e040962. doi:https://dx.doi.org/10.1136/bmjopen-2020-040962	Protocol

Study
Study
Retrieval
Study
Protocol
WP
WP
Int
Study
Lang
Not SR
Study
Int
Sister
Pop

Chou R, Deyo R, Friedly J, Skelly A, Hashimoto R, Weimer M, Fu R, Dana T, Kraegel P, Griffin J, Grusing S, Brodt E. Noninvasive Treatments for Low Back Pain. Comparative Effectiveness Review No. 169. (Prepared by the Pacific Northwest Evidence-based Practice Center under Contract No. 290-2012-00014-I.) AHRQ Publication No. 16-EHC004-EF. Rockville, MD: Agency for Healthcare Research and Quality; February 2016. www.effectivehealthcare.ahrq.gov/reports/final.cfm.	Sister
Christie, L., Inman, J., Davys, D., & Cook, P. A. (2021). A systematic review into the effectiveness of occupational therapy for improving function and participation in activities of everyday life in adults with a diagnosis of depression. Journal of Affective Disorders, 282, 962-973.	MD
Clayton, S. (2012). Effectiveness of return-to-work interventions for disabled people: a systematic review of government initiatives focused on changing the behaviour of employers. European Journal of Public Health, 22(3). doi:http://dx.doi.org/10.1093/eurpub/ckr101	Outcome
Clayton, S., Bambra, C., & Gosling, R. (2011). Assembling the evidence jigsaw: insights from a systematic review of UK studies of individual-focused return to work initiatives for disabled and long-term ill people. BMC Public Health, 11(170).	Рор
Clayton, S., Gosling, R., Povall, S., Misso, K., Bambra, C., & Whitehead, M. (2010). PATHWAYS TO WORK? INSIGHTS FROM A SYSTEMATIC REVIEW OF THE UK'S RETURN TO WORK INITIATIVES FOR DISABLED AND CHRONICALLY ILL PEOPLE. Journal of Epidemiology and Community Health, 64, A6-A6. doi:10.1136/jech.2010.120956.15	Study
Cocchiara, R. A., Sciarra, I., D'Egidio, V., Sestili, C., Mancino, M., Backhaus, I., La Torre, G. (2017). Returning to work after breast cancer: a systematic review of reviews. European Journal of Public Health, 27. WOS:000414389806013	Study
Collie Workplace-Based Interventions for Improving Return to Work after Musculoskeletal and Pain Related Conditions: A Systematic Review (draft) 2014 Missingr	Retrieval
Costi, S. (2019). Return to work of cancer survivors in Europe: systematic review of the literature. Proceedings of the International Scientific Conference.	Outcome
Cox, A., O'Regan, S., Denvir, A., Broughton, A., Pearmain, D., Tyers, C., & Hillage, J. (2008). What works in delivering improved health and safety outcomes: A review of the existing evidence.	Study
Crawford, J. O., Graveling, R. A., Cowie, H. A., & Dixon, K. (2010). The health safety and health promotion needs of older workers. Occupational medicine (Oxford, England), 60(3), 184-192. doi:https://dx.doi.org/10.1093/occmed/kqq028	Int
Crowther, R. E. (2003). Vocational rehabilitation for people with severe mental illness: A systematic review; a survey of practice and a naturalistic follow up study. Vocational Rehabilitation for People With Severe Mental Illness: A Systematic Review; a Survey of Practice & a Naturalistic Follow Up Study, 1-1.	Рор
Crowther, R., Marshall, M., Bond, G., & Huxley, P. (2001). Vocational rehabilitation for people with severe mental illness. The Cochrane database of systematic reviews(2), CD003080.	Рор
Cruz, É. J. E., Souza, N. V. D., & Mauricio, V. C. (2011). Return of the person with intestinal stoma to the work force: a review. Revista Estima, 9(2), 31-38.	Lang
Cullen K, Franche RL, Clarke J, Irvin E.Working Paper #296. The role of organizational factors in workplacebased return-to-work interventions: A systematic review. Toronto: Institute for Work & Health, 2005.	Retrieval
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Cullen, K. L., Irvin, A., & Collie, F. (2018). Effectiveness of Workplace Interventions in Return-to-Work for Musculoskeletal, Pain-Related and Mental Health Conditions An Update of the Evidence and Messages for Practitioners. Orthopaedic Physical Therapy Practice, 30(3), 179-179.	Abs
de Boer, A. G., Taskila, T., Tamminga, S. J., Frings-Dresen, M. H., Feuerstein, M., & Verbeek, J. H. (2011). Interventions to enhance return-to-work for cancer patients. The Cochrane database of systematic reviews(2), CD007569. doi:https://dx.doi.org/10.1002/14651858.CD007569.pub2	Prev
de Boer, A., Taskila, T. K., Tamminga, S. J., Feuerstein, M., Frings-Dresen, M. H. W., & Verbeek, J. H. (2015). Interventions to enhance return-to-work for cancer patients. Cochrane Database of Systematic Reviews(9). doi:10.1002/14651858.CD007569.pub3	WP
de Buck, P. D., Schoones, J. W., Allaire, S. H., & Vliet Vlieland, T. P. (2002). Vocational rehabilitation in patients with chronic rheumatic diseases: a systematic literature review. Seminars in arthritis and rheumatism, 32(3), 196-203. doi:10.1053/sarh.2002.34609	Study
Demou, E., Vargas-Prada, S., Lalloo, D., & Avila-Palencia, I. (2016). OP63 Very early workplace sickness absence interventions: A systematic review and meta-analysis of their effectiveness: jech.bmj.com.	Abs
Désiron, H. A., De Rijk, A., Van Hoof, E., & Donceel, P. (2011). Occupational therapy and return to work: a systematic literature review. BMC Public Health, 11(1), 1-14.	Study
Desmeules, F., Boudreault, J., Dionne, C. E., Fremont, P., Lowry, V., MacDermid, J. C., & Roy, JS. (2016). Efficacy of exercise therapy in workers with rotator cuff tendinopathy: a systematic review. Journal of occupational health, 58(5), 389-403.	MD
Dewa, C. S., Loong, D., Trojanowski, L., & Bonato, S. (2018). The effectiveness of augmented versus standard individual placement and support programs in terms of employment: a systematic literature review. Journal of mental health (Abingdon, England), 27(2), 174-183. doi:https://dx.doi.org/10.1080/09638237.2017.1322180	Рор
Dibben, P., Wood, G., & O'Hara, R. (2018). Do return to work interventions for workers with disabilities and health conditions achieve employment outcomes and are they cost effective? A systematic narrative review. Employee Relations, 40(6), 999-1014. doi:10.1108/ER-01-2017-0023	Study
Doki, S., Harano, S., Shinada, K., Ohyama, A., & Kojimahara, N. (2018). [Return-to-work support programs for workers on sick leave: a systematic review and meta-analysis]. Sangyo eiseigaku zasshi = Journal of occupational health, 60(6), 169-179. doi:https://dx.doi.org/10.1539/sangyoeisei.2018-008-A	Lang
Donker-Cools, B., Daams, J., Wind, H., Frings-Dresen, M. (2016). Effective return-to-work interventions after acquired brain injury: A systematic review. Brain injury, 30(2), 113-131.	Outcome
Driessen, M. T., Proper, K. I., van Tulder, M. W., Anema, J. R., Bongers, P. M., & van der Beek, A. J. (2010). The effectiveness of physical and organisational ergonomic interventions on low back pain and neck pain: a systematic review. Occupational and environmental medicine, 67(4), 277-285.	Pop
du Plessis, C., Whitaker, L., & Hurley, J. (2020). Peer support workers in substance abuse treatment services: A systematic review of the literature. Journal of Substance Use, 25(3), 225-230. doi:10.1080/14659891.2019.1677794	Study

Durand, M. J., Corbiere, M., Coutu, M. F., Reinharz, D., & Albert, V. (2014). A review of best work-absence management and return-to-work practices for workers with musculoskeletal or common mental disorders. Work-a Journal of Prevention Assessment & Rehabilitation, 48(4), 579-589. doi:10.3233/wor-141914	Study
Ebrahim, S. (2014). Psychotherapy for depression in claimants receiving wage replacement benefits: review of the evidence. Journal of insurance medicine (New York, N.Y.), 44(1), 53-57.	Study
Egan, M., Bambra, C., Petticrew, M., & Whitehead, M. (2009). Reviewing evidence on complex social interventions: appraising implementation in systematic reviews of the health effects of organisational-level workplace interventions. Journal of Epidemiology & Community Health, 63(1), 4-11.	Study
Elders, L. A. M., Van der Beek, A. J., & Burdorf, A. (2000). Return to work after sickness absence due to back disorders—a systematic review on intervention strategies. International archives of occupational and environmental health, 73(5), 339-348.	Date
Fadyl, J. K., & McPherson, K. M. (2009). Approaches to vocational rehabilitation after traumatic brain injury: a review of the evidence. The Journal of head trauma rehabilitation, 24(3), 195-212. doi:https://dx.doi.org/10.1097/HTR.0b013e3181a0d458	Рор
Fassier, J. B., Sarnin, P., Rouat, S., Peron, J., Kok, G., Letrilliart, L., & Lamort-Bouche, M. (2019). Interventions Developed with the Intervention Mapping Protocol in Work Disability Prevention: A Systematic Review of the Literature. Journal of occupational rehabilitation, 29(1), 11-24. doi:https://dx.doi.org/10.1007/s10926-018-9776-8	Study
Fong, C. J., Murphy, K. M., Westbrook, J. D., & Markle, M. M. (2018). Psychological Interventions to Facilitate Employment Outcomes for Cancer Survivors: A Systematic Review and Meta-Analysis. Research on Social Work Practice, 28(1), 84-98. doi:10.1177/1049731515604741	WP
Franche, R. L., Cullen, K., Clarke, J., Irvin, E., Sinclair, S., Frank, J., & Institute for Work & Health (IWH) Workplace-Based RTW Intervention Literature Review Research Team. (2005). Workplace-based return-to-work interventions: a systematic review of the quantitative literature. Journal of occupational rehabilitation, 15(4), 607-631.	Sister
Garrido Larrea, P., Ansoleaga Moreno, E., Tomicic Suñer, A., Domínguez Valverde, C., Castillo Vergara, S., Lucero Chenevard, C., & Martínez Guzmán, C. (2013). Mental Health Illness and the Return to Work Process: A systematic review. Cienc. Trab, 15(48), 105-113. Retrieved from http://www.epistemonikos.org/documents/8d85850f117fb91a2dffa40bd337d12f101a677c	Retrieval
Gensby U, Labriola M, Irvin E, Amick BC 3rd, Lund T. A classification of components of workplace disability management programs: results from a systematic review. J Occup Rehabil. 2014 Jun;24(2):220-41. doi: 10.1007/s10926-013-9437-x . PMID: 23666474 .	Sister
Geurtsen, G. J., & Heugten, C. M. v. (2010). Comprehensive rehabilitation programmes in the chronic phase after severe brain injury: a systematic review: ingentaconnect.com.	Outcome
Graham, C. W., West, M. D., Bourdon, J. L., Inge, K. J., & Seward, H. E. (2016). Employment interventions for return to work in working aged adults following traumatic brain injury (TBI): A systematic review. Campbell Systematic Reviews, 12(1), i-133.	Outcome
Grimani, A., Bergström, G., Casallas, M. I. R., Aboagye, E., Jensen, I., & Lohela-Karlsson, M. (2018). Economic evaluation of occupational safety and health interventions from the employer perspective: A systematic review. Journal of occupational and environmental medicine, 60(2), 147.	Outcome

Gussenhoven, A. H., Jansma, E. P., Goverts, S. T., Festen, J. M., Anema, J. R., & Kramer, S. E. (2013). Vocational rehabilitation services for people with hearing difficulties: A systematic review of the literature. Work, 46(2), 151-164.	MD
Guzmán J, Esmail R, Malmivaara A, Karjalainen K, Irvin E, Bombardier C. (2006). Multidisciplinary biopsychosocial rehabilitation for chronic low back pain. Cochrane Database of Systematic Reviews 2006, Issue 2. [DOI: 10.1002/14651858.CD000963.pub2	Prev
Guzman, J., Esmail, R., Karjalainen, K. A., Malmivaara, A., Irvin, E., & Bombardier, C. (2002). Multidisciplinary bio-psycho-social rehabilitation for chronic low-back pain. Cochrane database of systematic reviews, (1).	Prev
Guzmán, J., Esmail, R., Karjalainen, K., Malmivaara, A., Irvin, E., & Bombardier, C. (2001). Multidisciplinary rehabilitation for chronic low back pain: systematic review. Bmj, 322(7301), 1511-1516.	Prev
Halonen, J. I., Atkins, S., & Hakulinen, H. (2017). Collaboration between employers and occupational health service providers: a systematic review of key characteristics: bmcpublichealth.biomedcentral.com.	Study
Hanif, S., Peters, H., & McDougall, C. (2017). A systematic review of vocational interventions for youth with physical disabilities. Factors in Studying. Doi:10.1108/S1479-354720170000010008	Рор
Hanson, M. A., Burton, A. K., Kendall, N. A., Lancaster, R. J., & Pilkington, A. (2006). The costs and benefits of active case management and rehabilitation for musculoskeletal disorders.	Study
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rehabilitation may improve function in survivors and decrease the economic burden of cancer to individuals and society. Work-a Journal of Prevention Assessment & Rehabilitation, 46(4), 455-472. doi:10.3233/wor-131755 Staal, J. B., Hlobil, H., van Tulder, M. W., Koke, A. J. A., Smid, T., & van Mechelen, W. (2002). Return-to-work interventions for low back pain: a descriptive review of contents and concepts of working mechanisms. Sports medicine (Auckland, N.Z.), 32(4), 251-267.40-00004.pdf Stergiopoulos, E., Cimo, A., Cheng, C., Bonato, S., & Dewa, C. S. (2011). Interventions to improve work outcomes in work-related PTSD: a systematic review. BMC public health, 11, 838. doi:https://dx.doi.org/10.1186/1471-2458-11-838 Stergiou-Kita, M., Dawson, D., & Rappolt, S. (2012). Inter-professional clinical practice guideline for vocational evaluation following traumatic brain injury: a systematic and evidence-based approach. Journal of occupational rehabilitation, 22(2), 166-181. doi:https://dx.doi.org/10.1007/s10926-011-9332-2 Stergiou-Kita, M., Grigorovich, A., & Gomez, M. (2014). Development of an inter-professional clinical practice guideline for vocational evaluation following severe burn. Burns: journal of the International Society for Burn Injuries, 40(6), 1149-1163. doi:https://dx.doi.org/10.1016/j.burns.2014.01.001 Sundstrup, E., Seeberg, K. G. V., Bengtsen, E., & Andersen, L. L. (2020). A systematic review of workplace interventions to rehabilitate musculoskeletal disorders among employees with physical demanding work. Journal of occupational rehabilitation, 30(4), 588-612. Sutton, D. A., Cote, P., Wong, J. J., Varatharajan, S., Randhawa, K. A., Yu, H., Stupar, M. (2016). Is multimodal care effective for the management of patients with whiplash-associated disorders or neck pain and associated disorders? A systematic review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration. The spine journal : official journal of the North American Spine Society, 16(12), 1541-1565. doi:htt	Abhängigkeitserkrankungen - ein systematischer Review. Ergoscience, 10(2), 55-67.	Lang
Return-to-work interventions for low back pain: a descriptive review of contents and concepts of working mechanisms. Sports medicine (Auckland, N.Z.), 32(4), 251-267.40-00004.pdf Stergiopoulos, E., Cimo, A., Cheng, C., Bonato, S., & Dewa, C. S. (2011). Interventions to improve work outcomes in work-related PTSD: a systematic review. BMC public health, 11, 838. doi:https://dx.doi.org/10.1186/1471-2458-11-838 Stergiou-Kita, M., Dawson, D., & Rappolt, S. (2012). Inter-professional clinical practice guideline for vocational evaluation following traumatic brain injury: a systematic and evidence-based approach. Journal of occupational rehabilitation, 22(2), 166-181. doi:https://dx.doi.org/10.1007/s10926-011-9332-2 Stergiou-Kita, M., Grigorovich, A., & Gomez, M. (2014). Development of an inter-professional clinical practice guideline for vocational evaluation following severe burn. Burns: journal of the International Society for Burn Injuries, 40(6), 1149-1163. doi:https://dx.doi.org/10.1016/j.burns.2014.01.001 Sundstrup, E., Seeberg, K. G. V., Bengtsen, E., & Andersen, L. L. (2020). A systematic review of workplace interventions to rehabilitate musculoskeletal disorders among employees with physical demanding work. Journal of occupational rehabilitation, 30(4), 588-612. Sutton, D. A., Cote, P., Wong, J. J., Varatharajan, S., Randhawa, K. A., Yu, H., Stupar, M. (2016). Is multimodal care effective for the management of patients with whiplash-associated disorders or neck pain and associated disorders? A systematic review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration. The spine journal: official journal of the North American Spine Society, 16(12), 1541-1565. doi:https://dx.doi.org/10.1016/j.spinee.2014.06.019 Sweetland, J., Howse, E., & Playford, E. D. (2012). A systematic review of research undertaken in vocational rehabilitation for people with multiple sclerosis. Disability and rehabilitation, 34(24),	rehabilitation may improve function in survivors and decrease the economic burden of cancer to individuals and society. Work-a Journal of Prevention Assessment & Rehabilitation, 46(4),	Study
work outcomes in work-related PTSD: a systematic review. BMC public health, 11, 838. doi:https://dx.doi.org/10.1186/1471-2458-11-838 Stergiou-Kita, M., Dawson, D., & Rappolt, S. (2012). Inter-professional clinical practice guideline for vocational evaluation following traumatic brain injury: a systematic and evidence-based approach. Journal of occupational rehabilitation, 22(2), 166-181. doi:https://dx.doi.org/10.1007/s10926-011-9332-2 Stergiou-Kita, M., Grigorovich, A., & Gomez, M. (2014). Development of an inter-professional clinical practice guideline for vocational evaluation following severe burn. Burns: journal of the International Society for Burn Injuries, 40(6), 1149-1163. doi:https://dx.doi.org/10.1016/j.burns.2014.01.001 Sundstrup, E., Seeberg, K. G. V., Bengtsen, E., & Andersen, L. L. (2020). A systematic review of workplace interventions to rehabilitate musculoskeletal disorders among employees with physical demanding work. Journal of occupational rehabilitation, 30(4), 588-612. Sutton, D. A., Cote, P., Wong, J. J., Varatharajan, S., Randhawa, K. A., Yu, H., Stupar, M. (2016). Is multimodal care effective for the management of patients with whiplash-associated disorders or neck pain and associated disorders? A systematic review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration. The spine journal : official journal of the North American Spine Society, 16(12), 1541-1565. doi:https://dx.doi.org/10.1016/j.spinee.2014.06.019 Sweetland, J., Howse, E., & Playford, E. D. (2012). A systematic review of research undertaken in vocational rehabilitation for people with multiple sclerosis. Disability and rehabilitation, 34(24),	Return-to-work interventions for low back pain: a descriptive review of contents and concepts	Study
for vocational evaluation following traumatic brain injury: a systematic and evidence-based approach. Journal of occupational rehabilitation, 22(2), 166-181. doi:https://dx.doi.org/10.1007/s10926-011-9332-2 Stergiou-Kita, M., Grigorovich, A., & Gomez, M. (2014). Development of an inter-professional clinical practice guideline for vocational evaluation following severe burn. Burns: journal of the International Society for Burn Injuries, 40(6), 1149-1163. doi:https://dx.doi.org/10.1016/j.burns.2014.01.001 Sundstrup, E., Seeberg, K. G. V., Bengtsen, E., & Andersen, L. L. (2020). A systematic review of workplace interventions to rehabilitate musculoskeletal disorders among employees with physical demanding work. Journal of occupational rehabilitation, 30(4), 588-612. Sutton, D. A., Cote, P., Wong, J. J., Varatharajan, S., Randhawa, K. A., Yu, H., Stupar, M. (2016). Is multimodal care effective for the management of patients with whiplash-associated disorders or neck pain and associated disorders? A systematic review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration. The spine journal : official journal of the North American Spine Society, 16(12), 1541-1565. doi:https://dx.doi.org/10.1016/j.spinee.2014.06.019 Sweetland, J., Howse, E., & Playford, E. D. (2012). A systematic review of research undertaken in vocational rehabilitation for people with multiple sclerosis. Disability and rehabilitation, 34(24),	work outcomes in work-related PTSD: a systematic review. BMC public health, 11, 838.	MD
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workplace interventions to rehabilitate musculoskeletal disorders among employees with physical demanding work. Journal of occupational rehabilitation, 30(4), 588-612. Sutton, D. A., Cote, P., Wong, J. J., Varatharajan, S., Randhawa, K. A., Yu, H., Stupar, M. (2016). Is multimodal care effective for the management of patients with whiplash-associated disorders or neck pain and associated disorders? A systematic review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration. The spine journal : official journal of the North American Spine Society, 16(12), 1541-1565. doi:https://dx.doi.org/10.1016/j.spinee.2014.06.019 Sweetland, J., Howse, E., & Playford, E. D. (2012). A systematic review of research undertaken in vocational rehabilitation for people with multiple sclerosis. Disability and rehabilitation, 34(24),	clinical practice guideline for vocational evaluation following severe burn. Burns: journal of the International Society for Burn Injuries, 40(6), 1149-1163.	Study
(2016). Is multimodal care effective for the management of patients with whiplash-associated disorders or neck pain and associated disorders? A systematic review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration. The spine journal: official journal of the North American Spine Society, 16(12), 1541-1565. doi:https://dx.doi.org/10.1016/j.spinee.2014.06.019 Sweetland, J., Howse, E., & Playford, E. D. (2012). A systematic review of research undertaken in vocational rehabilitation for people with multiple sclerosis. Disability and rehabilitation, 34(24),		Outcome
vocational rehabilitation for people with multiple sclerosis. Disability and rehabilitation, 34(24),	disorders or neck pain and associated disorders? A systematic review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration. The spine journal: official journal of the North American Spine Society, 16(12), 1541-1565.	WP
	vocational rehabilitation for people with multiple sclerosis. Disability and rehabilitation, 34(24),	Study

Managing employees' depression from the employees', co-workers' and employers' perspectives. An integrative review. Disability and Rehabilitation, 42(4), 445-459. doi:10.1080/09638288.2018.1499823 Thomson, L., Neathey, F., & Rick, J. (2003). Best practice in rehabilitating employees following absence due to work-related stress. HSE Books.	RQ Study
absence due to work-related stress. HSE Books. Tilbury, C., Schaasberg, W., Plevier, J. W., Fiocco, M., Vliet-Vlieland, T. P., & Nelissen, R. G. (2013). RETURN TO WORK AFTER TOTAL KNEE AND HIP ARTHROPLASTY: A SYSTEMATIC REVIEW.	Study
(2013). RETURN TO WORK AFTER TOTAL KNEE AND HIP ARTHROPLASTY: A SYSTEMATIC REVIEW.	
ISI>://WOS:000331587904139	Abs
Tompa, E., Dolinschi, R., & De Oliveira, C. (2007). A Systematic Review of OHS Interventions with Economic Evaluations: Volume 1 & Volume 2-Appendices. Institute for Work & Health.	Sister
Tompa, E., Dolinschi, R., de Oliveira, C., & Irvin, E. (2009). A systematic review of occupational health and safety interventions with economic analyses. Journal of occupational and environmental medicine, 51(9), 1004-1023.	Sister
Trenaman, L. M., Miller, W. C., & Escorpizo, R. (2014). Interventions for improving employment outcomes among individuals with spinal cord injury: A systematic review. Spinal Cord, 52(11), 788-794. doi:10.1038/sc.2014.149	Study
Trivedi, D. (2018). Cochrane Review Summary: Interventions to improve return to work in depressed people. Primary health care research & development, 19(2), 107-109. doi:https://dx.doi.org/10.1017/S1463423617000482	Study
Tune, K., & Butler, J. (2012). Effectiveness of vocational rehabilitation after acquired brain injury: a systematic review. British Journal of Occupational Therapy, 75, 116-117. Retrieved from <go isi="" to="">://WOS:000209478500260</go>	Study
Van De Cauter, J., Verbrugghe, M., Van De Velde, D., & Braeckman, L. (2019, September). Return-to-Work of Transgender Patients: What do We Know so Far? A Systematic Review. International Journal of Sexual Health. (Vol. 31, pp. A381-A382).	Protocol
van der Giessen, R. N. (2012). The effectiveness of graded activity in patients with non-specific low-back pain: a systematic review. Disability and Rehabilitation, 34(13). doi:http://dx.doi.org/10.3109/09638288.2011.631682	MD
van Egmond, M. P., Duijts, S. F. A., van Muijen, P., van der Beek, A. J., & Anema, J. R. (2017). Therapeutic Work as a Facilitator for Return to Paid Work in Cancer Survivors. Journal of Occupational Rehabilitation, 27(1), 148-155. doi:10.1007/s10926-016-9641-6	Study
van Oostrom, S. H., Driessen, M. T., de Vet, H. C., Franche, R. L., Schonstein, E., Loisel, P., & Anema, J. R. (2009). Workplace interventions for preventing work disability. Cochrane database of systematic reviews, (2).	Prev
van Tulder MW, Ostelo R, Vlaeyen JWS, et al. Behavioral treatment for chronic low back pain: a systematic review within the framework of the Cochrane Back Review Group. Spine 2000;25:2688–99.	Date
Varekamp, I., Verbeek, J. H., & van Dijk, F. J. (2006). How can we help employees with chronic diseases to stay at work? A review of interventions aimed at job retention and based on an empowerment perspective. International archives of occupational and environmental health,	Study

Vargas-Prada, S., Demou, E., Lalloo, D., Avila-Palencia, I., Sanati, K. A., Sampere, M., Macdonald, E. B. (2016). Effectiveness of very early workplace interventions to reduce sickness absence: a systematic review of the literature and meta-analysis. Scandinavian journal of work, environment & health, 42(4), 261-272. doi:https://dx.doi.org/10.5271/sjweh.3576	MD
Verbeek, J. H., Martimo, K., Karppinen, J., Kuijer, P. P. F., Viikari-Juntura, E., & Takala, E. (2011). Manual material handling advice and assistive devices for preventing and treating back pain in workers. Cochrane Database of Systematic Reviews, N.PAG-N.PAG.	Int
Verhagen 2007 Exercise proves effective in a systematic review of work-related complaints of the arm, neck, or shoulder Missing	Outcome
Volter-Mahlknecht, S., & Rieger, M. A. (2014). Patient care at the interface between rehabilitation and occupational health physicians - a systematic literature review focusing health care organization. Deutsche Medizinische Wochenschrift, 139(31-32), 1609-1614. doi:10.1055/s-0034-1370189	Lang
Waddell, G., & Burton, A. K. (2001). Occupational health guidelines for the management of low back pain at work: evidence review. Occupational medicine (Oxford, England), 51(2), 124-135.	Study
Waddell, G., Burton, A. K., & Kendall, N. A. S. (2016). Vocational rehabilitation—what works, for whom, and when? Report for the Vocational Rehabilitation Task Group. 2008.	Study
Wagner, S. L., Koehn, C., White, M. I., & Harder, H. G. (2016). Mental health interventions in the workplace and work outcomes: a best-evidence synthesis of systematic reviews: ncbi.nlm.nih.gov.	Study
Wagner, S. L., White, M. I., Schultz, I. Z., Williams-Whitt, K., Koehn, C., Dionne, C. E., & Wright, M. D. (2015). Social support and supervisory quality interventions in the workplace: a stakeholder-centered best-evidence synthesis of systematic reviews on work outcomes. The international journal of occupational and environmental medicine, 6(4), 189.	Study
Wei, X. J., Liu, X. F., & Fong, K. N. K. (2016). Outcomes of return-to-work after stroke rehabilitation: A systematic review. British Journal of Occupational Therapy, 79(5), 299-308. doi:10.1177/0308022615624710	Int
Weir, R., & Nielson, W. R. (2001). Interventions for disability management. The Clinical journal of pain, 17(4 Suppl), S128-132.	Study
Wennman-Larsen, A., Petersson, L. M., & Alexanderson, K. (2010). Return to work after breast cancer-an exploratory systematic literature review. European Journal of Public Health, 20, 59-60. Retrieved from <go isi="" to="">://WOS:000283675900155</go>	Study
Wiese, M., Kramer, J., Becker, C., Nentwig, V., Theodoridis, T., & Teske, W. (2009). [Back school - an update]. Ruckenschule heute., 147(2), 194-198. doi:https://dx.doi.org/10.1055/s-2008-1039234	Lang
Williams A.C., Eccleston C., Morley S. (2012). Psychological therapies for the management of chronic pain (excluding headache) in adults. Cochrane Database Syst Rev 11:CD007407. https://doi.org/10.1002/14651858.CD007407.pub3	Outcome
Williams, R. M., Westmorland, M. G., Lin, C. Y., Schmuck, G., & Creen, M. (2006). A systematic review of workplace rehabilitation interventions for work-related low back pain. International Journal of Disability Management, 1(1), 21-30.	Sister
	•

Williams-Whitt, K., White, M. I., & Wagner, S. L. (2015). Job demand and control interventions: a stakeholder-centered best-evidence synthesis of systematic reviews on workplace disability: ncbi.nlm.nih.gov.	Study
Wong, J., Kallish, N., Crown, D., Capraro, P., Trierweiler, R., Wafford, Q. E., Heinemann, A. W. Job Accommodations, Return to Work and Job Retention of People with Physical Disabilities: A Systematic Review. Journal of Occupational Rehabilitation. doi:10.1007/s10926-020-09954-3	MD
Wright, M., Marsden, S., & Antonelli, A. (2004). Building an evidence base for the Health and Safety Commission Strategy to 2010 and beyond: a literature review of interventions to improve health and safety compliance. HSE Books.	Study
Wynne-Jones, G., Cowen, J., Jordan, J. L., Uthman, O., Main, C. J., Glozier, N., & van der Windt, D. (2014). Absence from work and return to work in people with back pain: a systematic review and meta-analysis. Occupational and environmental medicine, 71(6), 448-456.	Int
Yu, C. H., & Mathiowetz, V. (2014). Systematic review of occupational therapy—related interventions for people with multiple sclerosis: Part 1. Activity and participation. American Journal of Occupational Therapy. Retrieved from https://ajot.aota.org/article.aspx?articleid=1863111	Study
Yuen, A., Sugeng, Y., Weiland, T. J., & Jelinek, G. A. (2010). Lifestyle and medication interventions for the prevention or delay of type 2 diabetes mellitus in prediabetes: a systematic review of randomised controlled trials. Australian and New Zealand journal of public health, 34(2), 172-178.	MD
Zampolini, M., Bernardinello, M., & Tesio, L. (2007). RTW in back conditions. Disability and rehabilitation, 29(17), 1377-1385.	Study
Zhang, X., & Zhou, L. (2013). Cochrane review summary for cancer nursing: interventions to enhance return to work for cancer patients. Cancer nursing, 36(1), 4-5. doi:https://dx.doi.org/10.1097/NCC.0b013e318277b564	Study

Abs=Abstract, Int=Intervention does not meet inclusion criteria, Lang = Language, MD=Intervention not multi-disciplinary, Prev=Previous version of review, WP= Intervention not based in workplace

Table 17: Reasons for exclusion - primary studies

Andersen LN, Juul-Kristensen B, Roessler KK, et al. (2015) Efficacy of 'tailored physical activity' on reducing sickness absence among health care workers: A 3-month randomised controlled trial. Manual Therapy 20: 666–671 Allaire SH, Li W, LaValley MP (2003) Reduction of job loss in persons with rheumatic diseases receiving vocational rehabilitation: a randomized controlled trial. Arthritis Rheum 48:3212–18 Allaire SH, Niu J, LaValley MP (2005) Employment and satisfaction outcomes from a job retention intervention delivered to persons with chronic diseases. Rehabil Couns Bull;48:100–9 Allen RG & Ritzel DO (1997) Return-to-work Program.Professional Safety, 42(9): 24	eason for exclusion
rheumatic diseases receiving vocational rehabilitation: a randomized controlled trial. Arthritis Rheum 48:3212–18 Allaire SH, Niu J, LaValley MP (2005) Employment and satisfaction outcomes from a job retention intervention delivered to persons with chronic diseases. Rehabil Couns Bull;48:100–9 Allen RG & Ritzel DO (1997) Return-to-work Program.Professional Safety, 42(9): 24 Altmaier EM, Lehmann TR, Russell DW, Weinstein JN, Kao CH (1992) The effectiveness of psychological interventions for the rehabilitation of low back pain: a randomised controlled trial evaluation. Pain;49:329-35 Badii M, Keen DY (2006) Workplace-based Program to reduce occupational musculoskeletal injury and its associated morbidity in a large hospital.Journal of Occupational & Environmental Medicine; 48(11): 1159-1165 Bendix AF, Bendix T, Hæstrup C, et al. (1998) A prospective, randomized five-year follow-up study of functional restoration in chronic low back pain	IMD
outcomes from a job retention intervention delivered to persons with chronic diseases. Rehabil Couns Bull;48:100–9 Allen RG & Ritzel DO (1997) Return-to-work Program.Professional Safety, 42(9): 24 Altmaier EM, Lehmann TR, Russell DW, Weinstein JN, Kao CH (1992) The effectiveness of psychological interventions for the rehabilitation of low back pain: a randomised controlled trial evaluation. Pain;49:329-35 Badii M, Keen DY (2006) Workplace-based Program to reduce occupational musculoskeletal injury and its associated morbidity in a large hospital.Journal of Occupational & Environmental Medicine; 48(11): 1159-1165 Bendix AF, Bendix T, Hæstrup C, et al. (1998) A prospective, randomized five-year follow-up study of functional restoration in chronic low back pain	Outcome
Altmaier EM, Lehmann TR, Russell DW, Weinstein JN, Kao CH (1992) The effectiveness of psychological interventions for the rehabilitation of low back pain: a randomised controlled trial evaluation. Pain;49:329-35 Badii M, Keen DY (2006) Workplace-based Program to reduce occupational musculoskeletal injury and its associated morbidity in a large hospital. Journal of Occupational & Environmental Medicine; 48(11): 1159-1165 Bendix AF, Bendix T, Hæstrup C, et al. (1998) A prospective, randomized five-year follow-up study of functional restoration in chronic low back pain	Outcome
The effectiveness of psychological interventions for the rehabilitation of low back pain: a randomised controlled trial evaluation. Pain;49:329-35 Badii M, Keen DY (2006) Workplace-based Program to reduce occupational musculoskeletal injury and its associated morbidity in a large hospital. Journal of Occupational & Environmental Medicine; 48(11): 1159-1165 Bendix AF, Bendix T, Hæstrup C, et al. (1998) A prospective, randomized five-year follow-up study of functional restoration in chronic low back pain	No FT
musculoskeletal injury and its associated morbidity in a large hospital.Journal of Occupational & Environmental Medicine; 48(11): 1159- 1165 Bendix AF, Bendix T, Hæstrup C, et al. (1998) A prospective, randomized five-year follow-up study of functional restoration in chronic low back pain	opulation
five-year follow-up study of functional restoration in chronic low back pain	No FT
patients. Lui Spine 3,7.111–3	IWP
Bendix AF, Bendix T, Labriola M, et al. (1998) Functional restoration for chronic low back pain: two-year follow-up of two randomized clinical trials. Spine;23:717–25	IWP
Bendix AF, Bendix T, Lund C, et al. (1997) Comparison of three intensive programs for chronic low back pain patients: a prospective, randomized, observerblinded study with one-year follow-up. Scand J Rehabil Med 1997;29:81–9	IWP
Bendix T, Bendix AF, Labriola M, et al. (2000) Functional restoration versus outpatient physical training in chronic low back pain: a randomized comparative study. Spine;25:2494–500	IWP
Bernacki EJ, Guidera JA, Schaefer JA, & Tsai S (2000) A Facilitated Early Return to Work Program at a large urban medical center, Journal of Occupational and Environmental Medicine, 42(12): 1172-1177	No FT
Bernacki EJ, Guidera JA, Schaefer JA, Lavin RA, Tsai SP (1991). An ergonomics program designed to reduce the incidence of upper extremity work related musculoskeletal disorders. J Occup Environ Med; 41: 1032–1041	Study

Bernacki EJ, Tsai SP (1996) Managed care for workers' compensation: Three years of experience in an 'employee choice' state. J Occup Environ Med; 38: 1091–1097	No FT
Bernacki EJ, Tsai SP (2003) Ten years' experience using an integrated workers' compensation management system to control workers' compensation costs. J Occup Environ Med; 45: 508–516	No FT
Bjorkelund C, Svenningsson I, Hange D, Udo C, Petersson E, Ariai N, Nejati S, et al. (2018) Clinical effectiveness of care managers in collaborative care for patients with depression in Swedish primary health care: a pragmatic cluster randomized controlled trial. <i>BMC Family Practice</i> 2018; 19 (1):28	IWP
Blonk RWB, Brenninkmeijer V, Lagerveld SE, et al. (2006) Return to work: A comparison of two cognitive behavioural interventions in cases of work-related psychological complaints among the self-employed. Work Stress;20:129–44	IMD
Breslin R& Olsheski J (1996) The impact of a Transitional Work Return Program on lost time: Preliminary data from the Minister Machine company. National Association of Rehabilitation Professionals in the Private Sector; 11: 35-40	No FT
Brooker A-S, Cole DC, Hogg-Johnson S, Smith J, Frank JW (2001) Modified work: Prevalence and characteristics in a sample of workers with soft-tissue injuries. J Occup Environ Med; 43: 276–284	IMD
Brouwer S, Reneman MF, Bültmann U et al. (2010) A prospective study of return to work across health conditions: perceived work attitude, self-efficacy and perceived social support. J Occup Rehabil 20: 104-112	Study
Brouwers EP, Tiemens BG, Terluin B et al. (2006) Effectiveness of an intervention to reduce sickness absence in patients with emotional distress or minor mental disorders: a randomized controlled effectiveness trial. Gen Hosp Psychiatry 28: 223-229	IMD
Brox JI, Frøystein O (2005) Health-related quality of life and sickness absence in community nursing home employees: randomized controlled trial of physical exercise. Occup Med (Lond);55:558–563	Population
Bunn WB, Baver RS, Thomas KE, Stowers AD, Taylor DD, Holloway AM, Doung D, Pikelny DB, Sotolongo D (2006) Impact of a Musculoskeletal Disability Management Program on medical costs and productivity in a large manufacturing company. The American Journal of Managed Care	
2006; 12: 27-39 Bunn WB, Pikelny DB, Slavin TJ, Paralkar S. Health, safety, and productivity	Study
in a manufacturing environment. Journal of Occupational and Environmental Medicine. 2001; 43:47-55.	No FT
Burton WN & Conti DJ.Disability Management: corporate medical department management of employee health and productivity. Journal of Occupational -and Environmental Medicine 2000; 42(10): 1006-	
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	Study

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Abs=Abstract, Int=Intervention does not meet inclusion criteria, Lang = Language, IMD=Intervention not multi-disciplinary, IWP=Intervention not based in workplace, No FT=No Full text,

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Supplementary Materials 1

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	w PIC studie clusio	O fo s rel n cri	regar r prim lates t iteria iew (\	ary o for	Review inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	studies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies / studies
Arends 2012;(1) Cochrane SR: RCT	To assess the effects of interventions facilitating RTW for workers with acute or chronic adjustment disorders	Pharmacological interventions may improve RTW by reducing MH complaints related to the adjustment disorder, caused by the medication. The effect of psychological interventions, especially CBT and PST, on RTW is hypothesised to be established through one (or both) of two routes. Firstly, by addressing cognitions, behaviours & problems related to the adjustment disorder, MH may improve. The improved MH could then facilitate RTW. Secondly, focussing on cognitions, behaviours and problems that are work-related may induce adaptive cognitions & find solutions for the work-related problems to enhance RTW. Also, when a graded activity approach is part of psychological intervention, RTW could be facilitated by gradually building up exposure to the work environment & work tasks. Relaxation techniques & exercise progs may influence RTW by introducing enjoyable activities which create an	1. Time until partial RTW (a) no of sick leave days until partial RTW, (b) total no of partial sick leave day during follow-up, (c) rate of partial RTW at follow-up 2. Time until full RTW (a) no of sick leave day until full RTW, (b) total no of days of full-time sick leave during follow-up, (c)	MA	N	Y	N	N	1	Participant characteristics - Workers (18 to 65 years of age) with work disability related to an adjustment disorder causing sick leave. Diagnosis - Studies were included when participants had a main diagnosis of adjustment disorder based on the DSM-IV or ICD-10 criteria. Studies were also included when the authors stated that a diagnosis of adjustment disorder, burnout or neurasthenia was made by a qualified medical or psychological professional based on a classification system or by excluding other psychiatric disorders based on the DSM-IV or ICD-10. Studies were included when participants reported a distinct level of (di)stress-related symptoms or burnout-related symptoms assessed by a (di)stress or burnout scale of a validated self-report questionnaire. Studies were excluded if it was clear that more than 30% of the participants (a) suffered from moderate to severe depression or anxiety	High, Low	1 of 10

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov si inc	ertain PICC udies lusior prella	for prelate crite	orima es to eria fo	ary o or	Review inclusion/exclusion criteria	g, Relevance to Medium/ Low)	/total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, review aim (High/ Mo	No. relevant studies /
		understanding of the importance of a balance between work and leisure	rate of full RTW at follow-up							disorder, (b) were diagnosed with other psychiatric disorders than adjustment disorder, or (c) were diagnosed with physical disorders		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	w PICo tudie clusio	O for s rela n crit	regard prima ites to eria f ew (Y,	ary o or	Review inclusion/exclusion criteria	g, Relevance to Medium/ Low)	/total included s
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Axen 2020;(2) SR: RCT, Quasi- experiment al, Longitudinal , SR	To synthesize the research literature regarding OHS interventions targeting the prevention or reduction of CMD among employees	OHS may act in the preventive field to ensure that ill health is prevented or minimized, as well as having a role in facilitating RTW through rehabilitation and work adaptations when ill health has occurred. As the OHS is operating in the workplace setting, knowledge about the specific work situation is good, and investigations and interventions can be directed appropriately both on an individual, group, and organizational level	Workability (SA, RTW and self-reported workability)	Narrative	N	Y	N	N	1	Included - Population: studies investigating employees at risk or diagnosed with CMD, preventive workplace intervention targeting MH. Intervention: studies, where the recruitment or the intervention was delivered by the OHS or OHS personnel, Control: individuals or groups who did not receive the target. Outcome: All types of outcomes concerning SA, including RTW, and psychological health. Publications written in English, Danish, Norwegian, or Swedish language. All types of OHS if they were labelled as such. Any type of intervention to prevent or reduce the risk of CMD or consequences thereof on an individual or at the organizational level was included. Longitudinal studies with baseline and follow-up measurements were included. Studies, where it was not possible to clearly understand the intervention through reading, were excluded	Low, High	7 of 21

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	w PIC tudie clusio	O for s re on cr	or pri elate: riteri	ardin imary s to ia for (Y/N)		ng, Relevance to Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	Outcome	Other		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Baldwin 2011;(3) SR: RCT, Case- control, Cohort	To determine the effect of VR programs on RTW rates post-stroke	VR is a specific program of medical, psychological, social, physical, and/or occupational rehabilitation activities with a primary aim to re-establish the sick or injured to RTW or availability for work. The services are tailored to match an employee's capacity and include negotiating suitable duties at the workplace. The UK NSF highlights the need for local or specialist multidisciplinary teams to enable individuals to enter or RTW, remain, or return to existing jobs, prepare and retrain for alternative job options, and access appropriate alternative occupational and educational opportunities	RTW, defined as returning to a vocation that is inclusive of employment, unpaid labour, leisure, unemployment, and retirement following a stroke	Narrative	Y	Υ	Y	· N	1 3	Adults of working age (18 to 65 years) who had survived a stroke and had participated in a VR program, which was defined as a specific program of medical, psychological, social, physical, and/or occupational rehabilitation activities. The exclusion criteria were the following: any other type of rehabilitation that did not specifically address vocation; other diagnostic groups or studies where the stroke population results were not reported independently; and publications that were not translated into English	High, Low	2 of 6

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertain v PICC tudies clusion brella	o for rela	prima ites to eria f	ary o or	Review inclusion/exclusion criteria	z, Relevance to Aedium/ Low)	/total included s
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Brewer 2007;(4) SR: Control or Concurrent comparison	To evaluate the effect of IPCs on reducing the frequency and/or severity of workplace injuries	In a workplace, there are three functional levels in most organizations. The policy level is associated with top management. The procedures level is a function of middle management, while actual work practices are at a lower or general worker level. Functional divisions by organizational level are seldom this clear-cut and are often known by other names. The policies, procedures and practices combine to create workplace IPCs. What separates prevention strategies and control strategies is not absolute; prevention is the activities that focus on preventing injuries, while control strategies focus on minimizing losses associated with injuries once they have occurred. This approach to planning provides a practical explanation of IPCS	RTW	Best- evidence synthesis	N	Υ	N	N	1	Workplaces employing adults (18 years+). Intervention: primary and secondary prevention of illness/injury. Outcomes: injuries/illnesses, worker compensation claim/costs. Only studies with a control group or concurrent comparison group were included. English, Spanish or French. Excluded: agricultural/migrant/tele-/home offices workers, military installations, commercial fishing, workplaces employing 17 years old and younger, laboratory studies, reviews, commentary, letter to the editor, editorial, or <2 pages long. Policies that addressed the following areas were excluded: employee assistance programs, violence prevention, substance abuse, Americans with Disabilities Act, quality management, health-care utilization, and MH/illness	High, High	6 of 53

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertain w PICC tudies clusior brella	o for rela	prim tes to eria f	ary o for	Review inclusion/exclusion criteria	ng, Relevance to 'Medium/ Low)	es /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Carroll 2010;(5) SR: Controlled Longitudinal (RCT, Controlled Trials), Economic evaluations	To determine whether interventions involving the workplace are more effective and cost-effective at helping employees on sick leave RTW than those that do not involve the workplace at all	Reviews of prognostic factors predicting RTW or reduced sick leave among employees have found that supervisor and co-worker support, levels of job demand and control, ergonomics, the adaptation of job tasks and working hours and contact between health providers and the workplace may all predict effective RTW among employees on sick leave with MSK or related back pain. To be categorised as involving the workplace, an intervention either had to take place in full or in part at the workplace of the employee or had to directly involve input from or contact with the employer or a representative (employee's supervisor or employer's OHS)	RTW	Narrative	N	Y	N	N	1	The population had to consist of employees (full/part-time) on long-term sick leave (2 working weeks) at the time of the intervention; The intervention had to involve the workplace; The control treatment could not include any involvement of the workplace; The study had to report data on the primary outcome - RTW; The study had to be a controlled longitudinal study/ a cost-benefit/ CE analysis of one or more controlled longitudinal studies; English language only; 1990 onwards only. Studies were excluded if: They did not fulfil the above criteria; The workplace element of the intervention consisted only of education or advice concerning ergonomics or the workplace, without either a worksite visit or contact with the workplace or employer; The sample was self-employed; The sample was a mixed population (participants both on sick leave and in work) or (employees and the unemployed), and discrete outcomes for the participants in formal employment were not reported separately	Moderate, High	8 of 11

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	w PIC tudie clusio	O for s rela n crit	regard prima ates to eria fo ew (Y)	ary o for	Review inclusion/exclusion criteria	ng, Relevance to 'Medium/Low)	ss /total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Chou 2017 (The newest version of 2016);(6) SR: SR, RCT	To review the current evidence on the benefits and harms of nonpharmaco logic therapies for low back pain	Nonpharmacologic therapies: exercise, spinal manipulation, acupuncture, massage, mind-body interventions (yoga, tai chi, mindfulness-based stress reduction), psychological therapies, or multidisciplinary rehabilitation - coordinated program with both physical and biopsychosocial treatment components (at minimum) and are provided by professionals from at least two different specialities	RTW	Narrative synthesis, MA results for SR	Y	Y	Y	N	3	The population was adults with acute (<4 weeks), subacute (4 to 12 weeks), or chronic (≥12 weeks) non-radicular or radicular LBP. The intervention was randomized trials of exercise, spinal manipulation, acupuncture, massage, mind-body interventions, psychological therapies, or multidisciplinary rehabilitation versus sham treatment, wait list, or usual care, as well as comparisons between 1 therapy and another. Outcomes were long-term (≥1 year) or short-term (≤6 months) pain, function, RTW, and harm. Excluded conditions were LBP due to cancer or pregnancy, infection, inflammatory arthropathy, high-velocity trauma, or fracture and the presence of severe or progressive neurologic deficits. We included RCTs and SR of RCT. We did not include SR identified in update searches but checked reference lists for additional studies. We excluded non—English language articles and abstract-only publications	Moderate, Low	NA

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertain w PICO tudies clusion brella	O for s rela	prim tes to eria f	ary o for	Review inclusion/exclusion criteria	ing, Relevance to / Medium/ Low)	es /total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Cocchiara 2018;(7) SR of SRs: SR, NR	To identify factors influencing RTW after breast cancer, interventions to facilitate it	Comprehensive rehabilitation, including physical, pharmacological, and psychological approaches aimed to improve global quality of life and specifically to enhance RTW and employment for cancer survivors	RTW, work ability, work performance	Descriptiv e	N	Y	N	Y	2	Outcome: RTW or maintaining employment of adult women after specific treatment for breast cancer. Reviews without any restriction of the year of publication or language	Low,	All SRs
Cochrane 2017;(8) SR: RCTs, Cluster Randomized trials and Quasi-RCT	To determine the effectiveness of early multidisciplin ary interventions in promoting work participation and reducing work absence in adults with regional MP	Acknowledgement of the multicausal nature of work absence and disability suggests that programmes that address the range of relevant biopsychosocial factors might be most effective in reducing SA and promoting RTW. In the absence of fixed or standard components of the biopsychosocial model, we adopted the criterion; the intervention comprised a physical (bio-) component and at least one psychosocial element. Physical/bio: The participant was assessed by a health professional for causes of their pain and received exercise/physical therapy if indicated Psychological, for example, education, self-management training, coping with pain and unhelpful beliefs,	Duration of sick leave or time to RTW.	MA	N	Y	N	N	1	People aged ≥18 with MP who met the following criteria: ≥80% were in paid employment at the time of recruitment; •≤three months sickness absence from work, related to MP, if the sample involved participants with longer periods of sick leave, the study was included if < 20% of the sample had > three months sick leave. Trials focused on patients with inflammatory conditions were excluded. We considered trials with mixed populations if the inflammatory conditions comprised < 10% of the overall sample. We planned to consider work productivity, presenteeism and healthcare utilisation if enough trials included these as outcomes. Studies of CE were included if conducted alongside or after a trial that met the inclusion	High, High	9 of 20

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov si inc	v PICO tudie: lusio:	O for rela	regard r primates to teria fiew (Y	ary o for	Review inclusion/exclusion criteria	g, Relevance to Medium/ Low)	/total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
		counselling and cognitive behavioural approaches. Social/occupational, for example, workplace assessment and adaptations or barriers to work, development of communication and problem-solving skills								criteria. We included trials that reported outcomes for short-term (e.g., 3–6 months) and long-term follow-up (e.g., 12 months or longer). Trials of primary prevention for healthy workers and surgical interventions were excluded		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s ind	w PIC tudie clusio	O for s rela n crit	regare primates to teria f ew (Y	ary o for	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, review aim (High/ Mo	No. relevant studi stu
Corbiere 2006;(9) SR: Cluster RCT, Controlled Trials, Non- RCT	To describe psychological RTW interventions for people with MH problems and/or physical injuries, and to summarize the impact of these RTW interventions on work and health outcomes	Interdisciplinary approaches are now recognized as the most effective treatment options for helping people with chronic pain RTW. It is important to integrate several components of psychological interventions such as CBT into treatment programs to help people with musculoskeletal injuries RTW	Sick leave is defined as an absence from work because of illness due to work-related causes.	Descriptiv e	Y	Υ	N	N	2	The study inclusion criteria were: the interventions were offered to employees experiencing absence due to work-related causes, RTW oriented, and had psychological components focusing on MH problems. They could be implemented either in the context of primary care or in the workplace. The intervention participants were (a) 100% absent from work and 100% employed prior to and during the intervention, or (b) 100% absent from work and a mix of both employed and unemployed prior to and during the intervention. The study exclusion criteria were (a) interventions that were designed as a transitional employment service or supported employment program, (b) interventions that included job-seeking components, and (c) interventions not aimed at RTW. Studies involving RTW interventions aimed at improving the ability of employees on sick leave, with or without work-related physical injuries, to cope with or manage MH problems were included	Low, Low	2 of 14

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertain w PICO tudies clusion brella	O for s rela n crit	prim ates to teria f	ary o for	Review inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
de Oliveira 2020;(10) SR: B&A Case- control, Pretest-post test, Economic evaluation	To analyse the economic or financial return of interventions targeting MH and substance use disorders in the workplace	Initiatives around promotion, prevention, and early intervention can provide positive returns on investment. The initiative had to target MH or substance misuse, or both, improve an outcome related to work, and be provided in a workplace or be sponsored by the employer	Outcome related to work e.g., productivity, no of days SA	Narrative	N	Y	N	N	1	Included all studies targeting employed adults (≥18 years). Our population excluded unpaid workers, and individuals related to workers (e.g., spouses). The intervention had to target MH or substance misuse, or both, and be provided in a workplace or be sponsored by the employer. Studies were excluded if the intervention was implemented at a jurisdictional level. All studies on workplace interventions of supported employment or accommodation were excluded. The comparator had to be usual care or no care; studies without a control or comparison group were excluded (except studies with pre-test and post-test analyses of the same population). Included outcomes related to work, such as productivity; and economic or financial-related outcomes, such as return on investment. Studies were excluded that did not assess MH or substance misuse, or that examined disorders related to sleep. We searched literature published in English, French, German, Portuguese, Spanish, and Korean between Jan 1, 2000, and Dec 31, 2018	Moderate, Low	2 of 56

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertain w PICC tudies clusion brella	O for s rela	prima tes to eria f	ary o or	Review inclusion/exclusion criteria	quality rating, Relevance to aim (High/ Medium/ Low)	es /total included lies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Dewa 2021;(11) SR: Original research, Comparison group, RCT, Retrospectiv e two group CT	To examine the cost- effectiveness of RTW interventions targeted at workers with medically certified SA related to mental disorders	Economic evaluations of RTW interventions targeted at workers with medically certified SA related to mental disorders	RTW: SA included sick leave, disability leave (e.g., short-term and long- term)	Descriptiv e, Narrative, Economic analysis	N	Y	N	N	1	Study inclusion criteria were: 1. The study sample was comprised of workers on medically certified SA due to mental disorders. 2. The evaluated intervention focused on RTW. 3. The evaluation included a comparison group. 4. The paper reports original research. Exclusion criteria were: 1. The study sample was not comprised of workers on medically certified SA due to mental disorders. 2. The paper was a review article or commentary. 3. A comparison program was not used in the evaluation. 4. The intervention did not focus on RTW. We included studies based on data that were conducted in 2000 or later. Studies using pre-2000 data were excluded	Moderate,	2 of 10
Dewa 2015;(12) SR: Cluster RCT, RCT	To examine the effectiveness of RTW interventions that incorporate work-related problem-solving skills for workers	Stress management programmes can target three points in the stress cycle by: (1) changing the degree of stress, (2) helping workers to modify how they perceive stressors, and (3) helping workers gain skills to cope effectively with stress. Coping theory suggests that there are two major types of coping approaches: problem-focused and emotion-focused. The former of these two types of coping styles have been observed to be	(1) whether and (2) how long it took for a worker to RTW	Descriptiv e, Narrative	N	Y	N	Υ	2	The following eligibility criteria: The study sample was comprised of workers on medically certified SA due to mental disorders. SA included sick leave, short-term and long-term disability leave. SA benefits could be either publicly or privately sponsored. Studies that looked at 'no cause' SA were included and absence was not required to be work-related; The evaluated intervention included work-focused problem-solving skills; The study assessed effectiveness in terms of RTW	Low,	2 of 6

Author, date; Type of review: type of studies included	Review aim			may work relevance to umbrella review			Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)				ary o for	Review inclusion/exclusion criteria	ing, Relevance to / Medium/ Low)	es /total included lies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies		
	with SA related to mental disorders	significantly associated with decreased SA. Examples of problem-focused coping include problem-solving therapies. Teaching new skills to workers who are receiving disability benefits are aimed at enabling them to solve work-related problems. Evidence suggests that these skills help to develop a sense of control regarding stressors. In turn, this can moderate the effects of work stressors that could contribute to disability and ill health								outcomes. Studies included from 2002: we included studies based on data that were conducted in 2000 or later				
Dick 2011;(13) SR: RCTs, Cohort studies, SRs	To assess the effectiveness of workplace interventions in four common upper limb disorders	Workplace intervention for workers with carpal tunnel syndrome, non-specific arm pain, extensor tenosynovitis or lateral epicondylitis. A workplace intervention was defined as any action at a worker's place of work to improve the outcome of an existing upper limb disorder and, for this review, nonspecific arm pain	SA, retaining the normal job	Descriptiv e, Narrative	N	Y	N	Υ	2	RCTs, cohort studies or SRs employing any workplace intervention. We excluded neck/shoulder pain. Papers that were not relevant or did not meet basic quality criteria were rejected	Moderate, Low	3 of 28		
Doki 2015;(14) SR: RCT, Cluster-RCT	To examine the effects of interventions by OHS on sick leave prompted by	OHS is suggested to reduce the sick leave duration of people with MH issues. We generated the following hypotheses: 1) The numbers of sick-listed and non-sick-listed workers' total sick leave days are reduced by psychological intervention performed by	Sick leave duration (i.e., the no of days until RTW or the no of days of absence	МА	N	Υ	N	Υ	2	The subjects were workers. • The reason for absence was mental illness. • The intervention was conducted by staff. • One of the outcomes was sick leave duration. • RCT or cluster-RCT was performed. Additional subgroup criteria were as follows: Subgroup 1- The workers are	Moderate, Low	2 of 10		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho in	w PIC studie clusic	O fo es re on cr	s rega or prin lates riteria view (mary to for		ng, Relevance to Medium/ Low)	s /total included
				Type of synthesis	Population	Intervention	o most	Outcome	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
	psychiatric disorders	OHS staff. 2a) The duration of sick-listed workers' RTW after sick leave is reduced by psychological interventions performed by OHS staff. 2b) The number of non-sick-listed workers' total sick leave days is reduced by psychological interventions performed by OHS staff	during the observation period)							on sick leave. The number of days until RTW is mentioned in the paper. The workers are non- sick-listed or are soon non-sick-listed after RTW. The total number of sick leave days is mentioned in the paper		
Dol 2021;(15) SR: Cross- sectional, Cohort, RCTs, Non- RCTs	To understand the impact that RTWCs have on RTW outcomes for sick or injured workers	RTWCs play a key role in managing the RTW trajectory of workers. We define RTWCs as individuals who are responsible for coordinating and facilitating timely and safe RTW of workers who have been absent from work due to illness or injury. RTWCs include individuals with titles such as social worker, case manager, disability prevention specialist, disability manager, disability supervisor or rehabilitation counsellor	Work absence (sick-leave duration), RTW rates (no of workers who RTW relative to the total no of injured or sick workers)	Best evidence synthesis, Narrative	Y	Y	N	Y	3	Included: peer-reviewed articles; articles published in the English language; and articles published from 2000 onwards. The injured/ill people managed by the RTWCs could have any physical or MH condition, work-related or not, and included people on short-or long-term health leave. Articles were excluded if they did not have an analytic focus on RTWCs or did not focus on RTW (e.g., studies of supported employment) for people with illness or injury. Opinion articles, editorials, literature reviews, conference reports, abstracts, and grey literature were not included. Qualitative and non-English studies were also excluded	Moderate Low	9 of 27

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho ir	certair w PIC studie clusio nbrella	O fo s re on cr	or prir elates riteria	to for	Review inclusion/exclusion criteria	quality rating, Relevance to aim (High/ Medium/ Low)	s /total included ies
				Type of synthesis	Population	Intervention	ć moż tr	Outcome Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Finnes 2019;(16) SR: RCT	To examine the outcome and comparative effectiveness of psychological interventions in reducing SA due to CMDs or MSD	Psychological treatments, such as CBT, IPT, and PDT, are applied to a wide range of psychological, somatic and behavioural problems. There is strong support for the effectiveness of CBT when targeting various CMDs including mood and anxiety disorders. For MSDs, the predominant contemporary model consists of an integrative and multidimensional biopsychosocial theoretical framework. Psychological interventions were defined as being based on a psychological model or theory where qualified clinicians or treatment personnel deliver the treatment. Examples of therapies included are PST, CBT, PDT, MMCBT, and Motivational Interviewing	Time until first RTW, time until full RTW, cumulative duration of SA, i.e., total days of SA during the follow-up period, recurrence of SA (time in no of days until a recurrence or no of recurrences during follow-up), increased working hrs, and time on disability pension	MA	Y	Y	N	I N	2	All studies of working-age adults (18–65 years) on SA due to CMDs or MSDs were included in the review. Employment was not a requirement; unemployed on sickness benefits and self-employed were also included. Exclusion criteria included studies focusing on participants with severe mental disorders such as psychosis. Studies including participants with secondary pain due to malign illnesses or pain related to a prior accident were also excluded. All types of psychological interventions were included if they were based on psychological theory and the purpose was to influence psychological processes with the aim to increase function or decrease symptoms. Interventions that did not have a coherent theoretical base were excluded. All control conditions were accepted, including psychological or non-psychological treatments, treatment, as usual, pharmacological treatment, and waitlist	Moderate, Low	3 of 30

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s ind	w PIC tudie clusio	ties r O for s rela n crite revie	prima tes to eria f	ary o for /N)	Review inclusion/exclusion criteria	quality rating, Relevance to aim (High/ Medium/ Low)	No. relevant studies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rareview aim (Hig	No. relevant stud
Fong 2015;(17) Campbell SR: RCT, Quasi- experiment al equivalent and Non- equivalent comparison design that employed regression discontinuit y	To identify interventions with behavioural, psychological, educational, or vocational content that aim to facilitate cancer survivors' employment outcomes	Approaches to addressing strain on individual and interpersonal resources would include vocational components. Survivors are four times more likely to be employed when they receive employment assistance and support, such as job-hunting services or on-the-job training. Approaches to addressing health and well-being include components targeting behavioural change and/or alleviation of physical symptoms or emotional issues, with a focus on symptom reduction and improvement in related quality of life. A review of psycho-social interventions in oncology noted that treatment options for cancer patients vary due to the diversity among types of cancer and their treatment options, but that they included counselling, cognitive-behavioural methods, information and educational treatments and complementary therapies. Approaches to addressing barriers to employment that express themselves in work environments are educational	Employment initiation, RTW, or decreasing absenteeism and use of work disability or sick leave, disability onset; time out of work and/or differences in rates of employment. Rate of employment is also measured as wage-earning, or hrs worked	MA	Y	N	N	N	1	Included: a) adults aged ≥18 years (b) cancer survivors (i.e., had a past or present cancer diagnosis which occurred while the individual was aged. ≥ 18 years). Studies of populations that included, but were not limited to, cancer survivors were not excluded if the employment outcomes of the participants who were cancer survivors were reported independently from those of other participants. Studies of adults who were survivors of paediatric cancer were excluded. Study participants with comorbidities were not excluded. Participants not employed at the time of the study intervention were the focus of this review as RTW and gainful employment were primary outcomes; Individuals who were employed prior to an intervention study were not excluded in this review. Reviewers did not exclude studies in which the participant pool included both participants who had an employment history and those who did not	High, Low	2 of 12

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertain w PICC tudies clusion brella	o for rela	prim tes to eria f	ary o for	Review inclusion/exclusion criteria	ing, Relevance to / Medium/ Low)	es /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Franche 2005 (Sister version of 2004);(18) SR: RCT, Controlled Trials, Cross- sectional, Pre-post, Time series, Case- control, Retrospective e, Prospective cohort	To review the effectiveness of workplace based RTW interventions	Workplace-based interventions are defined as interventions specifically aimed at improving RTW outcomes including disability management, case management, education to workplace staff, insurance case managers or workers, and changes in general organisational factors. They had to be provided by the workplace or by an insurance company (private or governmental) and which could be provided in the workplace or provided by the healthcare provider with no or minimal integration with the workplace or provided by a healthcare provider in very close collaboration with the workplace. The intervention was received by: workers, workplace staff, case managers from the insurance company	Work disability duration: self- reported time to RTW, time on benefits, total duration of lost time, recurrences; point- prevalence of status (e.g. back to work versus not back at work), costs (healthcare costs, wage replacement costs, intervention costs)	Best evidence synthesis, Narrative	N	Y	N	N	1	Quantitative studies published since 1990. Population - Studies involving workers' compensation claimants were included. Studies with a mix of lost-time and non-lost- time claims were also included. Workers who are off work due to one of the following: • MH conditions as a primary condition • MSK condition • Phantom limb pain • Pain-related condition that was episodic or non-episodic or associated with a degenerative or nondegenerative condition • Short duration self-limiting pain • Pain associated with a malignant condition • Chronic pain OR • A workers' compensation claimant population. Nature of intervention - Specifically aimed at improving RTW outcomes, including • Policies• Primary prevention ergonomics • Disability management interventions • Case management• Education to workplace staff, insurance case managers, or workers • Changes in general organizational factors, but specifically aimed at improving RTW outcomes	Medium, High	5 of 65

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertain v PICO tudies clusion brella	o for properties for the second secon	prima tes to eria fo	or	Review inclusion/exclusion criteria	ig, Relevance to Medium/ Low)	/total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, review aim (High/ M	No. relevant studies studie
										workplace. Exclusion criteria: Non-comparative studies: case series, case study		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s ind	ertain w PICO tudies clusion brella	o for rela	prim ites to eria f	ary o or	Review inclusion/exclusion criteria	ng, Relevance to 'Medium/ Low)	s /total included les
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Furlan 2012;(19) SR: RCT, Controlled Trials	To determine which intervention approaches to manage depression in the workplace have been successful and yielded value for employers in developed economies	Workplace Intervention: interventions that were workplace-based or that could be explicitly implemented and/or facilitated by the employer	Work- relevant outcomes included: SA, absenteeism, worker turnover, long-term disability, on- the-job health-related performance, work- functioning (productivity) and injury rates	Narrative	N	Y	N	N	1	(P) Population: Men and/or women of working age (i.e., 18–65 years old) with depression. Studies that included participants with other MH disorders were included only if ≥50% had depression. Studies were excluded if the focus was on severe mental disorders (i.e., bipolar disorder or schizophrenia, or chronic severe depression) and where the primary focus was on persons with alcohol or other substance abuse or dependence disorders, depression related to pregnancy, and depression in military and veterans' populations. Studies primarily focused on bereavement, burnout, and anxiety were also excluded. (C) Comparison/Control: Any study with a comparator group was included. This included RCTs and non-RCTs. There were no language restrictions. Book chapters, dissertations, and conference proceedings were excluded. Inpatient intervention programs and those focusing entirely on drug treatment of depression were excluded	Moderate, Low	1 of 12

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s ind	ertain w PICC tudies clusion brella	o for rela	prim tes to eria f	ary o for	Review inclusion/exclusion criteria	ing, Relevance to / Medium/ Low)	es /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Gaillard 2020;(20) SR: Economic evaluations	To analyse the cost-benefit, cost-effectiveness and cost-utility results of interventions intended to improve employees' MH, prevent CMD or promote RTW after an absence due to CMD	Mental disorders and work are interrelated making them very expensive in terms of indirect costs (production losses). The work environment and the type of working activity can also favour or impair MH or affect RTW after a period of absence due to mental disorders. Given this interrelation between MH and work, preventive interventions that include workfocused components are pertinent. The interventions had to address employees' specific working situations and the corresponding actions had to be tailored to take account of the specific difficulties or challenges encountered by them. Such actions could take the form of an analysis of the psychosocial constraints in the workplace, of the psychological barriers (such as representations, and behaviours) to functional improvement at work, the elaboration of work strategies and the acquisition of problem-solving skills at work, or the creation of a dialogue	Cost- efficiency, cost-utility or cost-benefit analysis, benefit-to- cost, return- on- investment studies and payback period estimates (as the length of time that benefits take to cover the costs of intervention)	Best evidence synthesis	N	Y	N	N	1	Included: studies published in peer-reviewed journals; written in English/French; published January 2007-June 2019; interventions aimed at preventing workplace psychosocial constraints, reducing CMD (depression, anxiety syndrome, adjustment disorder) in a workingage population; improving RTW & rehabilitation of workers on sick leave due to CMD. Interventions conducted by an OP were considered work-focused actions & could also include components relating to non-work issues. Excluded: 1. Did not evaluate outcomes specifically focused on CMD, psychosocial constraints or related production losses; 2. Centred on psychiatric problems and severe MH disorders & focused on vocational programs aimed at helping people with severe MH problems gain access to the labour market; 3. Aimed at the recruitment screening of future workers; 4. Involving only drug therapy pharmaceutical treatment/diagnostic tool; 5. Synthesis, point-of-view studies or simulation studies, which did not evaluate specific and implemented interventions; 6. Partial economic evaluations with data on the costs of	Moderate, High	5 of 11

Author, date; Type of review: type of studies included	Review aim Description of intervention and how it Outcomes of may work relevance to umbrella review			hov s inc	v PIC tudie :lusio	O for s rela n crit	prima prima ites to eria fo ew (Y)	ary o or	Review inclusion/exclusion criteria	ting, Relevance to 1/ Medium/ Low)	s /total included	
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
		supervisors and counsellors) in order to favour sustainable RTW								production or worktime losses (or gains) as an outcome of the intervention was not considered		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertain v PICC tudies clusion orella	for presented for the second second for the second	prima tes to eria f	ary o or	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, review aim (High/ Mo	No. relevant stud stu
Gensby 2012, (Sister version 2014);(21) Campbell SR: RCT, Non-RCT, Controlled Trials B&A (NB: No studies met inclusion criteria)	To assess the effects of WPDM programs and examine components or combinations of components, which appear more highly related to positive RTW outcomes, and get an understandin g of the research area to assess needed research	WPDM is defined as policies & procedures, provided by the employer and put into practice at the workplace with the goal of returning employees to work or helping them to stay at work. This favours a secondary preventive perspective to work disability prevention, which focuses attention on the arrangements that employers have in place to facilitate RTW and sustain job retention. Supporting this approach is a shift in focus from community or clinically based treatment programs to workplace-based programs that utilize evolving DM models that are coordinated from within the organization. This definition encompasses WPDM programs that are (1) 'in-house' DM or RTW programs managed & implemented at the workplace, (2) provided by the employer or initiated through a companywide department in collaboration with key players in the workplace, (3) addressing the duration and/or extent of an inability to work due to physical injury, MH disorder or	Duration of RTW and days lost from work; Modification or change of job function and job functioning; Health consequences ; Return to full or part-time work; RTW was completed at the current employer or new employer; Sustainability of RTW; Relapse to SA	Narrative	N	N	N	N	1	Inclusion: Employees on sick leave unable to work due to physical injury /illness /MH disorders. Physical injuries: MSDs (back pain, limb problems, neck and shoulder injuries, osteoarthritis, etc; MH disorders: psychiatric or psychosocial illnesses e.g., depression, stress, anxiety, somatic illness, fatigue etc; Other illnesses e.g., cancer, stroke, neurological illness, and eye strain; Employees from the public and private sector. Intervention: WPDM programs where at least one of the program components addressed/modified features of the employee's actual job, work tasks, equipment, workstation, work schedule or mode of interaction with key players in the workplace. No minimum restrictions related to the duration and intensity of the programs. WPDM programs with clinical components only included if: the program was provided by the employer; intervention was put into practice within the workplace setting. Comparators: 'Usual services,' other interventions, and no intervention. Exclusion: Unemployed persons and those with a preexisting permanent or total impairment. Interventions provided by healthcare or	High,	11 of 11

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov si inc	ertaint v PICC tudies lusior orella	for presented for the following for the followin	prima tes to eria fo	or	Review inclusion/exclusion criteria	ig, Relevance to Medium/ Low)	/total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
		other illness, and (4) describing a clear linkage between planned research interventions and a program provided	in the follow- up period							community, stand-alone individual clinical/medical interventions not part of a WPDM program		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertain w PICO tudies clusion brella	O for s rela n crit	prim etes te teria f	ary o for	Review inclusion/exclusion criteria	quality rating, Relevance to aim (High/ Medium/ Low)	ss /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Hamberg- van Reenen 2012;(22) SR: Economic evaluations	To give an overview of the evidence on the CE and financial return of worksite MH interventions	Several types of MH intervention exist for (sick-listed) workers, varying from group interventions, to counselling by a GP, MH coach or OP to medication, to CBT among others. MH interventions can either target the working population not (or short-term) sick-listed due to MH problems (i.e., prevention and treatment) or the working population at long-term absence due to MH problems (i.e., RTW interventions). Primary preventive interventions target the entire workforce in order to increase MH and prevent MH problems; Secondary preventive interventions target high-risk workers and aim to reduce MH problems and prevent sick leave. Treatment interventions target the working population with MH problems either in the short-term absence or not. RTW interventions, finally, are focused on improving the RTW of workers who are sick-listed due to MH problems	CE (i.e., comparing costs and effects in MH), cost-utility (i.e., comparing costs and effects in Quality Adjusted Life Years), or cost benefits (i.e., comparing costs and financial benefits, which are net benefits)	Narrative	N	Y	N	Y	2	Inclusion criteria: Working population (either sick-listed or not), an intervention on MH problems (either prevention, treatment or an RTW intervention), and representing a full economic evaluation, with an outcome on CE. Articles which reported only on outcome measures of costs (non-economic evaluations or cost studies) were excluded. Studies on work resumption for psychiatrically hospitalised patients were excluded, as well as economic evaluations on medication as solely interventional for MH problems. Economic evaluations including persons on sick leave with subgroup analyses regarding MH problems were excluded. Only economic evaluations focusing on MH interventions as the primary target were included. We selected studies in English from 1 January 2000 to 14 June 2011	Moderate,	2 of 10

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho ir	ow Plo studi nclusi	CO fo es re on ci	s rega or prinelates riteria view	mary to a for		ng, Relevance to 'Medium/ Low)	s /total included ies
				Type of synthesis	Population	Intervention		Outcome	Total uscostistics		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Heathcote	To synthesize	Self-efficacy is shown to be strongly related	Proportion of	MA	N	Υ	N	l N	1	Eligible studies - RCT, with defined intervention	Moderate,	4 of
2019;(23)	evidence of	to resilience and could be a positive factor	people who							comparison group, and prospective follow-up.	∐iah	21
SR: RCT	the	promoting functional recovery, work	were working							Population - adult patients aged 18–70 years,	High	
JR. RCI	effectiveness	participation and QoL. Resilience also	at the							who sustained a physical injury, presented to a		
	of socio-	includes the ability to cope with stress, which is also influenced by social support	designated							clinic for acute management, and were recruited during the rehabilitation phase for		
	ecological	networks that moderate the effects of	study follow-							that injury. Studies of elite athletes or active		
	resilience	stress on health and promote adjustment	up time point,							military personnel exposed to psychological &		
	rehabilitation	to adversity. Other resilient skills include	following the							physical trauma were excluded. Interventions		
	programs on	the ability to successfully integrate with	injury event,							were aimed at preventing the development of		
	RTW, self-	the workplace, and social and community	and second as							new disorders, or worsening disabilities		
	efficacy, and	resources. Evidence suggests that	the average							following injuries. Interventions had to target a		
	stress	individual behaviour changes are unlikely	time in days							component of the socio-ecological framework.		
	mitigation	to be sustained unless health programs	taken to RTW							Primary outcome- objective measures of		
	following	target one or more factors in an	following the							occupational re-integration. Secondary		
	traumatic	individual's ecological environment, (social,	injury event							outcomes - self-reported changes in resilient		
	physical	economic, physical, and cultural systems).								behaviours. Follow-up time-restricted to 2		
	injuries	This framework applies to resilience								years after the acute injury event. Where the		
		promotion where supportive families and								intervention was delivered to the target		
		caregivers, peers and social networks, the								patients and other groups, the outcome		
		workplace, community health services, and								measures need to include at least one		
		cultural and spiritual influences are								outcome measure of the patient. Excluded –		
		thought to enhance resilient behaviours.								pilot studies, quasi-experimental, case reports,		
		Programs aimed at fostering resilient								case series, case-control and cohort studies, or		
		adaptation in injured patients by targeting								studies analysing non-numerical data. Studies		
		these social and ecological systems could								where patient selection was based on an		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov si inc	v PICO tudies lusios	o for p relat reite	egardi orima es to eria fo w (Y/I	ry	Review inclusion/exclusion criteria	ng, Relevance to Medium/Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
		promote recovery above what is normally expected, enabling people to return to employment or to acceptable levels of productivity								existing psychological condition, if the intervention was not part of the post-discharge rehabilitation process or was treating an existing disorder other than the injury		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s ind	ertain v PICO tudies clusion brella	o for rela	prima tes to eria f	ary o or	Review inclusion/exclusion criteria	ng, Relevance to ' Medium/ Low)	ss /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/Low)	No. relevant studies /total included studies
Hegewald 2019;(24) Cochrane SR: RCT	To assess the effects of person- and work-directed interventions aimed at enhancing RTW in patients with CHD compared to usual care or no intervention	Work-directed interventions aim to facilitate RTW by reducing perceived or actual barriers through workplace adjustments such as modified work hrs, tasks or workplace and improved communication with or between managers, colleagues and health professionals. Person-directed interventions like physical conditioning interventions (physical training and exercises) and intense, occupation-specific training aim to equip patients with a level of functional capacity that is necessary to perform work tasks safely and successfully. Specific psychological interventions, on the other hand, can help by changing people's perception of their illness such that they see themselves again as capable workers and not just as recuperating patients. Psychological interventions include patient counselling and health education; screening and treatment of comorbid psychological disorders; stress	RTW, including either full- or part-time employment, to the previous job, and to the same role or with changes in work status (change of duties, working location, function). RTW could be measured either as event data (e.g., RTW rates), or as time-to-event data (e.g. no of days on sick leave	Meta- analysis	N	Y	N	N	1	Included studies involving adults (≥ 18 years) diagnosed with CHD, who experienced MI or a coronary revascularisation procedure & people with angina pectoris or angiographically-defined CHD. Within each study, ≥80% of participants had to fulfil these criteria. Participants should also have been either in paid employment or self-employed at the time of diagnosis and on sick leave or otherwise not working at the time of the study. This could have been a subgroup of a trial, but ≥ 80% of the participants should not have been working at the start of the trial. Included studies with a control group receiving usual care. We considered studies involving any pharmacotherapeutic or dietary therapies only if both the intervention and control groups received the same treatment. Secondary outcomes 1. Health-related QoL within the RTW process, either measured with generic instruments or with disease-specific instruments for participants with angina, MI or heart failure 2. No of the participants who RTW and were still working after an extended	High,	2 of 39

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		how st inc	PICC udies lusior	ties re o for p relat n crite revie	orima es to eria fo	ary o or	Review inclusion/exclusion criteria	ig, Relevance to Medium/ Low)	s /total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, review aim (High/ Me	No. relevant studies / studies
		management and relaxation training; social support; and gender-specific interventions	during the follow-up period)							period of ≥ one year 3. Adverse effects. We added working after five years to the list of the secondary outcomes		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s ind	ertain v PICC tudies clusion brella	o for rela	prima tes to eria f	ary o or /N)	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Releva review aim (High/ Medium/	
Hlobil 2005;(25) SR: RCT	To examine the effectiveness of RTW intervention for subacute LBP on work absenteeism, pain severity, and functional status	Intervention after the onset of LBP and work absenteeism is a practical alternative for primary prevention. Such therapeutic intervention is intended to prevent subacute LBP from becoming chronic with a long-lasting disability to work. Return to one's regular work without relapses is the ultimate goal of this type of intervention. Such intervention for LBP is often designed as a therapeutic program intended to improve physical functioning and, subsequently, to enhance RTW	Absenteeism	Best- evidence synthesis	N	Υ	N	Y	2	Only RCTs were included; All studies evaluating any type of out-patient intervention for sick-listed workers with LBP and aimed at RTW were included (one of the reference groups should receive traditional or usual care treatment; if applicable, the reference group should receive no treatment at all); The participants should be adult workers who were absent from paid work due to subacute, nonspecific LBP with or without referral to the leg [studies evaluating surgical or pregnant persons were excluded]; the subacute period was defined as a period of LBP complaints for ≥ 4 weeks, but ≤ 3 months. Work status should be one of the main outcome measures (functional status and pain could have been used as additional outcome measures	Moderate,	2 of 9
Hoefsmit 2012;(26) SR: Empirical studies, SR	To detect and identify characteristics of RTW interventions that generally facilitate RTW	Modern RTW interventions can be characterized by: • Timing of intervention: early, initiated in the first 6 weeks of absence or not; • Care professionals involved: multidisciplinary, including multiple professionals from > 1 discipline or not; • Planning of activities to support	Sickness absence	Narrative	N	Y	N	N	1	Studies were included when they: • Covered the effectiveness of interventions on RTW; • Described interventions tested in a population of workers on SA; • Were full-text articles; • Were written in English and published in the last 16 years (from 1994 to 2010); • Were empirical studies or systematic literature	Moderate, Low	CD of 24

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertain w PICC tudies clusior brella	for prelate to the control of the co	prima tes to eria fo	ary or	Review inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
	(i.e., in multiple target populations & across interventions)	RTW: time contingent, in which activities are performed according to a predefined schedule or not; • Target population: all employees on SA irrespective of their medical diagnosis or only employees with a specific diagnosis; • Character of activities to support RTW: interventions including explicit actions to stimulate the employee to RTW, which are whether or not A: a decision was made as to when and/or how RTW will take place; B: there was gradual exposure to the workplace; and C: workplace adaptations were implemented; • Intensity: a high (C10 h divided over multiple sessions), moderate (\10 h divided over multiple sessions) or low intensity (once); • Employee and employer role: decision latitude of the employee and/or employer about activities to support medical recovery or RTW and the timing of RTW or no decision latitude of the employee								reviews. We define facilitated RTW as either a significant reduction in the cumulate or mean no of (work, calendar or annual) days or weeks of SA (whether or not measured at a certain follow-up date) or an increase in work resumption rates or % of participants who resumed work partially or fully at a certain follow-up date within the study period		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	w Plo tudi clusi	CO fies re	for p elat crite	egaro orima es to eria f w (Y,	ary o or	Review inclusion/exclusion criteria	quality rating, Relevance to aim (High/ Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention		Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Hogg 2021;(27) SR: RCT, B&A, Retrospectiv e, Non-RCT	To systematically review interventions targeting anxiety, depression, and suicidal ideation and behaviour in the SME workplace	Psychosocial intervention is defined as interpersonal or informational activities, techniques, or strategies that target biological, behavioural, cognitive, emotional, interpersonal, social, or environmental factors with the aim of improving health functioning and wellbeing. Workplace-based psychosocial interventions aimed at preventing and treating depression and anxiety can help reduce social and financial costs. Interventions based on CBT have the best evidence for reducing symptoms of depression and anxiety	RTW	Narrative	Υ	Υ	``	Y	N	3	Study sample included employees or owners/managers of companies specified as SMEs; the intervention was psychosocial; MH outcomes were measured in terms of symptoms of depression, anxiety and/or suicidal ideation/behaviour; quantitative or qualitative data comparing baseline and post-intervention data; published in English; and the intervention was delivered through the workplace	Moderate, Low	NA

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		how st inc	rtaint PICC udies lusion orella	for presented for the following for the followin	orima es to eria fo	ary o or /N)	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, review aim (High/ Me	No. relevant stuc
Hou 2017 (Newest version of 2013);(28) Cochrane SR: RCT	To assess the effects of VR programmes for enhancing RTW in workers with traumatic upper limb injuries	VR may be necessary when a defect due to trauma affects a worker's functional capacity for work or employment. As such VR helps the injured people in mitigating work disability, accelerating return to meaningful employment, minimising lost workdays, increasing the productivity of injured workers, and reducing premature retirement, These may include one or more of the following: education, follow-up by a case manager, occupational therapy, worksite visits, on-site management, vocational guidance, OHS, work hardening, work modification, job accommodation, work adjustments, work reintegration plans, and ergonomic intervention. Encouraging early RTW through early VR intervention in the workplace may be an efficient way to increase both job and physical wellbeing and decrease the need for a disability pension and sick leave. Also, VR delivered to people at risk of job loss (but still employed) can delay job loss. In this	Same or a reduced role, and to either the previous job or any new employment. • RTW measured as event data, such as RTW rates, or as (change in disability pension rates. • RTW measured as time-to-event data, such as no of days between reporting sick and any work resumption, or the no of days on sick	N/A (No studies met the criteria for the 2017 update)	N/A					Include: Any type of intervention for enhancing RTW. Interventions may have been carried out either with an individual/group, in a clinical setting/in the community. Interventions could be psychological, vocational, physical or multifaceted. All RCTs comparing VR with an alternative intervention such as standard rehabilitation/waiting-list controls. Participants were working-age adults (18 to 65 years) who had been in paid employment (employee or self-employed) at the time of sustaining an acute episode of traumatic upper limb injury involving any parts of the fingers, hand, wrist, forearm, elbow, or arm, regardless of injury type and mechanism. We excluded participants with shoulder injuries and trials where participants had been suffering from a subacute or chronic upper limb injury for > 3 months. When a study included workers with various kinds of injuries, we planned to include it if ≥ 50% of the participants had sustained upper limb injuries and the study authors reported separate analyses for them. We excluded studies where participants had cumulative trauma disorders or repetitive strain injuries. We also excluded studies where	High, Low	NA

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov st inc	ertain PICC udies lusior prella	o for p relat reite	orima es to eria fo	ary o or	Review inclusion/exclusion criteria	ig, Relevance to Medium/ Low)	studies /total included
miciaueu				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, review aim (High/ Mc	No. relevant studies / studies
		respect, VR can improve patients' QoL and well-being as well as reduce workforce attrition	leave during the follow-up period							participants had coexisting injuries to the central nervous system or internal organs.		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	w PIC tudie clusio	O foi s rela n cri	regard r prim ates to teria f iew (Y	ary o or	Review inclusion/exclusion criteria	ing, Relevance to / Medium/Low)	es /total included lies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Hoving	To assess the	Emphasis has shifted towards tertiary	1. Job loss	Narrative	N	Υ	N	Υ	2	Included: Intervention where the focus was on	High,	1 of 4
2014;(29)	effects of	prevention, which helps people cope with	measured as:							job loss prevention or improving work	1	
Cochrane	non-	impairments in their work, and primary	the no of							function. Job loss prevention interventions that	Low	
SR: RCT	pharmacologi	prevention of work disability. Thus, the	people that							fulfilled at least two of the following three		
SK. KCI	cal	focus is shifting from RTW toward job	become							components: a) An evaluation of the work		
	interventions	retention. This review focuses on non-	unemployed							challenges or work adaptations as a step in the		
	that aim to	pharmacological interventions aimed	following							main intervention of the study; b)		
	prevent job	directly at addressing work participation in	diagnosis,							Interventions directed at the person, meaning:		
	loss, work	one or more ways. Firstly, there should be	regardless of							job coaching or empowerment for work or self-		
	absenteeism	an analysis of a person's work activities,	disability							management; c) Interventions directed at the		
	or improve	work functioning, ergonomic needs or	pension							work environment, meaning: ergonomic		
	work	communication at work to identify those	status; • the							measures or • interventions targeted directly		
	functioning	features of working life that are placing the	time to job							at the employer, supervisor or co-workers.		
	for employees	person at risk of having to stop working.	loss. 2. SA							Included in the above are also multi-		
	with	Secondly, interventions should include	measured as:							disciplinary interventions as long as they		
	inflammatory	some form of consultation, such as advice	time lost							include, or are part of, a), b) or c). Both		
	arthritis (IA)	on job accommodations, vocational	from work (no							pharmacological & non-pharmacological		
		counselling or work rehabilitation	of work days							interventions for preventing job loss in workers		
		strategies to deal with challenges in	or hours							with IA are excluded. We have also excluded		
		relation to work. Both components include	missed at							interventions, such as physical therapy and		
		the context of work directly. As shown in	work due to							psychological interventions that weren't		
		several studies, people with arthritis	sick leave, or							designed to change work participation and do		
		struggle to find a balance between work	absenteeism);							not specifically target employment. We		
		and home demands, medical	• time to							included RCTs in which the population was		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov st inc	tudies Iusion	for presented for the following for the followin	prima	ry	Review inclusion/exclusion criteria	ig, Relevance to Medium/Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
		appointments, work issues, communication with co-workers and transportation, while coping with decreasing energy levels and pain. This relationship is influenced by contextual factors. Interventions that target an individual's capability for work, or that target work demands by changing work routines or providing accommodations, enable people with IA (rheumatoid arthritis (RA), ankylosing spondylitis (AS), psoriatic arthritis (PsA), other spondylarthritis (SpA) or IA associated with connective tissue diseases, such as Systemic Lupus Erythematosus (SLE)) to have fewer difficulties in functioning at work and thereby improves work participation	RTW; • the proportion of workers on sick leave at follow-up.							limited to adults of working age (18 to 65 years) of which ≥50% had been diagnosed with IA. We included trials conducted with participants from hospital settings, occupational settings, primary care or community settings, or outpatient care settings. Secondary outcomes - Work functioning measured using any at-work productivity, work functioning or presenteeism questionnaire		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s ind	w PICO tudie: clusio	O for s rela n crit	regare primates to teria f ew (Y	ary o for	Review inclusion/exclusion criteria	quality rating, Relevance to aim (High/ Medium/ Low)	/total included s
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Hunter 2017;(30) SR: SR, MA, RCT, Two- group nonrandomi zed (cohort, case- control), One-group non- randomized (pre-test and post- test)	To assess the effectiveness of cancer rehabilitation interventions that address the activity and participation needs of adult cancer survivors in activities of daily living, work, leisure, social participation, and rest and sleep	Multidisciplinary rehabilitation programs use a team approach that includes occupational therapy, physical therapy, and other allied health professions	RTW	Narrative	N	Υ	N	Υ	2	This article focuses on the use of multidisciplinary rehabilitation and interventions that address sexuality psychosocial outcomes, and RTW. Included in the review were peer-reviewed scientific articles on adults with cancer published in English between 1995 and 2014 and within the scope of practice of occupational therapy. The review excluded data from presentations, conference proceedings, non–peer-reviewed research literature, dissertations, and theses. The review also excluded studies focusing on caregivers, family members, or friends rather than cancer survivors; studies of childhood cancer; and interventions that required an academic degree other than occupational therapy (e.g., music therapy)	Low,	1 of 138

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertair w PICo tudie clusio brella	O for s rela n crit	primates t	ary o for	Review inclusion/exclusion criteria	ig, Relevance to Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Jansen 2021;(31) SR: Longitudinal	To explore the employer characteristics associated with work participation of workers with disabilities	In occupational health care, several studies have been published about employer-related determinants and intervention strategies that improve the labour market participation of workers with disabling health conditions. Each discipline and its corresponding research methods thus provide different insights about employer efforts and work participation of workers with disabilities, making them complementary to each other. An interdisciplinary approach is crucial to obtaining a complete overview. Moreover, to get a better insight into the role of employers in supporting workers with disabilities to continue their jobs it is important to take into account the role of the employer at all organizational levels	RTW after SA or long-term SA (> 3 months) as the outcome variable	Narrative	N	Y	N	Y	2	All peer-reviewed journal articles were screened according to (i) the study population consisted of workers with a chronic disease; (ii) the subjects were aged 18–67 years; (iii) the study used a longitudinal quantitative study design; (iv) the study examined continued employment, RTW after > 3 months of SA, or long-term SA (> 3 months) as the outcome variable; (v) at least one of the independent variables contains employer characteristics, including the role of professionals if they interact with the employer; and (vi) the article was written in English	Moderate, Low	CD of 50

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s ind	ertain v PICC tudies lusior brella	o for rela reit	prima tes to eria fo	ary o or	Review inclusion/exclusion criteria	g, Relevance to Medium/ Low)	/total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Johansson	To assess	Interventions that promote well-being,	RTW	Narrative	N	Υ	N	N	1	All types of work-related injuries were	Moderate,	1 of 2
2021;(32)	what type of	rehabilitation and a successful RTW for								considered except when the injury caused	1	
CD. Cabart	work-related	young adults may lead to improvements in								enough harm to make an RTW implausible.	Low	
SR: Cohort and Cross-	injuries young	workers' health, equity, productivity and								Inclusion criteria: 1) interventions of RTW		
Sectional	adults are	efficacy of organizations and society in								status, regardless of sustained RTW, full RTW,		
Sectional	exposed to,	general. It is important to focus on young								and partial RTW, 2) young adults aged 19–29		
	and What, if	adults since they are beginners in the								years including all working arrangements, 3)		
	any, type of	working life and may thereof be more								studies specified that the mechanisms leading		
	interventions	vulnerable to the consequences of work								to injury were work-related, 4) studies		
	have been	injuries. In other words, by supporting and								published in peer-reviewed journals between		
	used to	facilitating a successful RTW for young								the years of 2010 to 2020 and 5) studies were		
	facilitate RTW	adults, an opportunity for a healthy work-								published in English or Swedish. Lastly, all		
	for young adults	life and maintained health beyond								types of intervention programs that were		
	aduits	retirement age could be provided. All types								performed to facilitate young adults' RTW		
		of intervention programs that were								following work-related injuries were included,		
		performed with the purpose of facilitating								regardless of the study design. The following		
		young adults' RTW following work-related injuries were included, regardless of study								exclusion criteria were considered: 1) the study population was defined based on non-work-		
										related morbidity, 2) work-related diseases and		
		design								3) age of the study population was not defined		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	w PICo tudie clusio	O for s rela n crit	regar primates to teria f ew (Y	ary o for	Review inclusion/exclusion criteria	g, Relevance to Aedium/Low)	/total included s
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Karjalainen 2001;(33) SR: RCT, Controlled Trials	To evaluate the effectiveness of multidisciplin ary biopsychosoci al rehabilitation for subacute LBP among working-age adults	The inpatient or outpatient rehabilitation program was required to be multidisciplinary (i.e., it had to consist of a physician's consultation in addition to psychological, social, or vocational intervention or a combination of these). Consequently, RCTs in which rehabilitation was exclusively or predominantly medical were excluded. For example, a program consisting solely of medical treatment and physiotherapy was not included. Trials on back schools were excluded	Ability to work (e.g., SA, RTW, no of days off work)	MA, Narrative	N	N	N	Y	1	Only RCTs and non-RCTs on multidisciplinary rehabilitation were considered. However, if there were three or more RCTs, only RCTs were included. Studies reported in English, Dutch, Finnish, Swedish, Norwegian, German, French, and Spanish were included. Trials included were those in which the patients had experienced LBP that should have lasted > 4 weeks but < 3 months. Patients in the trials were required to be 18 to 65 years of age and did not have acute trauma, neoplasms, or inflammatory or neurologic diseases. Studies dealing with postoperative pain and osteoporosis were excluded. The following outcomes were sought in the selected studies: pain intensity, lobal status, disorder-specific functional status, generic functional status or QoL, ability to work, health care consumption and costs and satisfaction with treatment	High, Low	NA

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	relevance to umbrella review		hov s inc	w PIC tudie clusio	O for s rela n crit	regar primates to teria f	ary o for	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality raireview aim (High	No. relevant studi stuc
Khan 2009;(34) Cochrane SR: RCT, Controlled clinical trials, including B&A controlled trials	To evaluate the effectiveness of VR programs compared to alternative programs or care as usual on RTW, workability and employment in pwMS; to evaluate the CE of these programs	The UK NSF for People with Long Term Neurological conditions outlines the need for VR which is defined as a 'process whereby those disadvantaged by illness or disability can be enabled to access, maintain or return to employment, or other useful occupation'. The NSF highlights the need for multidisciplinary/multi-agency VR programs offered by local or specialist rehabilitation services to enable individuals to • enter training or work opportunities • remain or return to existing jobs • prepare and train for alternate job options • plan withdrawal from work at an appropriate time (conserving pension and other rights); and • access appropriate alternative occupational and educational opportunities. VR can be broadly divided into three main groups: • General rehabilitation programs for pwMS which may provide VR as part of their service. • Specialist MS VR services which specifically support pwMS and RTW • Statutory pan-	The rate of RTW in days of pwMS. • The change in proportion of pwMS on disability pension. • The improvement of work ability in pwMS • Costs of programs and CE of RTW or employment	Best evidence synthesis. Calculatio n of OR, RR and RD	Y	Y	N	N	2	Trials were included if the study population was working age 18-65 years and had the diagnosis of MS (sub types of MS were included), irrespective of MS severity. Primary outcomes • The change in the proportion of pwMS in competitive employment • The change in proportions of persons in supported employment. Secondary outcomes • The rate of RTW in days of pwMS. • The change in the proportion of pwMS on a disability pension. • The improvement of work ability in pwMS. • Costs of programs and cost effectiveness of RTW or employment. All categories of VR programs (individual and /or group level), which incorporate a clearly defined VR or work therapy element were included. These included structured multi-disciplinary / multiagency interventions to preserve employment such as a clinic or community-based counselling, planning for disclosure and accommodation and workplace accommodations. All three types of VR programs were included	High,	1 of 2

Author,	Review aim	Description of intervention and how it	Outcomes of		Uncertainties regarding	Review inclusion/exclusion criteria		_
date; Type		may work	relevance to		how PICO for primary		<u>\$</u>	nded
of review:			umbrella		studies relates to		nce Lo	ä
type of			review		inclusion criteria for		eva m/	<u>.<u>ĕ</u></u>
studies					umbrella review (Y/N)		ele diu	<u>ta</u>
included							8g. F Me	s /tc
				Type of synthesis	Population Intervention Outcome Other Total uncertainties		Overall quality ratin review aim (High/ I	No. relevant studies studie

disability VR services that support a range of disabled persons (including pwMS) back to work

Author, factorial date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s ind	v PIC tudie :lusio	O for s rela n crit	regar primates t teria ew (Y	ary o for	Review inclusion/exclusion criteria	g, Relevance to Medium/ Low)	/total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Kojimahara	To assess the	RTW for MH disorder is positively carried	Sick-leave	Quantitati	N	Υ	N	N	1	Studies evaluated included systematic reviews	Low,	9 of
2020;(35)	impact of the	out and evidence is gathering in the	duration, Rate	ve						or meta-analyses and RCTs corresponding to		18
SR: RCT, Cohort	at the workplace, OH activities combined with clinical medicine, Social support, and Work accommodati on for workers on sick leave on RTW	Japanese occupational health settings these decades, but both support and evidence for the other various disease, for example, MSD or cancer, are insufficient. Moreover, there has been increasing emphasis on avoiding prolonged periods of sick leave or layoff because of illness, considering the burden for both the workplaces and individuals concerned and society in general	of RTW	synthesis, GRADE, Developm ent of recomme ndation						our PICO (P: sick leave exceeds 4 weeks, I: workplace intervention, and O: length of sick leave), and studies were in English or Japanese. We excluded studies regarding sick leave due to accidents, compensation insurance; assessing only medical interventions; involving restricted populations such as the military, individual proprietors, or people engaged in dangerous duties; and without outcome values	High	

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	relevance to h umbrella review u		hov s ind	ertair w PIC tudie clusio brella	O for s rela n crit	prim ates t	ary o for	Review inclusion/exclusion criteria	ing, Relevance to / Medium/ Low)	es /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Kuoppala 2008;(36) SR: Original articles	To evaluate the effects of medical, vocational and early rehabilitation on sickness absenteeism, RTW and disability pensions among persons of working age	Rehabilitation can be defined as measures required for coping with functional consequences of a disease, defect or trauma. The aim of rehabilitation is to improve work ability and functional capacity. Rehabilitation can be divided into medical, vocational or social rehabilitation. Medical rehabilitation aims at developing the functional and psychological abilities of the individual and, if necessary, his or her compensatory mechanisms, to enable him or her to attain self-dependence and lead an active life. VR aims, for example, at promoting employment opportunities for disabled persons in the open labour market. If a disease or a defect due to trauma affects functional capacity, the need for rehabilitation should be assessed. Rehabilitation can focus on health, work ability or employment	Sick leave, disability pension, RTW	Descriptiv e statistics, RR Calculatio n	Y	Y	N	Y	3	A study was included in the analysis if it was original and the study population was of working age. In addition, those studies that did not provide information about study design and results in sufficient detail were excluded. Dissertations were excluded. Inclusion criteria: The studies that were conducted in other than a true working environment, such as in classes or courses or among students, were excluded	Low,	6 of 45
Lamontagne 2007;(37)	To identify models of international best practices	Interventions are commonly classified as primary, secondary, or tertiary. Primary preventive interventions are proactive, aiming in the job-stress context to prevent	Sickness absence	Narrative	Y	Y	Y	Υ	4	We defined job-stress intervention studies as those expressly aiming to alter the sources of, responses to, or effects of job stress. Natural experimental studies were not included in this	Low, Low	NA

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	relevance to umbrella review		h i	ow Pl stud nclus	ICO dies sion	for pr relate criter	garding rimary es to ria for v (Y/N)	Review inclusion/exclusion criteria	ing, Relevance to / Medium/Low)	es /total included lies
				Type of synthesis	Population	Intervention	Intervention	Outcome	Other Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
SR: Qualitative, Action research studies, Quasi- Experiment al, Experiment al, No Comparison Groups	of job-stress intervention. To test the applicability of these various intervention frameworks integrated under the systems approach umbrella in the context of evaluating job-stress interventions	exposures to stressors and the occurrence of illnesses among healthy individuals. Most primary preventive interventions are directed at the organization or the work environment, but they can also be directed at individuals when addressing stressors rather than stress responses, as in conflict-management skills development in a hospital worker. Secondary interventions are ameliorative, aiming to modify an individual's response to stressors. Secondary interventions target the individual with the underlying assumption that addressing individuals' responses to stressors should be done in addition to or sometimes in preference to removing or reducing stressors. Tertiary interventions are reactive, aiming to minimize the effects of stress-related problems once they have occurred, through management or treatment of symptoms or disease. These include counselling as well as RTW and other rehabilitation programs								review. The full list of studies was subjected to the following qualifying criteria: Reported on a job-stress intervention; Reported on intervention: evaluation of some sort, including qualitative and action research studies, and those without control or comparison groups. Minimum sample size 30 individuals; Interventions including employees or contractors independent of pre-existing susceptibilities, complaints, or illnesses (e.g., did not include studies that excluded patient populations, nor study that included interventions for employees reporting stress-related symptoms only)		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	w PIC tudie clusio	O fo s rel on cri	s rega or prin lates f iteria view (nary to for	Review inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	studies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Outcome	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies studie
Lamore 2019;(38) SR: Qualitative, Quantitative , Mixed methods	To identify and describe the interventions developed specifically to help cancer patients to RTW after treatment	Intervention to help RTW for cancer patients being treated or after treatment completion. Theoretical models and theories used to design the interventions differed among studies. Researchers based their interventions on the bio-psycho-social model, graded activity (i.e., step-by-step intervention) and goal-setting theories, the self-regulation model and goal-setting theories, the shared care model (i.e., the intervention was included in the care pathway) or the attitude-social influence-efficacy theoretical model	RTW (employment)	Narrative	N	Y	Υ	Y	3	Eligibility: (a) describe an intervention to help RTW for cancer patients being treated or after treatment completion; (b) conducted on patients aged 18 and over and diagnosed with cancer (all locations); (c) written in English; (d) published in peer-reviewed journals. Exclusion criteria included reviews, case-control studies, protocol studies (as the RTW intervention is described but not evaluated) and studies which were not evaluated/tested or did not aim to RTW. The search was limited to original studies published in the English language and peer-reviewed journals	Moderate, Low	NA

Author, date; Type of review: type of studies included	relevement may work relevement umbig revie		relevance to h umbrella review i u				O for rela	regard primates to eria f ew (Y	ary o for	Review inclusion/exclusion criteria	ing, Relevance to / Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Lefever 2018;(39) Cochrane SR: SR, RCT, Controlled Trials, Mixed methods, Qualitative	To systematically review the efficacy and efficiency of DM programs	DM is a systematic and constructive method associated with the bio-psychosocial model to ensure job retention and job reintegration in competitive employment for individuals with a (temporary) disability. Individual needs, workplace conditions and legislation are taken into account during the program. Evidence supports that RTW has an impact on the micro- (employee), meso- (company) and macrolevel (society). On the micro-level, RTW promotes health, community integration and participation. Additionally, there is strong evidence that work has a positive influence on QoL, social status, and occupational identity, provided that there is a good person-job fit. This means a balance between challenge, flexibility and predictability and a job fitting with the values and interests of a person. On the meso-level the company benefits by reducing costs of recruitment, selection and training, productivity loss, absenteeism, and losing qualities and skills by using DM. On the macro-level, DM could provide an answer to a growing	Time to RTW, RTW (y/n), sick days, work status	Descriptiv e, Narrative	N	Y	N	Y	2	(P) Participant: job retention or job reintegration for people with competitive employment who have an occupational disability; (I) Intervention: DM as described by National Institute of Disability Management and Research (NIDMAR); (C) Comparison: no intervention or no comparison and (O) Outcome: efficacy and/or efficiency and the successful components of DM programs	Moderate, Medium	4 of 28

Author,	Review aim	Description of intervention and how it	Outcomes of		Unce	rtainti	ies regar	ding	Review inclusion/exclusion criteria		
date; Type		may work	relevance to		how	PICO	for prim	ary		₽ 2	nded
of review:			umbrella		st	udies	relates t	:0		nce Lo	ğ
type of			review		inc	usion	criteria	for		eva m/	<u>=</u>
studies					umb	rella r	eview (\	//N)		Rele	otal
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		Control of the last									

group of patients with multi-morbidity and an increasing social gradient in health

Author, date; Type of review: type of studies included	ype may work ew: f		Outcomes of relevance to umbrella review		hov s ind	ertain v PICO tudies clusio brella	O for s rela n crit	primates to	ary o or	Review inclusion/exclusion criteria	ing, Relevance to / Medium/ Low)	es /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Madsen	To present an	It is relevant to offer non-pharmacological	Work	Narrative	N	Υ	N	N	1	Population - Adults diagnosed with IA and of	Moderate,	2 of 6
2021;(40)	overview of	interventions that help keep people in the	participation							working age (18-65 years). Comparison -	Low	
SR: RCT	the evidence	labour market. Such interventions are	(e.g.,							Participants receiving usual care, which may	Low	
SK. KCI	of the effect	referred to as job loss prevention,	work							include medical treatment as well as		
	of job loss	occupational rehabilitation or VR. These	functioning							outpatient consultations with a doctor and/or		
	prevention	interventions may be delivered by	and work							a nurse. The participants could also receive		
	interventions,	physiotherapists, OTs, social workers and	ability), SA							general oral or written information about living		
	aiming to	psychologists. These interventions are all	and job loss							with rheumatological disease. Study Design		
	improve work	referred to as job loss prevention								and Languages - Only RCTs published in English		
	ability and	interventions (JLPIs). JLPIs are								and western countries were included. Studies		
	decrease	characterised by focusing on the person								from non-western countries were excluded.		
	absenteeism	and the work setting and may include								JLPIs had to contain at least two of the		
	and/or job	alternative ways to accomplish work tasks								following criteria: (a) Interventions targeting		
	loss in	and adaptations of work settings.								work challenges including trying out different		
	persons with	Observational and qualitative studies								strategies and adaptations to improve specific		
	Inflammatory	indicate that such strategies may increase								work situations; (b) Interventions directed at		
	Arthritis (IA)	work ability and improve participation in								the person, including job coaching and		
		work life for people living with IA								training, empowerment for work or self-		
										management; and (c) Interventions directed at		
										the work environment, including ergonomic		
										measures, job accommodations or		
										interventions targeted directly at the		
										participants, supervisors or co-workers. The		
										above-mentioned intervention strategies (a, b		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)	Review inclusion/exclusion criteria	, Relevance to 1edium/ Low)	/total included
iliciaca				Type of synthesis	Population Intervention Outcome Other Total uncertainties		Overall quality rating review aim (High/ M	No. relevant studies. studies

or c) could be delivered as part of a multidisciplinary intervention

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s ind	ertain w PIC(tudies clusion brella	o for rela	prima tes to eria f	ary o or	Review inclusion/exclusion criteria	ng, Relevance to ' Medium/ Low)	ss /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Marin 2017 (Newest version of Kamper 2014;(41) Guzman 2001, 2002, 2006; Karjlanen 2001, 2003);(42) Cochrane SR: RCT	To examine the effectiveness of MBR for subacute LBP (pain for 6-12 weeks) among adults, with a focus on pain, back-specific disability, and work status	MBR programs acknowledge that although an anatomical or physiological problem can contribute to back pain, psychological factors such as fear, and mood disturbance may amplify or prolong the pain. Similarly, social/environmental factors such as physical job demands, workplace social support, and expectations for resuming work can affect long-term disability. These insights have led to the design of interventions to address a combination of physical, psychological, social and/or work-related components which are often delivered by a team of clinicians with different skills. The theoretical basis for MBR comes from the biopsychosocial model. According to this theory, chronic LBP involves impairments of physical, psychological and social functioning, and effective treatment requires intervention that specifically addresses these problems. MBR includes elements aimed at improving back-related physical dysfunction as well as addressing psychological issues or targeting social or work-related behaviours or any combination of these. Thus	Work status (RTW, sick leave)	MA, GRADE	N	Y	N	N	1	Adult participants with nonspecific LBP with a mean duration for the current episode of 6-12 weeks. Participants were required to be of working age (18-65 years). In samples with mixed durations of pain, > 75% of the study sample had to have pain that had lasted 6-12 weeks. Participants with or without radiating pain. Inclusion criteria: We included studies that investigated an MBR program. This means that the intervention included a physical component (e.g., pharmacological, physical therapy) in combination with either a psychological, social, or occupational component (or any combination of these). We also required the involvement of healthcare professionals from at least two different clinical backgrounds. Exclusion criteria: Studies that involved participants with LBP - caused by specific pathologies (e.g., infections, neoplasms, fractures, etc) during or immediately following pregnancy. Studies that recruited participants with postoperative back pain	High,	3 of 9

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)	Review inclusion/exclusion criteria	, Relevance to 1edium/ Low)	/total included
iliciaca				Type of synthesis	Population Intervention Outcome Other Total uncertainties		Overall quality rating review aim (High/ M	No. relevant studies. studies

interventions that target these factors in the early stages of LBP may be particularly effective and important to examine

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertain v PICC tudies clusion brella	O for s rela	prima tes to eria f	ary o for	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality raterion (High	No. relevant studi stud
McLennan 2021;(43) SR: RCT, Retrospectiv e, Qualitative, Mixed methods	To compile the evidence for early VR interventions for people with major injury or illness.	An early, integrated approach to VR involves the commencement of conversations, planning, and actions relating to work resumption earlier than has traditionally been espoused in health systems. VR may commence predischarge, or during the primary rehabilitation phase. This new, earlier approach often requires speciality vocational "in-reach" expertise delivered within the hospital setting or the addition of vocational practitioners in the primary rehabilitation team. Studies have suggested that this inclusion of VR can help with patient adherence to other functional rehabilitation goals and improve QoL and psychological well-being, perhaps by adding greater meaning or purpose to rehabilitation tasks. Furthermore, the latency at which VR services are offered has been indicated as an important factor in predicting long-term employment outcomes; with earlier service delivery being associated with improved vocational outcomes. Results from studies examining	RTW rate	Narrative	Y	Y	N	N	2	The inclusion criteria required articles to be peer-reviewed original research papers; published in English with available abstract; addressing at least a subsample of serious or major illness or injury, with at least moderate severity; and interventions that were focused on vocational/work outcomes and commenced earlier than traditional services (i.e., in the hospital/in-patient setting). Excluded from this review were theses and literature reviews; studies solely covering injuries of mild severity; and studies with non-working age populations	Moderate, Low	CD of 25

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		Uncertainties regarding R how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)	Review inclusion/exclusion criteria	g, Relevance to Medium/ Low)	/total included
meduce				Type of synthesis	Population Intervention Outcome Other Total uncertainties		Overall quality rating review aim (High/ M	No. relevant studies. studies

the earlier provision of VR indicate its potential effectiveness in enhancing employment outcomes for people who have sustained serious injury

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov si inc	ertair v PIC tudie lusio brella	O foi s rel n cri	r prin ates teria	to for	Review inclusion/exclusion criteria	ig, Relevance to Medium/ Low)	s /total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
McQueen 2017;(44) SR: RCT, Controlled Trials	To determine whether a vocational case management approach impacts RTW for an individual living with cancer	Case management is identified as a collaborative process that assesses, plans, implements, coordinates, monitors and evaluates the services required to meet the individual's health, employment and educational needs. The review focuses on specific case management VR interventions delivered to individuals within hospital, clinic or community setting and reports RTW as a prime objective. The VR encompassed a wide range of assessments & interventions, including counselling, functional capacity evaluation, work capability assessments, job analysis, and workplace adjustments such as modified work hours, work tasks, work environment and interventions designed to improve communication with managers	RTW, Sustained employment and/or SA costs	MA	N	Υ	N	Y	2	Population: working-age adults with a cancer diagnosis Intervention: vocational case management Comparison: usual clinical care Outcomes: RTW, length of sickness absence Settings: hospital, clinic and community settings. This review considered studies that included adults or adolescents (people aged 16 years or older) with any cancer-related diagnosis who were in paid employment either as an employee or self-employed at the time of their diagnosis	Moderate, Low	1 of 3

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertair w PIC studie clusio brella	O for s rela n crit	primates t	ary o for	Review inclusion/exclusion criteria	ing, Relevance to / Medium/ Low)	es /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Meijer 2005;(45) SR: RCT, Clinical Controlled Trials	To gain insight into the effectiveness of RTW treatment programs among sicklisted patients with nonspecific MSD	RTW treatment programs	RTW, sick leave days	Narrative, Best evidence synthesis	N	Y	N	Y	2	Written in English; published as a peer- reviewed article; covered a human study; and published between January 1990 and December 2004	Moderate, Low	CD Of 26
Mikkelsen 2018;(46) SR: RCT, Controlled Trials	To synthesise evidence on the effectiveness of interventions aimed at enhancing RTW in sicklisted workers with MH disorders	Interventions aimed at sick-listed workers, intervention types coded according to four components: (1) organisational change, that is, enhanced collaboration or integration of central partakers, (2) graded RTW, (3) therapeutic elements, for example, therapy or therapeutic support and (4) workplace contact before RTW, for example, meetings with the sick-listed worker and a representative of the employer at the workplace	Time until RTW, proportion of participants achieving RTW, no of sick leave days and self- reported work- readiness	MA, Meta- regression	N	Y	N	Y	2	Peer-reviewed, randomised or controlled studies assessing employment-related outcomes of interventions aimed at sick-listed workers with anxiety disorders, depressive disorders, adjustment disorders, stress-related disorders, personality disorders and/or somatoform disorders. When studies were aimed at more than one of these disorders, they were classified as targeting sick-listed workers with CMDs. Previous systematic reviews have been used as a foundation for this review but were not formally included.	High, Medium	12 of 39

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertain w PICC tudies clusior brella	for rela	prim tes to eria f	ary o for	Review inclusion/exclusion criteria	quality rating, Relevance to aim (High/ Medium/ Low)	es /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
										Grey literature, single case studies and qualitative studies were excluded		
Minjoo 2014;(47) SR: RCTs, Pre-test post-test, Quasi- experiment al, Naturalistic evaluation	To systematically summarise and synthesise the empirical evidence across studies concerning the effects of CBT on employment outcomes for people with mental illness	CBT is one intervention that has been applied to people with emotional psychological and psychiatric difficulties. It has a history of a combination of behaviour-modification approaches with cognitive therapies to a short-term, focused approach to dealing with a specific problem. This approach centres on changing the thoughts and feelings that influence behaviour. The emphasis is on learning new skills or habits in areas such as mindfulness or acceptance and commitment. The essential component is the formation of new patterns of thinking. CBT incorporates diverse approaches that may focus on general improvements in cognitive functioning and social skills, managing negative and positive symptoms, reducing internalised stigma and enhancing self-efficacy or positive beliefs. Based on the description of the intervention approaches, CBT is coded into three types	Employment status (employment rates, working hours)	Narrative	Y	Y	Y	Y	4	The target population of the study was individuals of working age (18–65 years old) with mental illness; CBT was the intervention (independent variable) and it included descriptions of the specific approaches used during the study; employment-related outcomes were the dependent variables, including employment rate, job satisfaction, employment productivity and working hours. Articles were excluded if they aimed at investigating the efficacy of CBT interventions in general. Non-empirical studies such as case studies, review articles and book chapters were excluded. Dissertations were also not included in the study	Low,	NA

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)	Review inclusion/exclusion criteria	ig, Relevance to Medium/ Low)	/total included
				Type of synthesis	Population Intervention Outcome Other Total uncertainties		Overall quality ratin review aim (High/ N	No. relevant studies studie

of approaches: (1) general CBT (2) vocationally oriented CBT and (3) vocationally oriented CBT combined with employment services

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertain w PICO studies clusion brella	O for s rela n crit	prim tes to eria f	ary o for	Review inclusion/exclusion criteria	ng, Relevance to 'Medium/Low)	es /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Munoz- Murillo 2018;(48) SR: RCT, Controlled Trials, Non controlled pre-post intervention , Observation al studies	To assess the effectiveness of strategies used in the professional (re)integration of persons with mental disorders in European countries	Employment integration interventions for unemployed people are divided into two groups, here: traditional vocational rehabilitation models and the supported employment model (SE). These models represent what we have called "job access strategies". Traditional models focus on the interventions in the setting prior to initiating work activity. They can include, among other elements, prevocational training, clubhouse, or sheltered workshops. Conversely, SE focuses on the immediate competitive job search. The SE method appears to be effective in gaining employment for people with mental disorders—it has been proved to be more effective than other vocational training programs and it may reduce feelings of exclusion and mental illness stigma. Individual Placement and Support (IPS) is one of the most structured and properly methodized SE programs to date. Available evidence of the effectiveness of employment strategies shows that IPS is	Employment status, RTW, sick leave, maintaining a job, obtaining a job	Narrative, Descriptiv e	Y	Y	N	Y	3	Studies were included if they were: (a) published in January 2011-April 2016 (b) in English; (c) intervention studies; non-controlled pre-post intervention; qualitative or observational studies; (d) carried out in European Union, Norway, Lichtenstein, Iceland or Switzerland, or in non-European countries with western lifestyle; (e) investigating variables affecting effectiveness. (f) focused on working-age 16 to 65 years. Health conditions: focused on: (a) persons with chronic diseases in general; persons with disability were included; (b) the disease groups: mental disorders, MSDs, cancer, neurological, metabolic, respiratory and CVDs; (c) the specific diseases: depression, back and neck pain, migraine, diabetes mellitus, COPD and IHD. Studies were excluded if they: (a) included participants with mainly other chronic diseases as the ones defined above and only pooled results were reported; included participants aged <16 or >65 years; (c) were case report/case series, psychometric studies, letters, comments, editorials, overviews	Moderate, Low	NA

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov si inc	v PIC tudie lusio	inties r CO for es rela on crit a revie	prim tes to eria f	ary o or	Review inclusion/exclusion criteria	ng, Relevance to Medium/Low)	s /total included es
included				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Releva	 No. relevant studies /total included studies
		more effective than traditional models of vocational rehabilitation and this effect was found across diverse cultural and economic backgrounds. These models focus on interventions for employees on sick leave due to MH problems. These programs aim to get employees back to work in some capacity as soon as possible. They can include part-time sick leave								without empirical primary or secondary data, reviews & MA, protocols, studies reporting exclusively on design or baseline data; (d) didn't consider effectiveness outcomes; (e) didn't focus on a concrete strategy or; (f) were not in English; (g) before 2011; (h) no abstract		

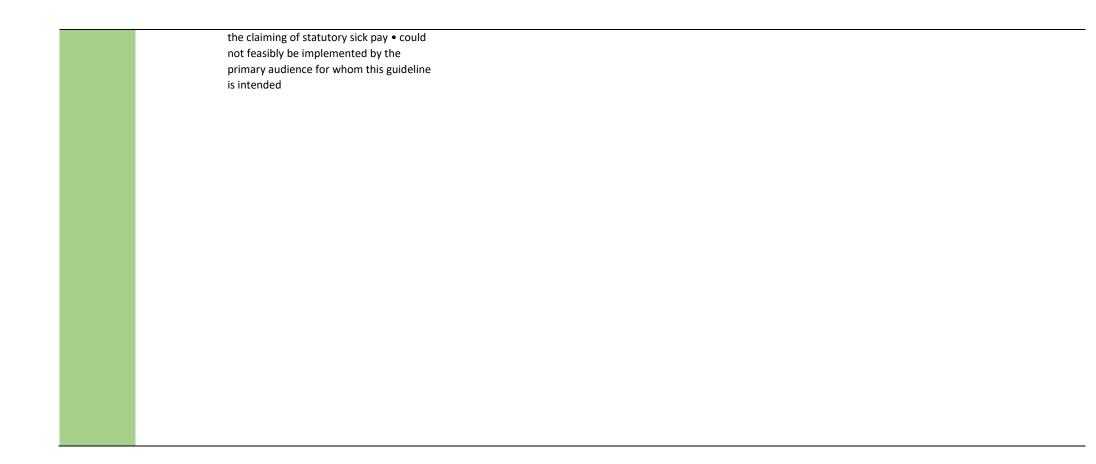
interventions, absenteeism prevention, and making accommodations, if necessary

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s ind	w PICo tudie clusio	O foi s rela n cri	regar r prim ates to teria f iew (Y	ary o for	Review inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	studies /total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies studie
Nazarov 2019;(49) SR: RCT, Controlled Trials	To identify studies of interventions that support the maintenance of work and RTW among workers with chronic illnesses	RTW is the internationally accepted term for all activities that enable and facilitate returning to work after an illness. These activities can be people-oriented or workplace-oriented intervention programs, rehabilitation programs, and training tools, including, for example, CBT, increasing activity, workplace adaption, etc. Interventions should target employees with the following conditions: diabetes, CVDs, metabolic vascular syndrome, respiratory diseases, MSDs, mental disorders and neurological disorders	Maintenance of work and RTW - RTW rate, RTW time, RTW per cent, duration of SA, Sick leave in days, and working ability	Narrative	N	Y	N	Y	2	Studies were selected if they described factors related to RTW of employed adults (aged 18+) with common disorders in general or one of the following: diabetes, CVD, metabolic vascular syndrome, respiratory disease, mental disorders, MSDs, and neurological disorders. The search was carried out without temporal and geographical limitations. Excluded were MA, reviews, cohort studies, crossover studies, case-control studies, cross-sectional studies, and programs that were not evaluated or tested with a comparison group	Moderate,	4 of 15

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertain w PICO tudie: clusio brella	O for s rela n crit	primates teria f	ary o for	Review inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Neverdal	To identify	Nowadays, interventions for back and neck	Sick leave,	Descriptiv	N	Υ	N	N	1	The exclusion criteria were: No intervention	Moderate,	7 of 9
2015;(50)	studies	pain are multidisciplinary, and physicians	time to RTW,	е						described, Not assessing a workplace		
SR: RCT	describing	are no longer the only professionals	receipt of	synthesis						intervention. Not assessing RTW or SA as an	High	
SK: KCI	workplace	involved in removing the barriers	sickness							outcome. Not including subjects with		
	interventions	prohibiting RTW. A workplace intervention	benefits							unspecific LBP/neck pain. Study designs other		
	targeting RTW	includes intervention focusing on changes								than RCT. Language not English. A workplace		
	in patients	in the workplace environment. Examples of								intervention was defined as any intervention		
	with LBP and	how the domains are understood in								focusing on changes in the workplace, working		
	neck pain and	relation to the interventions: •Body								equipment, work design, work organization,		
	their	functions and structures: Education on the								working relationships, work conditions or work		
	effectiveness.	management of stress, optimal body								environment. Occupational case management		
	To describe the	posture, changing posture/working position. •Participation & Activities:								with active stakeholder involvement of worker/employer was also included. Calls		
	interventions	Graded activity, workload modifications,								made to the workplace if the study otherwise		
	according to	taking breaks, working								fit with the definition were accepted. Emphasis		
	which	methods/techniques,								was put on the assessment of the workplace		
	domains of	lifting/pushing/pulling technique sick leave,								intervention itself, as well as the direct impact		
	the ICF model	active sick leave and change of work hours.								it had on the outcome. Studies that included		
	they	•Environmental Factors: Physical changes								workplace interventions as a non-measurable		
	intervene	of the workstation, implementation of new								component of a larger-scale intervention were		
	upon	equipment, changes addressing								excluded		
	,	communication between workers and/or										
		management, workplace attitudes or										
		workplace culture. Personal factors:										

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	w PIC tudie clusio	O for s rela n cri	regard primates to teria f ew (Y	ary o or	Review inclusion/exclusion criteria	g, Relevance to Medium/ Low)	s /total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, review aim (High/ M6	No. relevant studies /total included studies
		Adaption of a life cycle, changing habits, making age-related adjustments, lifestyle changes										

NICE	To determine	Any interventions, programmes, policies or	RTW (full /	Narrative	Ν	Υ	N	N	1	Inclusion: Delivered by: any workplace, primary	High,	20 of
2019;(51)	what	strategies that aim to increase the RTW of	partial, paid,							care or other voluntary, private or statutory	11: - l-	45
n. CDIa	interventions,	employees: (≥16 years; full- or part-time;	unpaid).							sector provider(s), any mode, duration $\&$	High	
R: SR's	are effective	paid or unpaid) who • are currently absent	Measured as:							frequency of contact, including face-to-face,		
CT,	& cost-	from work for ≥ 4 consecutive weeks due	- Proportion							telephone, DVD or other digital media, and/or		
lluster-RCT,	effective in •	to sickness or • have RTW in the past 6	returning to							use of written materials. E Organisation level:		
lon-RCT,	Helping	months after an episode of long-term SA	work - Time							All employers in the public, private and 'not-		
Qualitative,	employees on	(lasting ≥4 consecutive weeks). Where	taken to RTW							for-profit' sectors. Comparator: No work-		
conomic	long-term SA	interventions are not delivered in a	- Hours							related intervention • Any other comparator		
	to RTW? ●	workplace or primary care setting, there	worked per							for managing SA or RTW. Secondary outcomes		
	Reducing the	should be some element of the employer	week/month -							 Health-related QoL • Psychological and/or 		
	recurrence of	or primary care involvement in the design,	Proportion							social functioning • Adverse or unintended		
	long-term SA	content, implementation or funding of the	who take ill-							effects: Self-reported 'presenteeism' or work		
	following a	intervention. Examples may include, risk	health							performance. Job satisfaction; Rate of staff		
	RTW? Are the	assessments, training for line managers in	retirement •							turnover; No of grievances. Exclusion criteria:		
	interventions	handling and monitoring SA, coordinated	Long-term SA							Population • self-employed individuals •		
	acceptable to	RTW programmes (this may include	(following the							pregnant women who have taken SA related to		
	employees,	occupational therapy, workplace	RTW, for							their pregnancy • individuals who are not in		
	employers	ergonomics, physical and psychological	those on long-							employment • mixed population. Studies:		
	and key	therapy), information and support	term sickness							Studies included in the original evidence		
	stakeholders,	networks (including MH support) for	at baseline) -							reviews will be excluded if they do not meet		
	and what are	employees, physical conditioning and	Proportion							the updated inclusion criteria. SRs will have to		
	the barriers	exercise programmes, flexible working and	with any long-							meet these three criteria: • directly applicable		
	and	work-life balance policies for employees, or	term SA (≥4							to the review question; • meets the inclusion		
	facilitators to	stress counselling. This excludes	weeks							criteria • high quality. Other primary studies		
	their	interventions that: • aim to promote	duration) - No							will be included if they were published after		
	successful	workforce general health and wellbeing or	of episodes of							the publication date of the SR and meet the		
	delivery?	prevent the first occurrence of SA or injury	long-term SA							inclusion criteria. Where SRs do not meet the		
		 target pregnant women exclusively or 	(per							above criteria, they will be citation searched to		
		focus on illnesses associated with	participant) -							identify any primary studies not already		
		pregnancy • tackle workplace absences	No of days							included in the database that meet the		
		that are not reported or recorded as SA •	sick leave per							inclusion criteria. Full economic analyses and		
		clinical management of conditions where	episode -							costing studies identified from searches will be		
		the primary focus is not on helping the	Total no of							included. Costing data will not be used for the		
		employed person to stay in or RTW • look	days SA							purpose of the effectiveness review. Only		
		at the effectiveness of private health	•							papers published in the English language &		
		insurance schemes, the benefits system or								carried out in OECD countries will be included		



Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertain w PICO tudies clusion brella	o for rela	prima tes to eria f	ary o for	Review inclusion/exclusion criteria	ng, Relevance to ' Medium/ Low)	ss /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Nieuwenhui jsen 2020 (Newest version of 2014 and 2008);(52) Cochrane SR: RCT, Cluster-RCT	To evaluate the effectiveness of interventions aimed at reducing work disability in employees with depressive disorders	Health-care interventions aiming to enhance RTW are mainly based on two mechanisms. Work-directed interventions; improving conditions related to work, such as helping workers with depressive symptoms to overcome barriers that prevent them from working such as reducing work hours, changing tasks, light duty, graded work exposure addressing causes of depression at work such as conflict, or supporting the worker in coping with the consequences of their depression in the workplace. Clinical interventions are through the improvement of depressive symptoms as is usual in treatment situations, assuming that the symptoms are the main barrier to not being at work. Treatment modalities: psychological or psychiatric treatment, antidepressants, a combination of these two, and other interventions such as improved care, exercise, and diet	Sickness absence; Work functioning	Standard Mean Deviations or Risk Ratio with 95% Confidenc e Interval to pool study results in studies judged to be sufficientl y similar	N	Y	N	N	1	Included: All RCTs and cluster-RCTs; No language restrictions; The population was limited to adult (> 17 years old) workers (employees or self-employed); Participants from OH settings, primary care, or outpatient care settings; Studies if less than 50% of the participants were not employed. We defined depressive disorder as the main diagnosis fulfilling the criteria of the DSM-IV, RDC, or the ICD-10 for one of the following disorders: dysthymic disorder, minor depressive disorder, or major depressive disorder. We also included studies that defined depressive disorder as a level of depressive symptoms assessed by validated self-report instruments published in peer-reviewed journals. Exclusion criteria - Studies involving workers with a primary diagnosis of a CMD other than a depressive disorder. We did not exclude workers with a co-morbidity from other CMDs (such as anxiety disorders), but we exclude workers with bipolar disorders or depressive disorders with psychotic features	High,	6 of 45

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov si inc	v PIC tudie tlusio	O fo s rel n cri	or pri lates iteria			ig, Relevance to Medium/ Low)	: /total included es
				Type of synthesis	Population	Intervention	Outcome	Outcome	Otilei Total importaintion		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Nigatu	To assess the	Any clinical or work-focused interventions	Proportion of	MA	N	Υ	N	N	1	Population - Employees aged 18 years or over	Moderate,	5 of
2016;(53)	effectiveness	aimed at enhancing RTW. Interventions	RTW and sick-							who were absent from work due to a CMD	Low	16
SR: RCT	of the existing workplace and clinical interventions aimed at enhancing RTW	developed for RTW in workers with a CMD are primarily based on CBT principles and coping strategies. These strategies share common goals and can be combined into interventions that address work issues	leave duration until RTW							including depressive disorders, any anxiety disorders (panic attacks, generalized anxiety disorder and specific phobias), obsessive-compulsive disorder, post-traumatic stress disorder or adjustment disorders. Interventions - Any clinical or work-focused interventions aimed at enhancing RTW. Study design - RCT and cluster RCTs were included. When there were different publications for the same intervention, we included the one that presented the latest results and most relevant outcome measures to our review, which was RTW		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertain w PICO studies clusio brella	O for s rela n crit	prim ites to eria f	ary o for	Review inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Oakman 2016;(54) SR: RCT, Cohort studies with pre-post intervention measures	To determine which characteristics of workplace interventions are most effective in assisting people with PMP to remain productively employed	Interventions were considered as either focused on the individual or multilevel. Accommodations that address the multidimensional aspects of productivity in workers with PMP may be more effective than those that take a more narrow focus; synchronous to a biopsychosocial approach to managing PMP. We used a macro ergonomics framework, considering interventions from the level of the individual worker to the influence of policy at the societal level. Macro ergonomics considers the organisational and sociotechnical context of work activities and processes with their subsequent impact on an individual's health, well-being and ultimately productivity	Job loss, productivity, sick leave, pain and cost- benefit	GRADE, Narrative	N	Y	N	N	1	Included: studies reporting on workers with PMP origin of > 3 months duration; Workers on sick leave (< 1 year) but with an ongoing relationship with their work through an employment agreement; studies where PMP was not a specific inclusion criterion, but where subgroups of participants with PMP could be separately analysed; countries with disability support schemes that provide support for individuals regardless of cause. For countries with a cause-based support system, studies were excluded if the PMP condition was considered a workplace injury or illness and study participants were receiving support through a cause-based workers' compensation system. Studies were included if they involved interventions that comprised at least advice about changes in work processes to improve productivity and/or were part of a multifaceted intervention. Interventions were required to be connected to the workplace, or a component of the intervention needed to be at the workplace. Studies with interventions that included additional components not connected to the work environment were not excluded. Interventions could be aimed at	Moderate, High	6 of 14

Author, date; Type of review: type of studies included	Type view: of es	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov si inc	v PICO tudie: :lusio	ities re O for p s relate n crite revie	prima tes to eria f	ary o or	Review inclusion/exclusion criteria	g, Relevance to Medium/ Low)	/total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Releva review aim (High/ Medium/	No. relevant studies /total included studies
										modifying the physical work environment, work routine, work hours and/or individual coping mechanisms provided they were workplace-based or involved the workplace		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertair v PIC tudie clusio brella	O foi s rel n cri	r prin ates t teria	to for	Review inclusion/exclusion criteria	g, Relevance to Medium/ Low)	/total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
O'Brien 2018;(55) SR: RCT, Controlled Trials	To examine whether the effects of psychosocial and vocational interventions delivered in the first 3 months post -acute myocardial Infarction are effective for improving work outcomes	RTW following AMI can be influenced by multiple factors - social, demographic and psychological. Specifically, nonmedical factors such as level of education, previous job role & job satisfaction are considered key factors of recovery post- acute myocardial Infarction. Interventions aimed at addressing these complex issues may include the following: psychosocial interventions such as patient counselling, health education, stress management, relaxation strategies, and social supports; vocational interventions such as advice on suitable modified duties, task & workplace modification, liaison between employee and employer with a graded RTW program, and subsequent referral to external vocational agencies	At least 1 RTW outcome including return to paid or unpaid employment, either full- time or part- time, to the previous job role or on modified duties	MA, Narrative	N	Υ	N	N	1	English language publications up to March 2016 across 4 electronic databases and grey literature. Inclusion criteria were (1) psychosocial and/or vocational interventions; (2) adults 18 years or older with an acute myocardial Infarction who were within the first 3 months post- acute myocardial Infarction; (3) randomized or clinically controlled trials; and (4) reporting of at least 1 RTW outcome: including a return to paid/ unpaid employment, either full-time or part-time, to the previous job role or on modified duties	High, Low	2 of 18

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	v PICo tudie :lusio	O for s rela n crit	regare prim ites to eria f ew (Y	ary o or	Review inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, review aim (High/ Mc	No. relevant studies / studies
Odeen	To give an	Active treatments refer to interventions	Quantified SA	Narrative	N	Υ	N	N	1	Inclusion criteria were (i) participants over 18	Moderate,	5 of
2013;(56) SR: RCT	overview of the general effectiveness of active workplace interventions aimed at reducing SA	requiring that the subject is active and where the goal is behavioural change. This definition excludes interventions such as surgery, massage, use of medication, etc	and/or RTW							years old with an active role in the intervention, (ii) intervention done partly or fully at the workplace or at the initiative of the workplace and (iii) SA reported	High	17

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertain w PICC tudies clusior brella	o for rela	prima tes to eria f	ary o or	Review inclusion/exclusion criteria	ng, Relevance to 'Medium/ Low)	s /total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Palmer 2012;(57) SR: RCT, Cohort	To assess the effectiveness of interventions in community and workplace settings to reduce SA and job loss in workers with MSDs	At the workplace level, approaches include: ergonomic and/or psychosocial risk assessments—aimed at the individual or at identifying and controlling workplace risks; ergonomic changes to the physical environment; At the service level, approaches included: assessment and a coordinated action plan, evolved by a multidisciplinary case management team or a case manager; consultation with an OP; education of primary-care doctors and/or OPs and/or formalized agreements between them, to improve liaison; and access to extra external support and referral services. Some categories were capable of finer delineation, e.g. physical therapy could be subdivided into exercises to build aerobic capacity, stamina and endurance; exercises to build anaerobic capacity and strength and size of muscles; exercises to improve balance and coordination; flexibility exercises; exercises that rehearsed work activities (to build endurance and flexibility for everyday work tasks, and mitigate fear-avoidance psychological responses); and physical	RTW, avoidance of health-related job loss and mean days of sick leave/month over follow- up, cost	Descriptiv e, Narrative	N	Y	N	N	1	Peer-reviewed RCTs and cohort studies published from 1990 onwards, in which subjects were workers who had an MSD and/or were on sick leave with an MSD at entry or had taken sick leave for an MSD in the past 12 months. We limited inclusion further to studies in which vocational outcomes of interest (SA, MSD-related job loss, RTW during follow-up or prevalence of work attendance at follow-up) could be quantified for a defined worker population. Qualifying interventions were those delivered in a primary-care or workplace setting or conducted in collaboration with primary-care providers or employers, excluding drug trials and surgery, but including physical therapies delivered by physiotherapists or chiropractors. Where accounts were sufficiently detailed, we subclassified behavioural change interventions into component techniques such as: providing information on behaviour health links, prompting practice, providing feedback on performance, setting graded tasks, prompting the identification of barriers, providing	Moderate, High	14 of 54

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov si inc	ertain v PICC tudies lusior orella	for presented for the presente	prima tes to eria fo	ary o or	Review inclusion/exclusion criteria	ig, Relevance to Medium/ Low)	; /total included
	:luded			Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included
		therapy applied by a health-care professional to increase mobility or reduce pain								contingent rewards, helping in specific goal setting, agreed behavioural contracts and stress management		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s ind	ertain w PICO tudies clusion brella	O for s rela	prima tes to eria f	ary o or	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	tudies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Perski 2017;(58) SR: RCT, Controlled Trials with matched Control Group	To assess the effectiveness of tertiary interventions for individuals with clinically significant burnout on RTW and psychological symptoms of exhaustion, depression and anxiety	Tertiary interventions refer to interventions that focus on the treatment of individuals who fulfil the diagnostic criteria for stress-related disorders and the facilitation of RTW, as opposed to primary or secondary interventions, which focus on the prevention of disease incidence and progression, respectively. Tertiary interventions may be delivered at the individual or organisational level. While individual-level interventions typically include elements of CBT, relaxation training, meditation or physical activity, organisational interventions typically focus on organisational re-structuring and leadership training. It may be hypothesized that the effect of tertiary interventions on RTW is mediated by reduced symptoms of exhaustion, depression and/or anxiety	RTW, operationalize d as days until RTW (i.e., continuous variable) or full RTW at follow-up (i.e., categorical variable)	MA	N	Y	N	N	1	Studies had to be written in English; for adults aged 18 years or over with a diagnosis of clinical burnout, exhaustion disorder, adjustment disorder or a stress-related mental disorder. No upper age limit. Included trials that compared a 'psychosocial intervention' for stress-related mental disorders or clinical burnout, delivered either individually or in groups, with a wait-list control or treatment as usual. A 'psychosocial intervention' is defined here as an intervention focusing on psychological (e.g., coping skills) or social factors (e.g., social skills training) as opposed to biological factors, e.g., medication. Studies with follow-up assessments conducted within 24 months post-intervention were considered for inclusion. Where more than two intervention groups were compared, individual as opposed to group-based treatments were favoured, as were wait-list controls as opposed to treatment as usual. Secondary outcomes included: exhaustion and depression, as measured by self-report or observational scales	Moderate, Low	NR

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s ind	w PIC tudie clusio	O fo s re n cr	or pri lates riteri	gardir imary s to ia for (Y/N	y	deview inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	o mostilo	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Pieper 2019;(59) SR of SRs: SR	To sum up, current evidence of workplace interventions to prevent MSDs, psychological and behavioural disorders and interventions for older employees and economic evaluations	Improving working conditions may promote physical and mental health by combining both the individual and organizational levels. A number of reviews and single studies have addressed the efficacy and cost-effectiveness of well-designed worksite health promotion programs to improve the health of employees and save money for employers	Economic Effects (including absenteeism); improvement and retention of older employees	Narrative	Y	Υ	Y	Υ	′ 4	th ac or di st In in he st	deviews were included in the full-text search if the reported workplace interventions ddressed health and/or work-related outcomes in the prevention of musculoskeletal disorders, mental illnesses or the trengthening of older employees. Interventions were to focus on either individual, organizational, or combined-level dealth promotion or prevention at work. The tudy population included male and female imployees in different age groups	Moderate, Low	NA

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertaint v PICC tudies lusior brella	for rela	prim tes to eria f	ary o for	Review inclusion/exclusion criteria	quality rating, Relevance to aim (High/ Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Pijpker 2019;(60) SR: RCT, Quasi- experiment al, Pre- test/post- test study	To assess the effectiveness of combined interventions for employees with burnout complaints (currently either working or not working) on facilitating rehabilitation	Burnout develops in a non-linear manner. Models that are well-supported by empirical evidence include the Job Demand-Control Model, Conservation of Resources theory and the Job Demands- Resources Model. These models emphasize that the development of burnout is fostered through a complex interplay between factors within employees (e.g., low self-esteem) and factors within the organizational context (e.g., work overload). Based on these theories, interventions should target both employees and their working contexts, in order to facilitate rehabilitation (i.e., reducing burnout complaints and promoting full RTW). Examples of person- directed interventions include psychotherapy and mindfulness sessions. Examples of organization-directed interventions include changing working schedules and team building	RTW: the mean no of days to partial and full RTW and the sick leave percentage	Descriptiv e, Narrative. Identified theories of mediators of change and combined with effectiven ess data	N	Y	Υ	N	2	Those focusing on employees were included, while those focusing on students, athletes and volunteers were excluded. Second, combined interventions (both person-directed and organization-directed) were included. Third, we did not define a comparison exposure, which means that experimental studies that did not include a control group were included. Fourth, studies using the MBI to assess burnout were included. With respect to RTW, all operationalizations were included. Studies published in English between 1970 and 29 September 2019	Moderate, Low	2 of 10

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertain w PICC tudies clusion brella	O for s rela n crit	prim tes to eria f	ary o for	Review inclusion/exclusion criteria	quality rating, Relevance to aim (High/ Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Ravenek 2010;(61) SR: RCT, Controlled Trials	To assess: (1) the multidisciplin ary treatment of chronic LBP in working adults to improve employment outcomes and (2) OT as contributing to a multidisciplin ary approach in the treatment of chronic LBP	The biopsychosocial model of health indicates that interventions should be responsive to the physical, psychological, and social or occupational domains contributing to the condition. Thus influencing practice through the use of multidisciplinary teams in back pain management because of greater strengths in content, development, and implementation. Collaboration between professionals & stakeholders in essential in engaging successful RTW. Workplace-based interventions have demonstrated positive support for these programs in reducing work disability and costs. While OTs can contribute to a biopsychosocial approach in working with a team of professionals and stakeholders, they also contribute to the occupational domain (e.g., ergonomic and workplace assessment and addressing social support needs of workers and education of coworkers to address stigma of work disability) within workplace interventions	Employment outcome. SA, RTW	Narrative	Y	Y	N	N	2	Study publication between July 1998 and July 2009. Study design either RCT or clinically CT. Participants were working-age adults (18+ years) experiencing work-related chronic LBP. For LBP to be considered chronic, it must be present for a minimum of 12 weeks duration prior to the participant's involvement in the study. The intervention evaluated was multidisciplinary. Employment outcome measured. Studies were excluded if they included participants experiencing pain in addition to LBP or if they mixed participants with chronic pain conditions and did not analyse the groups separately. Studies were also excluded if the multidisciplinary interventions employed included only physical dimensions or if the interventions did not include the physical dimension. Additionally, studies were excluded if the control group used also met the criteria for a multidisciplinary intervention. Non-English studies were excluded	Moderate, Low	2 of 12

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	v PICo tudie clusio	O foi s rela n cri	regar r prim ates t teria i	ary o for	Review inclusion/exclusion criteria	ig, Relevance to Medium/ Low)	/total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Roels 2016;(62) SR: RCT, Non- randomized studies (e.g., cohort, case series, case reports)	To investigate the effect of interventions enhancing (re)employme nt following spinal cord injury	Interventions could be carried out at a hospital and/or a community setting and an in- or outpatient setting. Interventions could primarily focus on different factors such as physical activities, for example, building up strength and endurance, educational activities, for example, teaching activities, environmental adaptations, or employment activities, for example, workplace adjustments or multidisciplinary interventions being a combination	The employment rate and duration of employment	Descriptiv e, Narrative	Y	Υ	Υ	N	3	Only articles written in the English language were withheld. Subjects had to be at least 16 years of age and have suffered spinal cord injury. Exclusion criteria were active and untreated drug or substance abuse and mental impairment affecting safety for self and others	Moderate, Low	NA

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho ! in	ertain w PICO studies clusion brella	O for s rela	prim ites to eria f	ary o for	Review inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Sabariego 2018;(63) SR: RCT, Controlled Trials, Non-controlled pre-post, cohort, case-control, cross-sectional studies, Descriptive longitudinal, Qualitative	To summarize the evidence on the effectiveness of strategies for integration and reintegration to work for persons with chronic diseases or with MSDs, implemented in Europe in the past five years	A wide range of general and disease- specific strategies are implemented. These strategies range from implementing incentive-based systems at national levels to the implementation of tailored interventions and case management approaches. For instance, the concept of Flexicurity—in which an optimal combination of active labour market policies and passive measures to maintain social security, such as disability benefits, is targeted. The EU-funded Participation to Healthy Workplaces and Inclusive Strategies in the Work Sector project aims to identify strategies of integration and reintegration to work for persons with chronic diseases in Europe, evaluate their effectiveness and assess the specific employment-related needs of these persons	(1) employment status (employed, unemployed) (2) RTW (3) absenteeism (sick leave) (4) maintain a job (5) obtain a job	Narrative	Y	Y	N	N	2	Studies were included if they were: (a) published in January 2011-April 2016 (b) in English; (c) intervention studies; non-controlled pre-post intervention; qualitative or observational studies; (d) carried out in European Union, Norway, Lichtenstein, Iceland or Switzerland, or in non-European countries with western lifestyle; (e) investigating variables affecting effectiveness. (f) focused on working-age 16 to 65 years. Health conditions: focused on: (a) persons with chronic diseases in general; persons with disability were included; (b) the disease groups: MSDs, cancer, mental disorders, neurological, metabolic, respiratory & CVDs; (c) the specific diseases: depression, back and neck pain, migraine, diabetes mellitus, COPD and IHD. Studies were excluded if they: (a) included participants with mainly other chronic diseases as the ones defined above and only pooled results were reported; included participants aged <16 or >65 years; (c) were case report/case series, psychometric studies, letters, comments, editorials, overviews without empirical primary or secondary data, reviews & MA, protocols, studies reporting exclusively on design or	Moderate, Low	3 of 18

Author,	Review aim	Description of intervention and how it	Outcomes of		Uncertainties regarding	Review inclusion/exclusion criteria		
date; Type		may work	relevance to		how PICO for primary		ş (Ş	nded
of review:			umbrella		studies relates to		nce Lo	ğ
type of			review		inclusion criteria for		m/	<u>=</u>
studies					umbrella review (Y/N)		ele diu	tal
included							g, F Me	s /tc
				Type of synthesis	Population Intervention Outcome Other Total uncertainties		Overall quality ratir review aim (High/	No. relevant studie: studi

baseline data; (d) didn't consider effectiveness outcomes; (e) didn't focus on a concrete strategy or; (f) were not in English; (g) before 2011; (h) no abstract available

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	w PIC tudio clusio	O fo es rel on cri	r prir lates iteria	to	Review inclusion/exclusion criteria	g, Relevance to Medium/ Low)	/total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Salathe 2018;(64) SR: Longitudinal , RCT, Prospective, Cost analyses, Retrospectiv e	To examine the efficacy, clinical utility, and cost-effectiveness of MBR interventions as treatments for persistent LBP or persistent non-specific LBP	MBR to involve weekly meetings of the therapeutic team at which individuals' treatment is discussed. MBRs with a high treatment intensity of at least 25 hours per week. MBR also typically involves CBT to help the individual identify and replace maladaptive thoughts, emotions and behaviours. Thus CBT is often integrated into MBR, generally in the form of group therapy as this is considered to represent the most cost-effective use of resources	Cost- Effectiveness, Sick leave (includes but is not limited to length of absence from work), and RTW	Narrative	Y	Y	N	Υ	3	Excluded publications that were abstract only, case reports, letters, comments, or reviews; studies based on fewer than 15 patients; publications in languages other than English or German; publications where there was insufficient information to determine whether the intervention met our criteria for MBR. Selected all articles between 2010 and 2017 that examined the efficacy, clinical utility, or cost-effectiveness of MBR, where the MBR consisted of more than 25 hours of treatment per week delivered by at least 3 different health professions as well as CBT-based psychological education. At least one out of several outcomes should be reported in the selected studies: pain intensity, disability, health-related quality of life, and work ability/sick leave	Moderate,	NA

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	v PICO tudie: clusio	o for rela reit	regard prima ites to eria fo ew (Y,	ary o or	Review inclusion/exclusion criteria	g, Relevance to Medium/ Low)	/total included s
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Salomonsso	To calculate	Clinical guidelines indicate that	Sick	MA	Υ	Υ	N	N	2	The following criteria had to be fulfilled: (1) the	Moderate,	CD of
n 2018;(65)	the effect size	psychological treatments, primarily CBT,	leave/absente							population consists of adult individuals	Low	45
SR: RCT	of psychological interventions for CMDs on sick leave and psychiatric symptoms based on all published RCTs	are effective to treat mental disorders. Psychological treatments can reduce symptoms, but it is unclear if they affect sick leave. Interventions to prevent or reduce sick leave differ between published studies. In some studies, the psychological treatment itself is proposed to enhance the patients' health and as a consequence work functioning, and therefore prevent or reduce sick leave. In other studies, a specific intervention is added to the psychological treatment to address work-related issues and facilitate RTW. And in yet other studies RTW is the focus of treatment arguing that if problems at work are addressed and RTW occurs, this will	eism							fulfilling diagnostic criteria for, or having symptoms of depression, anxiety, stress or insomnia; (2) the subjects are randomly allocated to conditions in the trial and receive a psychological intervention; (3) there could be any kind of comparison condition; (4) the outcomes are measures of sick leave or absenteeism from work; and (5) the study is published in an English language journal. A study was excluded if it: (a) was not an RCT, (b) did not have sick leave as an outcome measure, (c) was not a treatment study, (d) did not focus on a mental disorder or (e) was not the main outcome study from a project		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	w PIC tudie clusio	O for s rela n crit	regar primates to teria f ew (Y	ary o for	Review inclusion/exclusion criteria	g, Relevance to Aedium/Low)	/total included s
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Sampson 2015;(66) SR: Observation al design, RCT	To determine if 'stand-alone' occupational rehabilitation programs, such as those in place in Victoria, are effective in assisting injured workers to return to paid employment	Jurisdictions (like in Victoria, Australia) outsource occupational rehabilitation to sector providers who are independent of the regulator, the case management organisation, and the healthcare system. The occupational rehabilitation program had to be identifiably separate from case management and healthcare processes. Thus excluding vocational or occupational rehabilitation programs that were inpatient or hospital-based	Return to paid work (time away from work/employ ment, income replacement payments)	Narrative	Y	Y	N	N	2	Inclusion: Population - adults of working age with a work-related injury or disease, who have had a period of time away from work arising from that injury or disease. Intervention - 'stand-alone' vocational or occupational rehabilitation program. Studies in which occupational rehabilitation programs were conducted as part of broader case management or healthcare rehabilitation processes were excluded, Studies with any type of comparison or control group were deemed to be acceptable. Outcome - return to paid work with the same or a different employer. Study design criteria: controlled trials; other study designs (e.g. cross-sectional, time series, cohort studies) with a relevant comparison group; any systematic review within the scope of the review	Low,	3 of 6

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review	ho : in	ertair w PIC studie clusio brella	O foi s rela n cri	r prim ates t teria	ary o for	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	es /total included ies	
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rati review aim (High,	No. relevant studies /total included studies
Schaafsma 2013 (Newest version of 2011, 2010);(67) Cochrane SR: RCT, Cluster RCT	To assess: the effectiveness of physical conditioning as part of an RTW strategy in reducing time lost from work and improving work status for workers with back pain; and which aspects of physical conditioning are related to a faster RTW for workers with back pain	Physical conditioning programs incorporate some form of structured activity based on the idea that inactivity due to avoidance of painful activities can lead to deconditioning syndrome, which in turn can lead to more pain from attempts to move stiffened joints and muscles weakened by disuse. The main goal of physical conditioning programs, sometimes called work conditioning, work hardening or functional restoration/exercise programs, is to return injured or disabled workers to work or improve the work status of workers performing modified duties. These tasks are structured and progressively graded to increase psychological, physical and emotional tolerance and improve endurance and work feasibility. In such environments, injured workers learn appropriate job performance skills. Work hardening programs are individualized, work-oriented activities that involve clients in simulated or actual work tasks. Work conditioning is a program with an emphasis on physical conditioning that addresses the issues of strength, endurance, flexibility,	Work-status outcomes were: 1. time between intervention and RTW 2. RTW status in terms of "at work" or 'off work" 3. time on light or modified duties	MA	N	Y	N	N	1	We included studies on physical conditioning programs when they included the following three key elements: • exercises specifically designed to restore an individual's systemic, neurological, musculoskeletal, cardiopulmonary function, or a combination; • explicitly stated to have an intended improvement of work status; • a stated relationship between the intervention and functional job demands. Physical conditioning programs could include components such as operant conditioning behavioural approach, pain management, back pain education, advice on RTW or a workplace visit. The delivery of physical conditioning programs could involve multidisciplinary teams or individual health professionals. They could be delivered one-to-one/group. Based on the intensity of the program we differentiated between • light physical conditioning programs: These programs included the three key elements and were delivered in fewer than five sessions (of one hour) or were described by the primary study author as a light intervention programs. • intense physical conditioning programs: These programs included the three key elements and	High, High	10 of 41

Author, date; Type of review: type of studies included	Review aim	may work	Outcomes of relevance to umbrella review		hov si inc	ertaint v PICC tudies lusior orella	for prelated crite	orima es to eria fo	or	Review inclusion/exclusion criteria	ig, Relevance to Medium/ Low)	total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
		motor control, and cardiopulmonary function. Functional restoration aims at restoring a reasonable functional level for daily living, including work								were delivered in more than five sessions or were delivered on a full-time basis for more than two weeks. All RCTs were included without language restriction		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertain v PICC tudies clusion brella	o for rela	prima tes to eria f	ary o for /N)	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality ra review aim (Higl	No. relevant stud stu
Schandelma ier 2012;(68) SR: RCT	To determine the long-term effectiveness of RTW coordination compared to the usual practice in patients at risk for long-term disability	RTW often requires overcoming challenges, including coping with ongoing health problems, re-establishing work functioning, and finding suitable alternative work if a previous job is no longer available. Lack of cooperation between patients, employers, healthcare providers and insurers may also complicate RTW. The OECD postulated in 2010 that "more people with disability could work if they were helped with the right supports at the right time" through better "cross-agency co-operation" and "systematic and tailored engagement with clients". Following this intuitively appealing approach, social and private insurers have increasingly implemented RTW coordination services for people receiving wage replacement benefits. RTW coordination, however, demands considerable effort from the affected individual, health professionals, and employers, often without compensation, and is associated with substantial direct costs for insurers. We defined RTW coordination as involving a direct assessment leading to an individually	RTW	MA	N	Y	N	N	1	Eligible studies met the following criteria: (1) random allocation of adult participants to RTW coordination or usual care, (2) inclusion of participants of whom at least 80% were continuously off work (full or part-time sick leave or on disability benefit) for at least four weeks and employed at the time of sick listing, and (3) report of disability status or RTW as an outcome. We excluded employer-initiated RTW coordination programmes because they typically focus on the prevention of sick leave, and encounter fewer barriers in implementing workplace-directed interventions than insurance or third-party RTWCs	High,	3 of 9

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	v PICC tudies clusior	o for p relat rcrite	egardin orimar es to eria for w (Y/N	y	ig, Relevance to Medium/Low)	/total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties	Overall quality rating, review aim (High/ M	No. relevant studies. studies
		tailored RTW plan implemented by an RTW coordinator or team who coordinates services and communication among involved stakeholders									

Author, date; Type of review:	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella		hov	v PIC	O for	regar primates to	ary	Review inclusion/exclusion criteria	nce to Low)	cluded
type of studies included			review					teria f ew (Y			ing, Relevance to / Medium/Low)	es /total in
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Schonstein	To compare	Work-oriented back pain management	Work-status	MA	N	Υ	N	N	1	Studies published in a language other than	High,	2 of
2003 (Sister	the	programs aim to help people RTW and	outcomes: 1.							English were considered. Adults (> 16 years)	Low	19
version of	effectiveness	improve work abilities. They are called	time lost from							with work disabilities related to back or neck	Low	
Schonstein	of physical	work or physical conditioning, work	work 2. time							pain who were included in physical		
2003 in	conditioning	hardening or functional	between							conditioning programs. All subjects who were		
SPINE);{Sch	programs	restoration/exercise programs. These	injury and							accepted into physical conditioning programs,		
onstein,	with	programs aim for RTW, improvement in	return to pre-							whether they had acute, sub-acute or chronic		
2003 #53}	management	work status (for workers performing	injury work							back or neck pain, met our inclusion criteria.		
Cochrane	strategies that	modified duties) and/or the achievement	status 3. RTW							Studies with subjects with specific diagnoses		
SR: RCT	do not include	of a higher level of function by increasing	status in							such as infection, neoplasm, metastasis,		
Sit. Itel	physical	strength, endurance, flexibility, and	terms of "at							osteoporosis, RA, fracture, and inflammatory		
	conditioning	cardiovascular fitness. Such programs	work" or "off							processes or other conditions for which valid		
	programs, for	either simulate or duplicate work and/or	work" 4. time							diagnoses had been demonstrated were		
	workers with	functional tasks in a safe, supervised	on selected,							excluded. Types of interventions - Physical		
	back and neck	environment. These programs differ in	appropriate,							conditioning programs consisting of work		
	pain, in	their goals from other programs as they	light,							conditioning or hardening or functional		
	reducing time	include several features which are better	modified							restoration/exercise program with an intended		
	lost from	than usual care in reducing sick days for	duties 5.							improvement of work or functional status. We		
	work and	some workers with chronic back pain.	other							included interventions that were		
	increasing	Those features are: a cognitive-behavioural	reported							work/function-related physical rehabilitation		
	functional	approach (addressing attitudes and	changes in							programs specifically designed to restore an		
	status	behaviours such as fear of movement), are	work status							individual's systemic, neurological,		
		done at work or in cooperation with								musculoskeletal (strength, endurance,		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	w PICC tudies clusior	for p relate crite	egardir orimary es to ria for w (Y/N		g, Relevance to Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	oral uncertainties	Overall quality ratin review aim (High/	No. relevant studies studie
		employers, and are supervised by a physiotherapist or multidisciplinary team							movement, flexibility and motor control) and/or cardiopulmonary function		

Author, date; Type of review: type of studies included			pe may work relevance to w: umbrella review				how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	ing, Relevance to / Medium/ Low)	tudies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies		
Skamagki 2018;(69) SR: RCT, Cluster RCT	To identify the workplace management strategies for individuals with existing chronic MSDs and to highlight whether these interventions are effective	A healthy work environment influences the physical, mental, and socioeconomic behaviours of its employees and can promote the well-being of their families and communities. It can also increase productivity and reduce absenteeism or presenteeism (the practice of coming to work with an injury or medical condition). The WHO has identified three main categories of health interventions that can be used to manage the risk of MSDs at the workplace. These categories relate to prevention, RTW, and long-term management and can include specific services, actions, or products developed and implemented to change or improve health, behaviours, and awareness	RTW status, duration of absence from work/sick leave, time lost	Narrative	Y	Y	Y	N	3	Employees with long-term multi-joint conditions and chronic MSDs (12 weeks or more). Participants' age was between 18 and 68 years, and both males and females were included. Interventions included strategies that were conducted individually or in groups to manage chronic MSDs. Workplace interventions focusing purely on prevention and RTW strategies were not included in this review. This review excluded studies including people with acute MSDs or other serious pathologies and those that did not aim to compare the effectiveness of the interventions used in the workplace arena. In addition, guidelines, policies, and other recommendations were also excluded	Moderate,	NA		
Snodgrass 2011;(70) SR: RCT, SR	To identify, evaluate, and synthesize interventions for low back injuries and illnesses of	Occupational therapy practitioners perform client-centred evaluations, including job analysis and evaluation of contextual factors, using a variety of approaches, and they help clients with low back injuries in the performance of occupations and activities. Approaches	RTW, absenteeism, work capacity	Descriptiv e, Narrative	N	Y	N	Y	2	NR	Moderate, Medium	All SRs		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho	ow Pl studi nclusi	ICO ies ion	ies re for p relat crite	orima es to eria fo	ary o or	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
				Type of synthesis	Population	Intervention		Outcome	Other	Total uncertainties		Overall quality raterion (High	No. relevant studi stud
	relevance to occupational therapy	include instruction in proper body mechanics and the safe performance of activities; task analysis and use of ergonomic design to modify the environment; use of relaxation techniques; work hardening and reconditioning; and education for pain management, stress reduction, and coping											
Stapelfeldt 2019;(71) SR: RCT	To learn how occupationall y active cancer survivors may be optimally supported to retain work	Mixed interventions: (Psycho-)educational interventions, Physical interventions, Vocational/work-related interventions, Multidisciplinary interventions	Time to first job loss, the incidence of/time to recurrent SA, total hrs worked/% unemployed/ workability/w orking %, time to RTW, sick leave days, presenteeism, employment status, absenteeism,	Descriptiv e	Y	Y		Y	N	3	Studies were excluded for the following reasons: (1) no RCT; (2) no chronic disease; (3) 50% of the participants on sick leave at baseline; (4) outcome measures related to RTW instead of staying or retaining work after RTW; and/or (5) other (e.g., full text not available)	Moderate, Low	NA

Author, Review aim Description of intervention date; Type may work of review: type of studies included		Description of intervention and how it may work	Outcomes of relevance to umbrella review	e to how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)			ary o or	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	es /total included ies		
			Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rat review aim (High	No. relevant studies /total included studies	
			work disability, work productivity									
Steenstra 2017;(72) SR: RCT, Observation al cohort	To synthesize evidence on the effectiveness of interventions aimed at promoting work participation	All interventions aimed at RTW or stay at work in the defined population	RTW, work ability, career advancement, stay at work, work limitation, (early) retirement, disability, workers' compensation	Narrative	N	Y	N	Υ	2	Ageing workers - 45 years and older. We also included studies where the objective was clearly aimed at the effectiveness of interventions in older workers on the outcomes of interest. Some terms to limit the search to studies examining ageing workers were: age, ageing, older workers, senior workers, seniors, and elderly. All peerreviewed literature was included, including non-English citations	Moderate, Low	3 of 14

Author, date; Type of review: type of studies included	ate; Type may work f review: ype of udies		Outcomes of relevance to umbrella review	how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)				mary to a for	Review inclusion/exclusion criteria	ing, Relevance to / Medium/ Low)	es /total included lies	
				Type of synthesis	Population	Intervention		Outcome Other	Ourer Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
	in older workers		stay-at-work outcome									
Tamminga 2010;(73) SR: Controlled Trials, Prospective cohort (Not fully reported)	To review the effect of interventions focusing on RTW, employment status, or work retention in patients with cancer	The ICF offers three opportunities for interventions: 1. improving body structure & functioning 2. improving environment-related factors and 3. improving person-related factors. Better treatment of cancer and management of cancer-related problems such as fatigue will improve body structure & functioning, with a subsequent improvement in disabilities and work functioning. Interventions to adapt the work environment and interventions to improve person-related factors such as thoughts and expectations regarding RTW will have the potential for preventing long-term disability as well	RTW, employment status, or work retention through improvement of work- environment- related or person- related factors	Content	Y	Y	N	I N	2	Articles were included if the following criteria were met: 1. patients were diagnosed with cancer at age 18 years, 2. description of an intervention aiming at the improvement of RTW, employment status, or work retention through the improvement of workenvironment-related or person-related factors. Articles describing an intervention that was exclusively focused on the improvement of body structure or functions were excluded	Moderate, Low	5 of 20

Author, date; Type of review: type of studies included	Review aim	view aim Description of intervention and how it Outcomes of may work relevance to umbrella review			hov s ind	ertain v PICC tudies clusior brella	o for rela	prima tes to eria f	ary o for	Review inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Tompa 2008 (sister versions 2009, 2007);(74) SR: RCT, B&A, Interrupted Time Series	To assess the credibility of evidence that incremental investment in disability management interventions is worth undertaking	Many interventions include some workplace-based components, such as the inclusion of the injury employer in the RTW transition. Some initiatives have been undertaken directly by employers, though the complexity of disability management programs generally involves the expertise of various specialities from outside the firm. Hence many such initiatives are undertaken at the system level by a workers' compensation insurance authority or public administrator and provide disability management services to multiple industries. Disability management has been regarded as good practice since it promotes improved recovery time, and preliminary evidence suggests that it can lead to lower resource costs. In most cases, workers return to their injury employer, often initially to modified work, while concurrently receiving some kind of medical treatment and rehabilitation services	Compensation n expenses, days on benefits, wage value of sick days and disability pension, indemnity /medical care expenses, cost of lost time and light-duty time, wage value of sick days and medical care expenses	Best- evidence synthesis, Narrative	N	Y	Y	N	2	Studies had to be published in the year 1990 or later. We chose this date because we had identified a few workplace studies with economic evaluations published prior to 1990 in a scoping review undertaken by the author group to test the feasibility of this systematic review. In addition, we were concerned that studies from the pre-1990 time period would be less relevant to current workplace settings and would likely have used economic evaluation methods of lower quality since methods were less advanced prior to that period	Low, Medium	5 of 8

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertain v PICC tudies clusion brella	O for s rela n crit	primates to	ary o or	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality ra review aim (High	No. relevant studi stu
Torchalla 2018;(75) SR: Cohort study, RCT, Clinically Controlled Trials	To summarize interventions targeting individuals with work-related post-traumatic stress disorder to make recommendat ions for clinicians and administrative decision-makers involved in their rehabilitation, and to guide future research	Treatments were not limited in terms of their approach, but they were required to address existing trauma-related symptoms; interventions that aimed at preventing post-traumatic stress disorder (e.g., critical incident stress debriefing) were excluded. Both psychotherapy and pharmacotherapy interventions were acceptable. Particular attention was given to studies that were conducted under representative conditions (e.g., in naturalistic clinical settings). The outcome of psychotherapeutic or pharmacological therapies addressing post-traumatic stress in individuals who have been exposed to a traumatic event during their work duties	RTW	MA	Y	Y	N	N	2	All study participants were required to both (a) have experienced a traumatic event in the context of their work duties and (b) report the presence of posttraumatic distress. We excluded studies with military samples, those that combined workers with civilian or military participants in their treatment sample (except when results were disaggregated), and those that included individuals who had experienced nontraumatic work stressors (e.g., working overtime). Naturalistic clinical settings, randomized, nonrandomized, and uncontrolled studies were accepted. Single case studies were excluded. Studies were required to report work-related (preferably RTW) outcomes; if this was not available, quantitative measures of traumatic stress symptomatology were acceptable. Studies that used non-psychological/RTW measures as the only outcome variables were excluded. Studies had to present the outcome variables for the sample as a whole using statistical analyses. Studies that reported treatment outcomes for each participant individually and those that did	Moderate, Low	CD of 11

Author,	Review aim	Description of intervention and how it	Outcomes of		Uncertainties regar	rding Review inclusion/exclusion criteria	_
date; Type		may work	relevance to		how PICO for prim	nary	w) w)
of review:			umbrella		studies relates t	to	nce Suc
type of			review		inclusion criteria f	for	eva m/ line
studies					umbrella review (Y	Y/N)	Selk diu otal
included							g, F Me ss ss
				Type of synthesis	Population Intervention Outcome Other	Total uncertainties	Overall quality ratin review aim (High/ No. relevant studies studie

not use statistical analyses were excluded. Studies that received a "weak" rating for their methodological quality were also excluded

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertair w PIC tudie clusio brella	O for s rela n crit	primates t	ary o for	Review inclusion/exclusion criteria	quality rating, Relevance to aim (High/ Medium/ Low)	es /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Tveito 2004;(76) SR: Controlled studies	To assess the effect of controlled workplace interventions on LBP through a review of controlled studies	Controlled workplace interventions with employees as participants, aiming to prevent or treat LBP were included. The 24 preventive interventions were split into five subcategories: educational (10 interventions) · exercise (six interventions) · back belts (five interventions) · multidisciplinary (two interventions) · pamphlet (one intervention)	Lost workdays or sick leave due to LBP, cost or CE	Narrative	N	Y	N	N	1	One of the following outcome measures had to be used: lost workdays or sick leave due to LBP, cost or cost-effectiveness, new episodes of LBP, or level of pain. Studies published in English from 1980 through June 2002 were included	Moderate, Low	2 of 28
Van Geen 2007;(77) SR: RCT	To determine the long-term effect of multidisciplin ary back training on the work participation of patients with nonspecific chronic LBP	Multidisciplinary back training (including one physical and at least one other component: psychological, behavioural, educational or social). Multidisciplinary implies the involvement of several disciplines, such as psychologists, physiotherapists, OTs, and/or medical specialists. The multidisciplinary back training method is based on the biopsycho-social principles of chronic LBP treatment. The main objective of the training is to restore the daily functioning of participants for the longer term. The training program is partly based on physical training and partly on behavioural cognitive training. The physical training is	Work participation (ability to work, number of days of sick leave, and RTW)	Narrative	N	N	Y	N	1	Publications had to meet the following: an RCT study of patients, 18-65-year age range, experiencing restrictions due to chronic LBP evaluation of a multidisciplinary back training (including one physical and at least one other component: psychological, behavioural, educational, or social); Nonspecific chronic LBP are LBP in the lumbosacral region, with no specific demonstrable physical cause. The back pain may also be accompanied by radiation to the gluteal region and/or the (upper) leg. There are no symptoms of general diseases, such as fever or loss of weight. We use the term chronic pain if the pain episode continues for >12 weeks. The use of one of the following outcome measures: work participation,	Moderate, High	1 of 10

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho : in	w PIC studio clusio	CO for es rela on cri	regar r prim ates t teria iew (Y	ary o for	Review inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
		performed according to "graded activity" principle. Intensive therapy involves 30 hours of training a week or more								experienced pain, functional status, and QoL. All operationalizations used were considered to be indicators of work participation		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	w PIC tudie clusio	O for s rela n crit	regard primates to eria f ew (Y	ary o or	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	tudies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rat review aim (High	No. relevant studies /total included studies
Van Middelkoop 2011;(78) SR: RCT	To determine the effectiveness of physical and rehabilitation interventions (i.e. exercise therapy, back school, transcutaneo uselectrical nerve stimulation (TENS), low level laser therapy (LLLT), education, massage, behavioural treatment, traction, multi	Exercise therapy: series of specific movements with the aim of training or developing the body by routine practice or physical training to promote good physical health. Back school: consists of educational and skills acquisition program, including exercises, in which all lessons were given to groups of patients and supervised by a paramedical therapist or medical specialist. TENS: non-invasive therapeutic modality that stimulates peripheral nerves via skin surface electrodes at well-tolerated intensities. Superficial heat or cold: all kinds of heat or cold therapies. LLLT: light source that generates pure light of a single wavelength with nonthermal effects. Patient education: systematic experience, in a one-to-one situation, that consists of one or more methods which influence the way the patient experiences his illness and/or his knowledge and health behaviour, aimed at improving or maintaining or learning to cope with a condition. Massage: soft tissue manipulation using the hands /mechanical	RTW (e.g., RTW status, sick leave days)	Descriptiv e, Narrative	N	Y	N	Y	2	The following were included for selection criteria: (1) RCTs, (2) adult (>18 years) population with chronic (>12 weeks) nonspecific LBP, and (3) evaluation of at least one of the main clinically relevant outcome measures (pain, functional status, perceived recovery, or RTW). The following self-reported outcome measures were assessed: pain intensity, back-specific disability, perceived recovery, RTW (e.g. RTW status, sick leave days), and side effects. The primary outcomes were pain and physical functional status. Studies with a follow-up less than one day were excluded. The following physical and rehabilitation interventions were included: exercise therapy, back schools, transcutaneous electrical nerve stimulation (TENS), superficial heat or cold, low-level laser therapy (LLLT), individual patient education, massage, behavioural treatment, lumbar supports, traction, and multidisciplinary rehabilitation. Spa therapy (balneotherapy) was excluded. All types of LLLT, including all wavelengths, are	Moderate, Low	CD of 83

treatment, cognitive, and respondent treatments or a combination of these treatments which supports, and modifies one of the three response modifies one of the three response systems that characterize emotional experiences: behaviour, cognition, and physiological reactivity. Lumbar supports: any type of lumbar support, flexible or rigid, used for the treatment of chronic nonspecific LBP. The intervention traction: any type of traction. Finally, the multidisciplinary treatment included multidisciplinary treatment included dimension and one of the other	Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho in	ertain w PICC studies clusion brella	o for rela	prima tes to eria fo	iry o or	Review inclusion/exclusion criteria	ng, Relevance to 'Medium/ Low)	s /total included ies
lumbar combination of these treatments which supports, and heat/cold therapy) for chronic LBP chronic LBP the first reatment of chronic nonspecific LBP. The intervention traction: any type of traction. Finally, the multidisciplinary treatment included multidisciplinary to physical dimension and one of the other treatment of the other that the intervention of interest was the main contrast between the intervention groups included in the study included in the study the study included in the study					Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
occupational)		lumbar supports, and heat/cold therapy) for	combination of these treatments which modifies one of the three response systems that characterize emotional experiences: behaviour, cognition, and physiological reactivity. Lumbar supports: any type of lumbar support, flexible or rigid, used for the treatment of chronic nonspecific LBP. The intervention traction: any type of traction. Finally, the multidisciplinary treatment included multidisciplinary bio-psychosocial rehabilitation with minimally one physical dimension and one of the other dimensions (psychological or social or								that the intervention of interest was the main contrast between the intervention groups		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho ir	ow Pl stud nclus	ICO lies sion	es re for p relate crite eviev	orima es to ria f	ary o or	Review inclusion/exclusion criteria	ing, Relevance to / Medium/Low)	es /total included ies
				Type of synthesis	Population	40,400	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Van Vilsteren 2015 (Newest version of Van Oostrom 2009);(79) Cochrane SR: RCT	To determine the effectiveness of workplace interventions in preventing work disability among sicklisted workers, when compared to usual care or clinical interventions; and to evaluate whether the effects differ when applied to MSDs, MH problems, or	If the cause of work disability is associated with the workplace, then a return to an unchanged workplace (with or without appropriate treatment for the disorder) may lead to recurrences in the longer term. By incorporating workplace adaptations, workplace interventions aim to reduce barriers to RTW. We used the term 'workplace intervention' for interventions focusing on changes in the workplace or equipment, work design and organisation (including working relationships), working conditions or work environment, and occupational (case) management with active stakeholder involvement of (at least) the worker and the employer. We defined active involvement as face to-face conversations about RTW between (at least) the worker and the supervisor. Changes in the workplace and equipment include changes in the furniture or the materials needed to perform the work. Changes in the work design and organisation include changes in schedules or tasks, training in task performance, and altered working relationships with	RTW or SA reported as a continuous outcome, However, when studies used different ways of operationalisa tion, we only analysed the data collected in the following manners. • Time until lasting RTW < four weeks without dropping out. • Cumulative duration/	MA	N	Y		N	N	1	We included: RCTs of workplace interventions to improve RTW for disabled workers. All studies concerning full- and part-time workers (18 to 65 years) who were on sick leave. Secondary outcomes were: functional status; QoL; general health; depression; pain levels; and direct and indirect costs of work disability. We compared the workplace with either usual care or clinical interventions. We included only interventions that were linked closely to the workplace and that focused on work adaptations /involvement of stakeholders from the work environment. We excluded interventions that were intended to simulate the demands of work in a laboratory setting, without changes to or involvement of the workplace in the RTW process. Excluded: Studies that only reported a dichotomous measure of SA; Studies if the intervention was: • focused on primary prevention of SA, that is, targeted to healthy workers as opposed to those on sick leave; • not focused on RTW as the main goal; • group-based rather than individual-based; • focused on education about ergonomics only, and did not result in	High,	12 of 14

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	w PICO tudie: clusio	O for s rela n crit	regard r prima ates to teria f iew (Y	ary o or	Review inclusion/exclusion criteria	ng, Relevance to 'Medium/ Low)	ss /total included
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
	other health conditions	supervisors and co-workers. Changes in working conditions refer to the financial and contractual arrangement	Recurrences of SA							work adaptations; • aimed at posture modifications only without RTW as the goal		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertair w PICo tudie clusio brella	O fo s rel n cri	r pri lates iteria	mary to a for		ig, Relevance to Medium/ Low)	s /total included
				Type of synthesis	Population	Intervention	Outcome	Outcome	Ourer Total megattaintion		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Vandenbroe ck 2016;(80) SR: SRs, Meta- analyses, Literature reviews, Guidance, Grey literature	To determine: the effectiveness of rehabilitation and RTW interventions and factors important for successful long-term reintegration and sustainable RTW	A broad definition of the term intervention was used and included large-scale intervention studies to smaller scale workplace design changes, management training courses, or safety and health considerations. Included measurement of occupational safety or health initiative, measurement of the impact of health promotion initiative, ergonomics, health promotion, health promotion, occupational safety and/or health, occupational health, occupational medicine, occupational hygiene, worker protection, risk control, risk reduction, training for employees or managers, age management, rehabilitation, RTW, work disability, education	SA, workability, reduction in a premature departure from work	Descriptiv e, Narrative	Y	Y	N	N	2	Adults (employed, employed but not working, voluntary work), published post-2000, Outcomes - Reduction/increase in ill health, SA reporting, accidents, capability; Extended working life Improvement/decline in retention of workers, morale, workability, management style, mental well-being, Employability; Reduction in a premature departure from work. Excluded: economically inactive, published before 2000, primary research, MA, systematic reviews, reviews, guidance, guidelines, or reports reporting scientific evidence on risk factors, correlates or predictors of RTW, MA, SRs, reviews, guidance, guidelines or reports reporting scientific evidence on qualitative research	Low, Medium	CD of 31

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertain v PICO tudies clusion brella	for presented for the second for the	orima es to	ary o or	Review inclusion/exclusion criteria	ing, Relevance to / Medium/ Low)	tudies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Varatharaja n 2014;(81) SR: Studies that compared WDP intervention s to other non- invasive or no intervention , RCT, Cohort, Case- control	To assess the effectiveness of work disability prevention (WDP) interventions in workers with neck pain, whiplash-associated disorders (WAD), or upper extremity disorders	Although work disability is triggered by a health problem (e.g., neck pain), its prognosis is influenced by contextual determinants such as the workplace psychosocial environment, legal and regulatory frameworks and workers' beliefs and expectations. Thus, to be effective, interventions should consider these determinants with the goal of rehabilitating workers to prevent or decrease absenteeism at work and increase wellbeing. We classified WDP interventions into five categories. 1. Clinical rehabilitation at the workplace: any clinical/ rehabilitation treatment intended to facilitate RTW and provided within the workplace; 2. Work hardening or conditioning and graded activity: programs simulating work and/or functional tasks through progressive training and physical activity graded within a supervised environment in a clinical setting, to address the physical, functional, and/or occupational needs of patients;3. RTW	RTW	Narrative, Best evidence synthesis	N	Y	Y	N	2	We included studies of adults (i.e., 18 years of age and older) with neck pain and associated disorders (grades I– III), WAD grades I–III and/or upper extremity disorders. We excluded studies of patients with neck pain or upper extremity disorders due to major pathologies (e.g., fractures, systemic disease). Outcomes of interest: (1) self-rated recovery; (2) functional recovery (e.g., disability, RTW); (3) pain intensity; (4) health related QoL; (5) psychological outcomes such as depression; and (6) adverse events. Eligible studies met the following criteria: (1) English language; (2) Published between January 1st, 1990, to December 6th, 2012; (3) Study designs including RCTs, cohort studies, and casecontrol studies; (4) An inception cohort of at least 30 subjects per treatment arm with the specified conditions for RCTs or 100 subjects per group with the specified condition in cohort studies or case-control studies. Studies were excluded if they were: (1) letters, editorials, commentaries, unpublished manuscripts, dissertations, government	Moderate, Low	1 of 5

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	v PIC tudie clusio	nties r CO for es rela on crit a revie	prim tes to eria f	ary o or	Review inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	studies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, review aim (High/ Me	No. relevant studies , studies
		coordination: collaboration between workers, employers, and healthcare providers for the provision of services intended to rehabilitate and return injured workers to the workplace, under the supervision of a coordinator independent from one of the stakeholders; 4. Ergonomic interventions: interventions aimed at								reports, books and book chapters, conference proceedings, meeting abstracts, lectures and addresses, consensus development statements, guideline statements; (2) cross-sectional studies, case reports, case series, qualitative studies, narrative reviews, systematic reviews (with or without meta-analyses), clinical practice guidelines,		

biomechanical studies, laboratory studies,

cadaveric or animal studies

studies not reporting on methodology; or (3)

modifying biomechanical physical

intervention categories

exposure(s) and organizational factors

within a workplace; 5. Combined WDP

approaches: a combination of two or more interventions from two or more WDP

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	w PIC tudie clusio	O foi s rela n cri	regar r prim ates t teria f iew (Y	ary o for	Review inclusion/exclusion criteria	ig, Relevance to Medium/ Low)	/total included
				Type of synthesis	Population	Intervention	Outcome	Other .	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Verhoef 2020;(82) SR: RCT, Controlled Trials	To investigate the effectiveness and characteristics of VR interventions for people with chronic physical conditions	Despite disease-specific differences, there are generic characteristics that can be considered common consequences of a chronic physical condition that hamper work participation, such as pain, fatigue and functional disabilities, variability of symptoms, an unpredictable course of symptoms, and long-lasting impact of consequences. As a result, people with chronic physical conditions may face many similar challenges and adaptive tasks to participate in work. Therefore, the use of a generic approach to improve the work participation of persons with chronic physical conditions might be appropriate. Intervention: studies focusing on vocational rehabilitation interventions containing specific elements to improve work participation (excluding surgery, and medication)	Work status (yes/no- proportion of sample achieving RTW, employment or job maintenance), work productivity (hrs worked, sick leave duration), work attitude (employment activities, self- efficacy at work)	MA	N	Y	Y	N	2	Inclusion criteria: (i) population: working-age adults (18–65 years) with a chronic physical condition, other than chronic back pain, lasting 3 months or that can be categorized as long-lasting based on disease characteristics (e.g. RA), (ii) Intervention: studies focusing on VR interventions containing specific elements to improve work participation (excluding surgery, medication), (iii) Comparison: no vocational intervention (usual care, waiting list), (iv) outcome: work participation (v) original controlled trials in the English language and peer-reviewed	High, Medium	6 of 22

Vogel	To assess the	RTW programmes identify barriers that	RTW,	MA,	N	Υ	N	N	1	Included: RCTs that enrolled workers (16 to 65	High,	7 of
2017;(83)	effects of	may prevent workers from successfully	measured	GRADE						years) who were on full- or part-time sick leave		14
	RTW	returning to work and assess their	using several							continuously for > 4 weeks/were receiving	High	
Cochrane	coordination	strengths and limitations. A designated	descriptive							long-term disability benefits; and • were		
SR: RCT	programmes	coordinator then provides the worker with	outcomes:							employed at the time of sick-listing. ≥ 80% of		
	versus usual	individually tailored interventions to	Time to							the participants in a study had to fulfil both		
	practice for	overcome these barriers. Possible barriers	RTW.							criteria irrespective of their language of		
	workers on	are: • physical (e.g. a painful joint due to	 Cumulative 							publication; Studies reported as full text, those		
	sick leave or	osteoarthritis); • mental (e.g. low resilience	SA							published as abstract only & unpublished data;		
	disability	due to depression); • functional (e.g.	 Proportion 							• We included studies irrespective of the cause		
		restricted range of motion); • workplace-	at work at							of sick leave or disability, the setting or the		
		related (e.g. lack of job autonomy); and •	end of the							benefits scheme. We included trials comparing		
		psychosocial (e.g. interpersonal problems	follow-up.							RTW coordination programmes to usual		
		with the supervisor). Early multidisciplinary	 Proportion 							practice. We defined such programmes as. •		
		interventions seem appropriate and	ever returned							The objective is to promote RTW. • The		
		promising ways to return people to work.	to work							RTWC(s) and the affected worker have at least		
		Effective RTW coordination programmes	(Full/part-							one face-to-face contact. • The process starts		
		depend on good communication between	time, former							with an assessment of the worker's needs and		
		the various stakeholders (i.e. workers and	or modified							leads to an individually tailored RTW plan. •		
		their families, employers, supervisors,	occupation)							The implementation of the RTW plan is		
		healthcare providers, and insurers) and on								managed by the RTWC(s). Individually tailored		
		smooth coordination of the various								implies a personalised set of actions directed		
		components included in the programme.								at the worker, the employer, the workplace, or		
		The RTW coordinator plays a pivotal role								other factors in the RTW process. Adjustment		
		by ensuring communication and a joint								to the needs of the worker within a pre-		
		understanding regarding expectations for								defined action, such as individually tailored		
		all stakeholders. Face-to-face contact								physical therapy, was not sufficient to meet		
		between the worker and the RTW								the criterion. Consequently, the RTW plan had		
		coordinator favours an optimal selection								to allow for more than one possible action. We		
		and implementation of the RTW								included studies where public or private		
		interventions and intensifies the worker's								insurers offered RTW coordination		
		accountability to the programme								programmes to people on sick leave due to		
										impaired health ('in-house programmes'). In		
										addition, we considered RTW coordination		
										programmes that could be contracted by		
										insurers ('commissioned programmes'). We		

	excluded employer initiated RTW coordination
	programmes
	Propression and the second sec

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertain w PICC tudies clusion brella	o for rela reit	prima tes to eria f	ary o for	Review inclusion/exclusion criteria	ng, Relevance to 'Medium/ Low)	ss /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Vooijs 2015;(84) SR of SRs: SRs	To provide an overview of the available effective interventions that enhance work participation of people with a chronic disease, irrespective of their diagnosis	Interventions that aim to improve work participation are widely available and often contain common strategies or elements, either as single interventions or as part of a programme, such as job accommodations, encouragement, education, empowerment or self-management strategies. The wide application of these common interventions in people with various chronic diseases implies that these interventions are possibly applicable irrespective of the underlying diagnosis. However, since the interventions are studied in specific diagnoses, it is not clear if these interventions could be used as a generic approach. A generic approach enhances the insight of occupational health professionals regarding which interventions could be applied to enhance work participation without focusing on a specific chronic disease, or which interventions could be implemented in diagnoses in which evidence of effective	Work Retention - preventing work loss or staying employed. RTW - re- entering employment in the same job or in a different job after a period of SA	Narrative	Y	N	N	N	1	We included SRs that gathered these specific studies in an overall review including populations. Systematic reviews of quantitative, qualitative or mixed-methods studies were included that were written in English, Dutch or German. The SR had to describe an intervention aimed at the improvement of work participation or RTW in people with a chronic disease. Participants were of working age (18–65 years) and had to have been diagnosed with a chronic disease for more than 3 months. In addition, reviews had to include populations having different chronic diseases. Records were excluded if the full text was not available or when the review did not include information on search strategy, number of included studies or details of included studies	Moderate, High	All

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertain w PICO tudies clusion brella	o for rela	prim tes to eria f	ary o for	Review inclusion/exclusion criteria	ing, Relevance to / Medium/Low)	es /total included ies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
Wainwright	To explore	Resilience was operationalized as self-	RTW or	Narrative	Υ	Υ	Υ	N	3	Participants: aged 18+ with chronic pain	High,	NA
2019;(85)	the role of	efficacy, active coping, positive affect,	staying-at-							(diagnosed or labelled using any recognized	Low	
SR: RCT	resilience	positive growth, positive reinforcement,	work							criteria) who are either in any kind of	LOW	
SIV. IVCT	enhancement	optimism, purpose in life and acceptance. Resilience enhancement arises from	measures (via							employment or attempting to (re)enter		
	in promoting	positive psychology, notably the Broaden-	any							employment through any (RTW) scheme. •		
	work	and-Build and Self-Determination Theory.	quantifiable							Interventions: designed to assist RTW or		
	participation	Resilience can be defined as a dynamic	method							staying at work for chronic pain sufferers,		
	for chronic	process encompassing positive adaptation	capable of							which have an element of resilience within it. •		
	pain sufferers,	in the face of adverse experiences that	being							Comparators: a group offered a control such as		
	by reviewing	would otherwise lead to poor outcomes. It	validated)							a placebo, no treatment, waitlist, usual		
	the	is thought that having a resilient								care/treatment as usual (UC/TAU). • Primary		
	effectiveness	personality (i.e., having emotional								outcome measures: RTW or staying-at-work		
	of existing	flexibility and availability to problem-solve)								measures (via any quantifiable method capable		
	interventions	can protect older adults against adverse								of being validated). Resilience (as measured by		
		effects of chronic pain and may help								any validated resilience scale plus any		
		explain individual differences in pain								validated scales measuring the following		
		acceptance if considered a stable trait								aspects of resilience: self-efficacy, active		
		involving the ability to adapt to adversity.								coping, positive affect, positive growth,		
		Currently, a resilience-enhancing approach means shifting towards the inclusion of								positive reinforcement, optimism, purpose in		
		positive outcomes (sustainability) in								life and acceptance, all per se and in relation to		
		addition to one's ability to recover from								pain). We only report between-group analyses		
		negative outcomes (pain and distress).								from outcomes that conform to our inclusion		
		Resilience is a growing area in the pain								criteria. • Secondary outcome measures		
		literature, and we wanted to apply its								(measured using any validated scale): Pain		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)	g, Relevance to Medium/ Low)	/total included
				Type of synthesis	Population Intervention Outcome Other Total uncertainties	Overall quality rating review aim (High/ N	No. relevant studies studie

utility to looking at helping pain sufferers return to or stay at work

intensity, Pain interference, Pain disability, and Fear of work avoidance beliefs. No language restrictions

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertain v PICO tudie: clusio brella	O for s rela n crit	prima tes to eria f	ary o or	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, review aim (High/ Mo	No. relevant studi stuc
Wegrzynek 2020;(86) SR: RCT	To explore which tertiary interventions effectively promote RTW for chronic pain sufferers	The 'levels' framework, for interventions designed to improve workers' well-being or manage employees' stress levels, includes primary, secondary and tertiary. Primary and secondary levels are preventative and focus on healthy workers or those who are showing signs of stress but have not yet been signed off work, respectively. Tertiary interventions are reactive, addressing problems already experienced by employees, and following a period of SA. These interventions aim to improve employees' psychological and physical capacity, enabling them to successfully RTW. As such, tertiary classification is	RTW, operationalize d using 'administrativ e' criteria, such as work status, no of hrs worked, time until an employee RTW for contracted hrs/pay							The study populations had to be workers (over the age of 18), employed on any type of contract or self-employed, who were signed off work for 4 weeks or longer due to chronic pain. Selected articles had to be RCTs published in English and evaluate the effectiveness of individual, tertiary RTW interventions for workers with chronic pain versus a CG (e.g. usual care—UC; treatment as usual—TAU). Secondary outcomes were pain, disability and employee psychosocial/affective factors. We examined these secondary outcomes if provided and assessed via reliable psychometric measures. From the studies that	High, Low	4 of 13
		useful to review RTW interventions for workers with chronic pain								included both participants on SL at baseline and those who were not, we rejected trials where authors did not provide sub-group analyses or which authors did not provide such data upon request. Similarly, when the type of pain (acute versus chronic) was unclear, we contacted the authors for clarification. If no reply was received within 3 weeks, we rejected the paper		

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		hov s inc	ertair w PIC tudie clusio brella	O for s rela n crit	prima tes to eria f	ary o or	Review inclusion/exclusion criteria	ing, Relevance to / Medium/ Low)	es /total included lies
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
White 2016;(87) SR of SRs: SRs	To conduct a best-evidence synthesis of SRs on workplace interventions that address physical activities or exercise and their impact on workplace absence, work productivity or financial outcome	Interventions that occurred at, or were managed by, the workplace and that focused on adults (15+ years) who were working or trying to work	Absenteeism, presenteeism, work absence, productivity, cost	Best evidence synthesis	N	Y	N	N	1	Articles were included if they were published between January 1, 2000, and September 2012. As these were SEs, we limited the search strategy to reduce overlaps as some of the included reviews covered articles from earlier publication dates. Both quantitative (meta-analytic and non-meta-analytic) and qualitative literature was considered. Articles were required to address at least one of the outcomes of interest (absenteeism, productivity or cost), and to discuss a risk factor that is associated with work disability. Exclusion criteria included reviews that focused on severe or rare physical or mental conditions, or on specific occupations that would be difficult to generalize to other occupations (e.g., firefighters, police)	Moderate, High	All SRs
Williams 2007;(88) SR: RCT, Cohort studies with/ without	To evaluate the effectiveness of workplace rehabilitation interventions for injured workers with musculoskelet	Workplace rehabilitation interventions enable injured workers to carry out their employment duties which can fasten RTW process. These approaches should facilitate the injured workers' earlier RTW, enhance their QoL, and reduce the costs of these injuries. We focused on secondary interventions that were conducted at the workplace. Secondary prevention attempts	RTW status, duration of absence from work/sick leave, time lost, cost	Descriptiv e	N	Υ	N	N	1	(i) the intervention was carried out at the workplace; (ii) the sample consisted of employees with work-related musculoskeletal LBP injuries; (iii) the intervention involved secondary prevention; (iv) the study involved primary research on one or more patient groups (case studies were excluded); (v) the study design was prospective or cross-sectional; Retrospective studies were	Moderate, Low	3 of 10

Author, date; Type of review: type of studies included	Review aim	Description of intervention and how it may work	Outcomes of relevance to umbrella review		ho s in	ertain w PICo studie clusio brella	O fo s rel n cri	r prim ates t iteria	nary o for	Review inclusion/exclusion criteria	ng, Relevance to Medium/ Low)	s /total included es
				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
control groups	al work- related LBP	to limit the further development of a disease and limit the chances of disability and recurrence once the pain has started								excluded; (vi) abstracts and unpublished materials were excluded, and (vii) the study was published in English		
Yuen 2010;(89) SR: Cohort, Cross- Sectional, RCT, Delphi, Quasi- experiment al, SR, Qualitative, Case studies	To provide critical analysis of PCPs' role in returning injured workers to work following an occupational injury or illness	PCPs are responsible for the majority of work-related injury and illness care. As well, they are the main advisors to injured workers on disability prevention and work reintegration. In most countries, PCPs certifying SA assess the degree of disease or injury. In the case of workers' compensation, they assess the work-relatedness of the condition. This is followed by the determination of the level and extent of impairment. PCPs also recommend and arrange necessary treatment and rehabilitation during the absence period for the worker depending on the type of injury or disease. Examples of common rehabilitation programs include physical conditioning programs coupled with cognitive-behavioural interventions, participatory ergonomics programs and vocational medical rehabilitation	RTW	Descriptiv e	N	Y	Y	N	2	Publications were excluded if they were: (1) non-English; (ii) conducted prior to 1980, (iii) used children as participants, and (iv) opinion papers. letters, commentaries, or editorials; (v) narrative reviews; or (vi) case studies. Publications were considered as probably relevant if the study: (1) explored the experiences of primary care physicians; (ii) mentioned the RTW process or an RTW outcome; (iii) focused on work-related pain or injuries. When the reviewer was uncertain about any of the three criteria mentioned above the paper was labelled "unsure of relevance" Publications were ranked as not relevant if any one of the three criteria was not mentioned. In cases of disagreement, the reviewers discussed the abstract until a consensus was reached. Only studies that were ranked as probably relevant and unsure of relevance were retained for full-text review	Moderate, Low	3 of 30

Green shading=Prioritised for inclusion in evidence and gap map; B&A=Before and After, CBT=Cognitive Behavioural Therapy, CD=Cannot Determine, CE=Cost Effectiveness, CHD=Coronary Heart Disease, CMD=Common Mental Disorders, COPD=Chronic obstructive pulmonary disease, CT=Controlled Trial, CVD=Cardiovascular diseases, DM=Disability Management, DSM-IV=Diagnostic and Statistical Manual, GP=General Practitioners, ICD=International Classification of Diseases, IHD=Inflammatory Heart Disease, IPC= Injury/illness prevention and loss control programs, IPT=Interpersonal therapy, LBP=Lower Back Pain, MA=Meta-analysis, MBR= Multidisciplinary biopsychosocial rehabilitation; MH=Mental Health, MMCBT=Multi-modal Cognitive Behavioural Therapy, MP= Musculoskeletal Pain, MSD=Musculoskeletal Disorders, MSK=Musculoskeletal, N=No, NSF= National Service Framework, OECD=Organisation for Economic Co-operation and Development, OHS=Occupational Health Service, OP=Occupational practitioner, OT=Occupational Therapists, PCP=Primary Care Physician; PDT=Psychodynamic Therapy, PMP= Persistent musculoskeletal pain, PST=Problem Skills Training, pwMS=People living with Multiple Sclerosis, QoL=Quality of Life, RCT=Randomised Controlled Trial, RTW=Return to Work, RTWC=Return to Work Coordinator, SA=Sickness Absence, SR=Systematic Review, WPDM=Workplace Disability Management, VR=Vocational Rehabilitation, Y=Yes

References – Supplementary Materials 1

References: Supplementary Materials 1

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Supplementary Materials 2

Author (Date) Country Condition of interest	Name, Aim	How accessed	Who delivers, Method of delivery, Recipient	Key features	Intensity	LOI	Setting	Name and size of employer, Extent of WPI (High/Med/ Low)	Other outcome measure	Control Group
				No Categor	у					
Bernaards (2011)(1)	1) Work style intervention 2) Lifestyle physical	All workers who gave informed	NR Group	Full details NR 1) Work style intervention: Change behaviour with regard to	Six interactive group meetings (max 10	In Gr SE	WP, Other	Dutch companies	Yes - related to	UC: did not attend group meetings but received breaks and
Netherlands	activity intervention	consent and completed	meetings	body posture, WP adjustment, breaks and coping with risk	participants) in 6- month period.			NR	reason for sick	exercise reminder software
Musculo- skeletal: Neck and upper limb symptoms	1. For behavioural change with regard to body posture, WP adjustment, breaks & coping with risk factors for work stress 2. For increased engagement in moderate to high intensity physical activity	baseline questionnair e	Computer	factors for work stress; 2) Lifestyle physical activity programme: increase engagement in moderate to high intensity physical activity following the provision of group counselling but not supervised exercise programs	Meeting duration: 90 min in WSPA group and 60 min in WS group			Low	leave (Overall recovery and pain)	

Prevention program for BP who took part in program Employees strategies to reduce risk of future back pain by reducing pain to participate in follow-up in follow	Author (Date) Country Condition of interest	Name, Aim	How accessed	Who delivers, Method of delivery, Recipient	Key features	Intensity	LOI	Setting	Name and size of employer, Extent of WPI (High/Med/Low)	Other outcome measure	Control Group
	NR Musculo- skeletal: low	prevention program for BP To help maintain working status	Patients who took part in program were contacted and agreed to participate	NR	Reconditioning, ergonomic education, cognitive-behavioural intervention, development of strategies to reduce risk of future injury, instructions for self-care	with at least 4 hours of physical reconditioning each day. 18 month follow up interviews at ppts WP or		-OP Loka Brunn Back	licenced practical nurses NR	related to reason for sick leave (pain intensity , fatigue, anxiety, depressi on, sleep,	Waiting list control - but not used at follow-up

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Busch (2011, 10	Three treatment	Recruited	PT, Psych,	Subjects randomized to 1 of 3	Lasted 4wks,	In	WP	NR	No -	TAU: normal routines
year follow up	conditions: 1.	from the	and	active treatment conditions or a	conducted in	Gr	CSC		outcome	in health care
of Jensen	Behaviour-	AFA health	physicians	control group. Behavioural	groups of 4-8		rehabilit	NR	s focus	
2001)(3)	oriented physical	insurance		Medicine programme is	participants.		ation		on RTW	
	therapy 2. CBT 3.	register	Individual	intervention of interest: MD	Included medical		clinics	Medium	or costs	
Sweden	Behavioural		and Group	programme including all parts of	examination, 6					
	medicine		sessions	the PT and CBT programmes. All	didactic sessions,					
Musculo-	rehabilitation			participants received medical	visits at the WP,					
skeletal:	٠, = ١		Employee,	examination by a physician and	discharge session.					
Persistent back	1) To enhance		work	took part in 6 didactic sessions	Six booster sessions					
or spinal pain	physical		managers	addressing medical and	held over 1 year period after the					
	functioning and promote durable		and rehab officials	psychological aspects of chronic pain, as well as ergonomics; All	treatment.					
	behavioural		invited to	interventions included scheduled	Behaviour-oriented					
	change. 2) To		participate	time for visits at the WP. Work	physical therapy of					
	improve ability		in	managers and rehabilitation	20hrs per wk; CBT					
	to manage pain		discharge	officials invited to participate in	at 13-14hrs per					
	and resume a		session	the discharge session where a	week, BM given on					
	normal level of			rehabilitation plan agreed upon	a full-time basis (40					
	activity 3) To			, ,	scheduled hours per					
	lower sickness				week					
	absence									

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, ,,,	Behavioural	On monthly	Psych, PT,	Three treatment conditions. All	Lasted for 4wks,	In	WP,	NR	Yes -	TAU: normal routines
	medicine	basis, all	physician	treatments included a physician	conducted in	Gr	Other;		includes	in health care
	rehabilitation	new cases		who examined the patients and	groups of 4±8	SE	Rehabili	NR	wellbein	
	program	sent	Face-to-	was available throughout the	participants. 2x		tation	N. 4 12	g	
Musculo- skeletal: chronic	To reduce	symptom	face, Individual	intervention for consultations	sessions on		clinic	Medium	measure	
	absence from	question- naire.	and group	regarding the patients' medical concerns. All treatments included	psychological aspects of chronic				s directly and not	
-	work and	Individuals	and group	two sessions on psychological	pain, 2xsessions on				directly	
	improve health-	meeting	Employee,	aspects of chronic pain, two	ergonomics,				linked to	
	related QoL	inclusion	rehabilitati	didactic sessions on ergonomics,	2xsessions on				reason	
		criteria	on	and two sessions on medical	medical aspects of				for sick	
		interviewed	officials,	aspects of chronic spinal pain. All	chronic spinal pain,				leave	
		by phone &	work	treatments included scheduled	6x90min booster					
		offered a	manger	times for visits to the WP, and	sessions over 1 year					
		medical and		work managers and	after treatment. PT					
		functional		rehabilitation officials were	intervention carried					
		examination		invited to participate in the	out on a part-time					
		. Final		discharge session at which a	basis					
		decision re:		rehabilitation plan was agreed	(approximately					
		admission		upon. 3 conditions were: 1)	20hrs/wk). CBT:					
		to study		Behaviour-oriented physical	13±14hrs/wk					
		made by licensed		therapy 2) CBT 3) Full-time behavioural medicine						
		physician		rehabilitation: included both the						
		supervised		PT and CBT programs						
		by		2. p. 98. ss						
		orthopaedic								
		specialist								

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Jensen (2005, 3	Multi-	See details	for Jensen	See details for Jensen 2001				See deta	ils for Jense	n 2001
year follow up	disciplinary	200	01			Gr				
of Jensen	rehabilitation					SE				
2001)(5)	programme									
Sweden										
Musculo-										
skeletal: chronic										
spinal pain										

Finland Musculo- skeletal: LBP	Semi-intensive MD rehabilitation To restore physical/occupat ional condition, improve pain coping skills and encourage patients to take responsibility for management of back pain	Recruited from two OH centers by GPs occupationa I nurses, or PTs trained to identify patients eligible for the study	Rehabilitat ion team: PT, 2xOP (one from the Finnish Back Institute, one from an OH care center), Psych, physician specialized in the rehabilitati on medicine Groups of 7 participant s, individual appointme nts Patients	Three main parts: 1) Cognitive-behavioural stress management and applied relaxation sessions 2) Back school education including occupational intervention 3) Physical exercise program. During individual appointment, radiograph, CT, or MR imaging findings explained and causes of back pain clarified. Medications prescribed/changed if needed. Patients instructed of appropriate work ergonomics. OH care PT visited patient's WP, videotaped the most harmful work tasks, and evaluated the patient's physical, social, and psychological environment at work, proposed or made minor task-related ergonomic adjustments, and implemented a more ergonomically appropriate way of using the back at work. In the Finnish Back Institute, videotapes analysed and discussed in a group format as a part of back school led by an occupational PT. Physical exercise program was planned individually based on physiotherapeutic examination and baseline measurements. Program carried out in groups under supervision of PT. Included 2-3hr physical exercises and 20min progressive relaxation therapy per day. Patients encouraged to perform physical exercises period	8-week intervention: 70hrs rehabilitation program, including intensive period of 5 days (6 hr/day), home-training of 2 weeks, and semi-intensive period of 5 weeks (2x4hr/wk). Psychological intervention: led by Psych during 10 hours (10 x 1hr). The Back School program carried out by PT (7hrs), occupational PT (4 hours), and physician specialized in rehabilitation medicine (4hrs). Individual appointments with physiatrist (30min). OH care PT visited patient's WP	In Gr SE	Hospital - OP	NR (Multiple employers) Large (250+ employees) Low	Yes - includes wellbein g measure s not directly linked to reason for sick leave (General wellbein g)	Individual physiotherapy: carried out in rehabilitation center of the Finnish Back Institute in Helsinki. Experienced PT conducted treatment based on physiotherapeutic examination and baseline physical tests. Intervention consisted of ten 1-hour treatment sessions of 6 to 8 weeks. Each session included 30- to 40-minute passive pain treatment and 15- to 20-minute light active exercise. Patients advised to progressively increase their regular daily activities. General physical training, such as swimming and ordinary or Nordic walking, recommended. Patients also got a light home-exercise program, including 8 to 12 instructions about lower limb stretching, spine mobilization, and
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Loisel (1997)(7)	Sherbrook	Surveillance	MD	OM , ergonomic intervention,	See details reported	In	WP	All	Yes -	UC: received
Canada	model To treat	in worksites to detect incoming	medical, Ergonomic and	clinical and rehabilitation intervention; 1) Occupational intervention: began 6 weeks after	in intervention features	Gr SE	Hospital -OP	employers within Sherbrook	includes wellbein g	treatment from attending physician who could prescribe
Musculo- skeletal: subacute work- related back pain	subacute work-related BP	cases. Managemen t identified workers filing claims for BP. After 4 weeks work absence or assignment to light duties within 1 year, worker & attending physician offered opportunity to participate in study	rehabilitati on staff, including: OP, Ergonomis t, Medical specialist Face-to- face: either individuall y with worker or as a group with worker/ supervisor / union/ manageme nt Worker, worker's supervisor, representa tives of manageme	absence from work; Patient visits to OP and participatory ergonomics evaluation at WP (latter includes union and employer representatives to determine need for job modifications); Group formed: ergonomist, injured worker, worker's supervisor, representatives of management and unions; After observation of worker's tasks, group meeting allowed for ergonomic diagnosis and solutions to improve worksite; 2) Clinical intervention: after 8 weeks work absence; Visit to BP specialist and school for back care education 3) After 12 weeks absence, MD work rehabilitation intervention: medical specialist consulted to exclude serious/specific disease; If no serious disease-back school prescribed; If RTW did not occur after 12 weeks absence from work, functional rehabilitation therapy prescribed (fitness development+work hardening using CBT approach; Progressive				Medium (50-249 employees) Medium	measure s linked and not directly linked to reason for sick leave	any test, treatment or referral to specialist care. Educational videotape on back protection in daily activities shown to all participants. Supervisors at worksites of all participants received questionnaire assessing job difficulties. Participants could seek additional treatment in community

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			nt and unions	RTW (alternating days at original job with progressively increased tasks and days receiving functional therapy)				,		

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Meijer (2006)(8)	MD treatment	From	PT, Psych,	Psychological and physical	Main part of the	In	Both	Bank,	Yes -	UC: provided by OHS.
		population	medical	sessions. Physical sessions aimed	intervention took	Gr	treatme	universities	related	Could include
Netherlands	To enhance	of 160,000	specialist, OT	at restoring muscle strength and	13 full days (from 9.00 to 17.00		nts took	ND	to	treatment at WP and
Musculo-	reconditioning, de-medicalizing,	bank employees	O1	endurance, as well as aerobic fitness, using graded activity	9.00 to 17.00 hours), 5 RTW		place at location	NR	reason for sick	in the regular health care system, initiated
skeletal: non-	unrestrained	throughout	Face-to-	training. Education aimed to	sessions and 1		closest	Medium	leave	by GP/medical
specific upper	moving and RTW	the	face,	eliminate inappropriate pain	feedback session,		to WP			specialist. Took place
extremity	Ü	Netherlands	groups,	behaviour. Sports activities	all of which took		or home			at location closest to
		and workers	exercise,	outside the building (e.g.	place within 2					patient's WP/ home.
		at one of	WP visit	bowling) included. One of the	months. Patients					All patients allowed
		the two		daily psychological sessions	treated in groups of					to receive other
		universities	Patients	aimed at de- medicalizing, setting	8. Day schedule:					treatments
		in Amsterdam.		(and achieving) goals and improving coping strategies using	4x1.5hr sessions: 2xphysical and					
		OHS		cognitive techniques and	2xpsychological					
		managemen		education. The other	sessions, 2xwk					
		t at		psychological session prepared	supplemented with					
		participating		the participants to RTW, or to	30min session					
		organization		discuss work experiences. In the	relaxation exercises					
		s assigned		third week of treatment, a WP						
		66 in		visit could be arranged. The						
		company OP to refer		treatment protocol included certain additional sessions:						
		patients to		evaluations and training on how						
		study		to use and receive energy						

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Netterstrom	MD stress	Referred by	Initial	1) 8x 1hr individual stress	8x1hr individual	In	Hospital	NR	Yes -	1) TAU: 12
(2013)(9)	treatment	GP	interview	treatment sessions during 3	stress treatment	Gr	-OP		related	conventional,
	programme		and	months 2) WP dialogue and 3)	sessions during 3	SE		NR	to	individual sessions
Denmark			individual	participation in a group-based	months. MBSR				reason	during a 3-month
Mental Health:	To evaluate its effects of on sick		treatment	MBSR course including eight 2-	course including 8x2hr sessions			Low	for sick	period with a Psych
work related	leave, symptom		sessions performed	hour sessions every week over 8 weeks. Treatment started with	every week over 8				leave Psycholo	at one of two Psych practices in
stress	levels and RTW		by	initial medical and psychological	weeks				gical	Copenhagen.
311033	rate		specialist	interview, completion of a	WCCKS				Sympto	treatment content
			in OM &	personality and physiological					ms,	varied and may have
			Psych.	tests. Assessment by psychiatrist					Work	included CBT,
			Assessmen	was requested when needed.					Ability,	narrative methods,
			t by	Constant focus on RTW and if the					Degree	and other
			psychiatris t	participant did not agree to a direct dialogue with the WP, the					of Stress	techniques, which reflected the
				dialogue with employer and WP					Yes -	treatment that is
			Individual	was addressed and supported					includes	currently offered to
			and group	during the sessions					wellbein	patients with stress
			face-to-						g	symptoms in the
			face						measure	Copenhagen area 2)
			sessions						s not	Wait- listed control
			Employee						directly	group: placed on a
			Employee						linked to reason	waiting list for 3 months and then
									for sick	receiving the same
									leave	treatment as those in
									.54.0	the intervention
										group
										O 1º

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van den Hout (2003)(10) Netherlands Musculo- skeletal: chronic spinal pain	Graded activity plus problem-solving therapy (GAPS) For reducing number of sick days and facilitating RTW	Referred to the study by GP, OP, or rehabilitatio n physicians	Lecturers: OT, patient's WP supervisor, behaviour therapists, PT, OT, Psych, using a protocolize d manual, served as lecturers Small groups, individual meetings, WP visit Employees recently absent due	Based on bio-psychosocial model of pain. Graded activity plus problem-solving therapy. Problem-solving therapy (PST). Teaches strategies to help subjects feel confident and in control of stressful situation e.g. solve work-related problems when pain recurs	19x0.5day sessions over 8 weeks, small groups of max. 5 patients. Team of therapists: 3 meetings with individual patients. Group booster session: 2months after final treatment session	In Gr	WP CSC rehabilit ation setting	NR NR Medium	No - outcome s focus on RTW or costs	(GAGE): graded activity plus group education

Case Management only

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Cheng	WP-based	Recruited	Job coach	Biomechanics and ergonomic	Training frequency	In	WP	NR	No -	Clinic-based work
(2007)(11)	Rehabilitation	from		education were the basic	was uniformly at	SE			outcome	hardening training:
		workers	Face-to-	techniques or strategies taught	three sessions a			NR	s focus	routine conventional
Hong Kong	To improve RTW	compensati	face	to the worker; Job coach gave	week in both				on RTW	clinic-based work
		on		worker a tactics sheet outlining	groups			High	or costs	hardening training.
Musculo- skeletal: Work-		insurance	Workers	basic techniques and practiced						Mobilization
related Rotator		companies	and supervisor	these techniques with the worker in the first training session;						activities for upper limb extremities,
Cuff Disorder			S	Techniques designed to reduce						strength and
Curi Disorder			3	the effort level of the injured						endurance training
				shoulder; Included job specific						and work simulation
				activities; Before the						(carried out by
				commencement of the WP-based						different simulated
				work hardening programs, a job						work stations,
				coach assigned to each worker in						computerized work
				WWH group; Job coach would						simulators and Valpar
				contact the supervisor of the						work samples).
				injured worker at the worksite in order to arrange suitable work						Workers progress reports reviewed
				tasks as treatment media that are						regularly
				appropriate to the current						1 Chaidily
				functional status of the injured						
				worker						

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Durand	Therapeutic	Workers	ОТ	TRW is a new work rehabilitation	NR Small (10-49)	In	Hospital	NR	Yes -	Three control groups
(2001)(12)	RTW	included in		program which includes graded	employees	SE	-OP		includes	were chosen. 1)
	_	the groups	NR	work exposure managed by an	Medium (50-249)			NR	wellbein	Functional
Canada	For functional	recruited		OT; 1) a work rehabilitation	employees Large				g	restoration therapy
	restoration and	from	Workers	program for injured worker	(250+ employees)			High	measure	(without TRTW 2)
Musculo-	RTW	University		proposed to WP management 2)					s not	Community services
skeletal: Chronic		hospital		agreement made between team					directly	excluding any
low back pain		based work		OT and worker's supervisor on					linked to	rehabilitation
		rehabilitatio		partial work duties expected					reason	intervention 3)
		n facility in		from worker 3) injured worker					for sick	Referred to FR and
		Sherbrooke.		placed in supplemental position					leave	TRTW program by
		Workers in		and helps co-worker do partial						orthopaedic surgeon
		FR group		tasks of the job 4) injured						but denied program
		recruited in		worker's partial tasks						by the Quebec
		a Quebec		progressively augmented during						Workers
		university		4 to 8 weeks until full job						Compensation Board
		hospital BP		demands may be fulfilled						
		facility								

Finnes (2017)(13) Sweden Anxiety, depression, reaction to severe stress, adjustment disorder	ACT+WP intervention To promote RTW and cost-effectiveness	via the Swedish Social Insurance Agency	ACT+WDI: 2 different therapists NR fully: sessions, meetings Employees , supervisor	ACT: psychological intervention within frame of third wave behaviour therapies. WDI intervention: three meetings involving employee and supervisor at work. First step was individual interview with employee at clinic followed by interview with the employee's supervisor at WP. Aimed to investigate views upon causes of the sickness absence, and what might facilitate RTW. The aim of third meeting was to find solutions to facilitate RTW. ACT+WDI consisted of the two interventions as described above	Six sessions of ACT. WDI: 2x60min meetings (1 each with employee and supervisor). Third meeting at WP, lasted up to 90 minutes including the employee, supervisor, and project therapist. Duration of study interventions was 3 months, for some cases intervention was prolonged. Mean intervention	In SE	WP NR	NR NR High	Yes - related to reason for sick leave Yes - includes wellbein g measure s not directly linked to reason for sick	TAU: treatment as planned at their primary care centre or other care facility. They answered questionnaires at the same assessment points as the other groups. Included any intervention or consultation as offered by the primary care centre or other care facility. All participants meet with a physician for sickness absence
				ACT+WDI consisted of the two interventions as described above.	was prolonged. Mean intervention time was 10 weeks				reason for sick leave.	with a physician for sickness absence certification

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Glasscock (2018)(14)	Stress management	Patients with	Psych	CBT: early sessions involved psycho-education, Intermediary	Six x 1hr sessions of individual CBT	In SE	NR	NR	Yes - related	Control group: only followed
(2018)(14)	intervention	suspected	Face-to-	sessions included analysis and	lasting a maximum	JL		NR	to	questionnaires
Denmark		work stress	face,	restructuring of inappropriate	of 4 months 2) offer				reason	
Charac	To reduce	symptoms	individual	thoughts 2) offer of participation	of meeting between			Medium	for sick	
Stress	perceived stress and stress symptoms and time to RTW	referred by GPs	meetings with employee, group meetings between Psych, employee and supervisor Employees , supervisor	by the Psych in a meeting between patient and the employer to discuss the WP could aid RTW and reduce stress levels. Time spent focusing on the dialogue between employee and WP, on potential communication problems, and on ways of promoting a shared understanding of how stress arises and can be dealt with	Psych, patient and employer				leave	

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Lemstra	1) Early	36 health	MD	Interventions (Occupational	If not at work after	In	NR - WP	NR	No -	Standard care
(2003)(15)	intervention 2)	care centers	assessmen	management and early	6 weeks early	SE			outcome	
	Occupational	in the	t, PT,	intervention) across 2 companies	intervention,			Medium	s focus	
Canada	management	Helsinki	Family	: Early Intervention Program: Injured workers required to	broader secondary			(50-249	on RTW	
Musculo-	To facilitate RTW	metropolita n area	physician	immediately participate in	or tertiary treatment protocols			employees); Large (250+	or costs	
skeletal: back	To facilitate KTW	ii aica	Physical	expanded physical therapy and	are initiated: 4			employees)		
and upper			assessmen	work-hardening programs; If not	hours a day and			- ,,,		
extremity			ts, Face-to-	at work at 6 weeks, broader	include			Medium		
injuries			face	secondary or tertiary treatment	psychosocial					
				protocols initiated, including	intervention.					
			Workers	psychosocial intervention; Strategies included worker	Secondary treatment protocols					
				rotation schedules, reduced	average 31.85					
				lifting loads, and ergonomic	treatment days.					
				redesign of tasks; Secondary	Tertiary treatment					
				prevention strategies:	protocols averaged					
				independent on-site	48.93 days					
				management with PT						
				(reassurance of a good prognosis, encouragement to resume						
				normal activities, simple						
				exercises, recommendations to						
				resume work as soon as safely						
				possible on either full duties or						
				time-limited modified or light						
				duties); Then initiated an						
				occupational management protocol that included primary						
				prevention strategies designed to						
				change the work, not the worker						
				change the work, not the worker						

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Lindstrom	Graded activity	Sick-listed	Regular	1) Measurements of functional	1 hour to complete.	In	WP,	Volvo	No -	Traditional care:
(1992)	program	workers	physicians,	capacity; 2) A work-place visit; 3)	Measurements of		Private	Company of	outcome	recommended by
Consider	To restore	referred to	PT,	Back school education; and 4) An	functional capacity, 1hr WP visit, at 1		compan	Goteborg	s focus on RTW	physicians. Could
Sweden	occupational	the study during	Supervisor	individual, submaximal, gradually increased exercise program, with	visit lasting about 1		y, Own	Large (250+	or costs	include sick-listing with rest, analgesics,
Musculo-	function and	a 2.5 year	In-person	an operant-conditioning	hour, taught the		home/p	employees	OI COSES	available physical
skeletal: low	facilitate RTW	period	laboratory	behavioural approach, based on	patients individually		rivate	assumed)		therapy. Not given
back pain		•	testing,	the results of the tests and the	the main content of		residenc	,		any placebo care
			Face-to-face discussions Blue-collar workers employed at all divisions of the Volvo Company in Goteborg, sick-listed for 6 weeks	demands from the patient's work	the Swedish Back School Activity group: individually graded outpatient exercise program in the recreation department of the company, 3 days a week until RTW		e - Not explicitl y stated for exercise program me	Medium		after pre- randomization examination, except for during the 1-year follow-up examination. The patients in the control group were not prevented from getting information from the patients in the graded activity program

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Martin	Coordinated and	Recruited by	MDT	1) Work disability screening 2)	Max. 12 weeks	In	WP	NR	No -	CCM: Municipal SIOs
(2013)(16)	Tailored Work	the SIOs in	assessmen	Action plan for RTW, including			Job		outcome	obliged to assess and
	Rehabilitation	the job	t, Psych	activities to overcome barrier			centre	NR	s focus	monitor all SA
Denmark		centre at		and strengthen resources (e.g.;					on RTW	beneficiaries
Mental Health:	To facilitate RTW	the initial mandatory	Face-to- face, Not	stress management training, physical exercise, contact with				Low	or costs	regularly. Interviewing
mood disorders,		assessment	clearly	the WP) 3) Implementation of						beneficiaries in first 8
neurotic, stress-		interview,	reported	action plan and regular updates						weeks of absence
related or		within the 8		according to the individual's						and evaluating RTW
somatoform		weeks of	Employees	situation						prognosis. Frequent
disorders or		sickness								follow-up
related		absence								assessments for
conditions, e.g.										people at high risk of
burnout, and no co-morbid										prolonged absence.
psychotic										SIOs in charge of initiating efforts to
conditions										improve or retain
Conditions										beneficiary's labour
										market attachment,
										e.g. granting
										supplementary
										benefits while
										resuming work on
										reduced hours, wage
										subsidised job-
										training, further
										education. Free,
										unlimited access to GP. Psychiatric
										treatment in
										hospitals free upon
										referral from a GP

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Steenstra	RTW multistage	OPs	47 PTs	Individual, submaximal, gradually	26x1hr sessions	In	NR	NR	Yes -	UC: guided
(2006)(17)	LBP	referred 243	from 16 in-	increasing exercise programme,	maximally, with a	SE			related	throughout their sick
	management	workers to	company	with an operant-conditioning	frequency of two			NR	to	leave according to
Netherlands	programme	the study	and out-	behavioural approach based on	sessions/wk First				reason	the Dutch OP
	T . DT	from	company	the findings from patient history,	session took 30min			Low (can't	for sick	guidelines for LBP. By
Musculo-	To improve RTW	October	physiother	physical examination, functional	longer because it			tell)	leave	informing the
skeletal: low		2000 to October	apy	capacity evaluation, the demands	included a physical examination				(Pain - in favour of	patient's GP on interventions
back pain		2002	centres. A team of	from the patient's work and patient's expectations on time to	examination				UC)	performed we tried
		2002	specialised	RTW					UC)	to minimise co-
			PTs from	IXI VV						interventions.
			the Staal							Information on the
			et a trial							study and the LBP
			trained all							management by the
			PTs in the							OP was transferred
			graded							to the GP by the
			activity							worker by means of a
			protocol							information sheet on
										the study and a
			Face-to-							communication form
			face,							on the OPs BP
			Individual							management
			sessions							
			Worker							

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van Oostrom	WP intervention	Referred to	ОН	The WP intervention: stepwise	Median time	In SE	WP	VU	Yes -	UC: care from OPs
(2010a,		a RTWC for	profession	process to identify and solve	between 3			University,	related	according to the
2010b)(18, 19)	2010a - To solve	WP	als	obstacles for RTW, based on	meetings 12 days.			VU	to	evidence-based
Notherdonale	obstacles for	intervention	(company	consensus between sick-listed	3Xmeetings (of the			University	reason	guideline of the
Netherlands	RTW, 2010b - To establish cost-	•	SW or labour	employee and their supervisor;	RTWC, employee,			Medical	for sick	Dutch Association of OPs (NVAB)
Mental Health:	effectiveness		expert)	RTWC planned three meetings on 1 day: 1)employee performed	the supervisor, and the employee and			Centre, and Corus (a	leave	published in 2000
Distress	encetiveness		схрегту	task analysis and identified	supervisor			steel		and updated in 2007.
2.50.005			Meetings	obstacles for RTW with the RTWC	together) lasted for			company)		This guideline aims to
			Ü	2) supervisor identified obstacles	an average of 3 h			. ,,		facilitate optimal
			Employee	for RTW from perspective of	and 45 min. The			NR		functioning of
			on sick	supervisor 3) employee, the	median time					employees with
			leave 2-8	supervisor and RTWC were	investment for the			High		mental health
			weeks,	jointly involved in brainstorming	complete WP					problems and to
			supervisor	for solutions	intervention for the					prevent long- term
					RTWC was 7 h,					sick leave and
					including time needed for					frequent recurrences
					administration					
					ad					

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Purdon (2006)(20) UK Sickness or disability: most common were Musculo- skeletal, mental and behavioural, injury	Job Retention and Rehabilitation Pilot (JRRP) (3 alternative interventions) To increase RTW	study advertised to eligible population via range of marketing methods. Those interested in taking part asked to call a central number	NR fully - Psychother apy Referral to consultant / specialist/s urgeon, complimen tary or alternative therapy or other health interventio n NR Clients: those in employme nt of 16+ hrs/wk off work because of sickness or disability between 6-26 weeks	Three interventions were: Health intervention: Aimed at achieving a RTW by addressing the health issues of the individual; Delivered away from WP; deliver treatment to the mind or body of the recipient; must not contact or influence employer/WP; could not be delivered by OH Nurse; advice about the health condition and focus on the physical body/ mind. WP intervention: aimed at achieving a RTW by addressing issues in the WP (ergonomic assessment, employer liaison/mediation). Delivered in any location; delivered by an appropriately qualified professional or organisation; could involve contact with the recipient's employer; must focus on bringing about some degree of change within the individual's WP environment; advice about WP or how people work. Combined intervention: Any or all of the above	NR, but outcome had to be achieved within 13 weeks to be deemed successful. For combined intervention: Health interventions more commonly resorted to than WP interventions (32% received PT, 11% received ergonomic assessment, 22% employer liaison/mediation, 30% CBT)	In Gr SE	NR	NR fully (50% of participants public sector workers) NR Low/Mediu m	Yes - includes wellbein g measure s directly and not directly linked to reason for sick leave	Control group

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Spekle (2010)(21) Netherlands Musculo- skeletal: arm, shoulder and neck pain	Questionnaire intervention programme To reduce the prevalence of arm, shoulder and neck symptoms, exposure and sick leave	Workers reporting severe symptoms in the arm, shoulder and neck region, were invited by OP for a consultation	Organisations responsible of carrying out intervention. Quality control of interventions conducted by OHS, whose quality is certified by the Ministry of Social Affairs and Employment, and the profession als who work for them. Individual and group sessions Workers	Risk profile was made, using traffic light coding system; If ≥30% of participants had a red score or ≥ 60% of the participants had a red or amber score, a tailor-made intervention programme was proposed; Interventions aimed at each of the factors in the RSI QuickScan, with a total of 16 interventions aimed at reducing the associated risk; Examples of proposed interventions are: Individual level + Individual Workstation Check - advisor visits the worker at his/her work station and advises on ergonomic aspects; Eyesight check - in order to determine whether there is a need for computer glasses, visit to OH physician, Group level + Education programme on the Prevention of arm, shoulder and neck symptoms for Employees (education about arm, shoulder and neck symptoms, the ergonomic aspects of workstation and effects of work organisational factors), developing + Handling Stress in the WP (training aimed at getting insight into stress and stress situations	Multiple interventions available, differing in duration, ranging from 2hr information session to a 8x0.5day training sessions. Depending on risk profile, some workers offered multiple interventions	In Gr SE	WP - unclear	NR specific multiple organisatio ns NR High	No - outcome s focus on RTW or costs	UC: received general and limited advice. Did not receive interventions based on risk profile during time of the study. Workers, reporting severe symptoms in arm, shoulder and neck region were invited by OP for consultation. Treated according to Dutch guideline (workers should try to continue their work, except for tasks that induce severe pain). Received advice on possible treatments, adjustments in the WP and could be referred to a physical therapist. For other actions they were put on a waiting list, so that they received interventions that were similar to those in the intervention group after the study ended

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				Case Management and one other	er professional group					
Anema (2007)(22) Netherlands Musculo- skeletal: low back pain	MD rehabilitation of LBP To reduce disability and improve RTW	Researchers judged eligibility before workers first visit to OP. Workers still on sick leave after 8 weeks randomized for graded activity	Ergonomis t (process leader), Worker's supervisor, other stakeholde rs, PT Individual sessions Worker, Employer or Supervisor	WP intervention: worksite assessment and adjustments based on methods used in participatory ergonomics; Observation of the worker's tasks and identification of barriers to RTW; Meeting of the group of stakeholders to brainstorm and discuss about all possible solutions to barriers; Short communication form exchanged between OP and GP; Graded activity took place 8 weeks after start of sick leave; Gradually increasing exercise program based on a operant-conditioning approach; Additional treatments received by some workers: physiotherapy, manual therapy, Cesar therapy, chiropractor care, neurologist, orthopaedic surgeon	Graded activity: two 1-hour sessions a week, max 26 sessions. The program stopped when lasting return to own or equal work established, according to an agreed individual schedule	In SE	WP, CPC, PT setting	NR Large (250+ employees) Medium	Yes - related to reason for sick leave (Functio nal status and pain)	UC: Dutch occupational guideline on LBP, education, advice to RTW within two weeks if no further problems and, if necessary, temporary work adjustments (working hours or job content). Optional WP visit by an OT/ergonomist. Consultation with GP/ medical specialist if curative treatment inappropriate

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Arnetz	Early WP	List of sick-	FK case	Visit the local branch of FK for an	Participants	In	WP	Swedish	No -	Reference Group:
(2003)(23)	Intervention	leave cases	manager,	interview together with the FK	deemed to benefit	Gr		National	outcome	same information
			OT or	case manager for rehabilitation	from vocational	SE		Insurance	s focus	about study and
Sweden	To reduce		ergonomis	and an OT/ergonomist;	training were given			Agency	on RTW	questionnaires as
	disability days		t, OH	Approximately 1 week later,	a personal training				or costs	intervention group.
Musculo-	and improve		profession	employee, FK case manager, the	schedule to follow.			NR		Did not receive semi
skeletal	RTW		als	OT/ergonomist, and employer	Ergonomist			1 1 : la		structured interview
disorders			Face-to-	met at the employees WP; Ergonomic, physical stressor and	instructed the participant once or,			High		or worksite visits and improvement
			face	psychosocial stressor	when necessary,					improvement
			racc	assessment; Ergonomic	more times directly					
			Employee,	improvements introduced;	at work					
			employer	Participants deemed to benefit						
				from vocational training were						
				given personal training schedule						
				to follow (included information						
				on type of training and work						
				tasks adapted to the employees						
				capacity, time allotted for each training session, weeks of						
				training session, weeks of						
				successive increase in workload);						
				Participants encouraged to						
				complete personal diary about						
				experience of training; Employer						
				encouraged to complete						
				rehabilitation investigation						
				supported by FK case manager;						
				Subsequent rehabilitation plan						
				developed by case managers at						
				FK						

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Gice (1989)(24)	RTW programme	NR	Treating physicians,	1) A Job analysis completed 2) Functional Capacities Evaluation:	Frequency, mode, time-period NR.	In SE	WP	Hospital	Yes - related	Hospital that did not use the program
NR Chronic pain	To facilitate RTW		Limited number of OH staff involved (Profession als involved not clearly stated and presumabl y vary depending on need) Checklist Employee	written outline of physical abilities of the employee obtained from treating physician; Job Analysis and Functional Capacities Evaluation are matched; If changes needed to be made in the physical demands of job modification prescribed 3) Job Modification: any permanent/temporary change in duties, hours and expectations of a job 4) Work Hardening: gradual resumption of hours, duties or expectations required of the employee 5) Internal Transfers used if Job Modification or Work Hardening opportunities not possible 6) Another alternative is Light- Duty Work Stations: Keep	Generally low off intensity: 1-off assessments identify temporary or permanent alterations employee may require to work role or working pattern. Recommendations acti1d by employer.			Large (250+ employees) High	to reason for sick leave e.g. frequenc y of injuries	

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Goorden (2014)(25)	Collaborative Care	Employees sick-listed between 4	OP-care manager, guided by	Actively monitoring employees and increasing collaboration between healthcare	Six-twelve sessions of PST, a WP intervention.	In Gr SE	WP Other OH	NR NR	Yes - includes wellbein	CAU: visit company's OP in the first 6 weeks of their
Netherlands Mental health: Major depressive disorder	To reduce productivity loss	and 12 weeks due to mental disorders screened for depressive symptoms	a web- based stepped care protocol and consultant psychiatris t Face-to- face individuall y with employee, group with employee, OP and supervisor Employee, employer	professionals. Employees received collaborative care treatment, manual guided self-help, PST, WP intervention and if considered necessary, anti-depressant medication. In the WP intervention the OP-care manager, the employee and employer highlight barriers for RTW, brainstorm for potential solutions regarding going back to work and clearly define plan for implementing solutions	Elements ran parallel to each other. Every 2 weeks, treatment progress monitored, and if necessary, intensified by adding extra sessions of PST	JL .	service - presum e WP linked	Medium	g measure s not directly linked to reason for sick leave	sickness absence. OP received no extra training and after 1 year, actual care delivered was assessed by questionnaire

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Kenning (2018)(26)	Collaborative care To facilitate RTW	Identificatio n of people on long- term sickness	Specially trained CMs from host organisatio	Participants received handbook, the use of which would be supported by the CMs. Intervention involved core aspects of collaborative care	12 week intervention, 5x45min sessions	In	Two partner organisa tions. One of	OH Assist, FFW Large (250+ employees)	Yes - includes wellbein g measure	CAU: In organisations where recruited. Variation , dependent on a number of factors
NS: Long-term sickness absence		absence through GPs	ns Sessions were delivered by telephone and supported use of a self-help handbook Employee	models, including: 60min client-centred assessment by telephone, collaborative goalsetting, evidence-based low-intensity interventions (such as behavioural activation, problem-solving and cognitive restructuring), effective liaison and information sharing with key health-care personnel e.g. GP and primary care providers. CM training to support CMs: 2-day training course was developed that introduced the principles of case management and provided training in the brief psychological interventions employed in the patient manual			our partners (OH provider) had links with several large commer cial organisa tions. To access SMEs with 250/few er employ ees), our other partner organisa tion was Leiceste r FFW	7500 High	s directly and not directly linked to reason for sick leave (Well- being, RTW, Client health- and social- care utilisatio n)	such as reason for absence (predominantly physical, mental or work related), or whether they were receiving care mainly from primary care or through employer-provided OH packages

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Lemstra	Occupationally	NR	NR	Minimal clinical intervention:		In	WP	NR Specific	Yes -	Standard care/Early
(2004)(27)	based	As in earlier		Reassurance of a good prognosis	NR	Gr	Others	companies	related	intervention
	management	paper:	Face-to-	and education on injury;		SE	(Not	in the meat	to	programme: No focus
Canada	program	Injured	face, Self-	Encouragement to resume			clearly	industry	reason	on injury prevention
		workers are	care (Not	normal activity and education on			reporte		for sick	at worksite; physical
Musculo-	To facilitate RTW	required to	clearly	self-care; Simple exercise; Early			d)	Medium	leave	therapy and work
skeletal:		immediately	reported)	RTW on time limited and				NB		hardening; MD
occupational		participate	Morkora	monitored light or modified				NR		assessment at 6
back pain and work-related		in expanded	Workers	duties; Employer accommodates both work and non-work related						weeks; After 6 weeks, expanded
upper extremity		physical therapy and		pain; Onsite assistance provided						work hardening up to
disorders		work-		by independent and neutral						4hrs/day;
uisorucis		hardening		health care provider; Program						Psychology,
		programs. If		initiated, monitored and						education on hurt
		not at work		reviewed by management and						versus harm and case
		at 6 weeks,		workers (union); Consideration						management;
		broader		for individual beliefs, attitudes						Employer responsible
		secondary		and expectations; Patient						for work-related
		or tertiary		responsible for own self-care;						pain; no onsite
		treatment		RTW based on discussion						healthcare; Program
		protocols		between all interested parties						initiated, monitored
		are initiated								and reviewed by
		that last up								WCB; Standard
		to 4 hours a								assessment,
		day and								recommendations
		include								and treatment; RTW
		psychosocial intervention								based on functional information; Focus
		miervention								on injury prevention
										(i.e. job rotations,
										ergonomic protocols)

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Myhre	Work focused	All referred	Standard	Control procedures followed, in	Total duration 3	In	Hospital	NR	No -	Control
(2014)(28)	and	patients	clinical	addition-focus was placed on the	weeks, 7 sessions	SE	-OP		outcome	interventions: At the
	multidisciplinary	underwent	examinatio	RTW process. Patients received	with physio, 4/5			NR	s focus	time of this study,
Norway	rehabilitation	а	n from	individual appointments with	lectures. Followed				on RTW	the neck and back
		standardize	physician,	case- worker during first days of	for 1 year			Low	or costs	clinic at St.Olavs
Musculo-	To facilitate RTW	d medical	RTW	treatment. Work histories, family						Hospital used a
skeletal: back		examination	schedule	lives, and obstacles to RTW						comprehensive MD
and neck pain		to assess	together	discussed. Case- workers						intervention,
		eligibility for	with the	contacted participants employers						whereas the neck
		inclusion	caseworke	by phone in most cases (unless						and back clinic at
			r and MDT	the patient refused) to inform						Oslo University
			Individual	them of program and inquire						Hospital used a brief
				about possible temporary modifications at work. Patients						model; both
			appointme nts	created a RTW schedule together						programs were used as control
			1113	with the caseworker and the						interventions
			Employees	MDT						interventions
			on sick-	WIDT						
			leave							
			duration 4							
			wks - 12							
			mths							

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Netterstrom	MD treatment	Referred to	Specialist	Before initial interview,	6x1hr sessions over	In	Hospital	NR	Yes -	Control group:
(2010)(29)	programme	Stress Clinic	in OM.	participants filled out	four months. Stress	Gr	-OP		related	Referrals to Clinic of
Danisant	T- : DTM		Psychiatric	questionnaires: Basic information	handling sessions:	SE	Stress	NR	to	OM by GP during
Denmark	To increase RTW rate		assessmen t if needed	regarding social conditions, exercise and health, the Stress	During four month period, min four 1-		Clinic at Clinic of	Low	reason for sick	period from 1st January 2004 to 30th
Work related	rate		t ii iieeded	Clinic General-wellbeing	2hr sessions. Daily		OM,	LOW	leave	September 2004 for
stress			Individuall	questionnaire, WHO depression	relaxation exercises.		Hiller		(Depress	stress-related illness.
			y, face-to- face, group WP meeting with additional activities completed by patient outside of clinic setting Patient	questionnaire, Major Depression Inventory. Depending on anamnesis, clinical medical examination carried out; supplemented by para-clinical serological tests, x-rays or further examination. Stress handling sessions: education on stress-inducing factors, participants own stress-level and ways of reducing work/private-life stress. Relaxation exercises. Exercise: Participants encouraged to exercise at least twice a week. Stress manual: participants given book. Contact with WP: Participants place of work contacted if adjustments to tasks or responsibilities were needed. Participants encouraged to let work place know how they experienced their situation and the factors, which had brought it about	Exercise 2xweek. 1+ meetings WP with study author, supervisor and employee		Hospital		ion)	Given same questionnaires as patients at Stress Clinic, two sessions with specialist in OM, the second four months after first

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Noordik	RTW-E	After 2-	OP,	Gradual exposure to work	NR	In	WP	NR	Yes -	CAU: Counselled by
(2013)(30)	programme	3wks of sick	Worker's	situations; Patient motivated and		SE			includes	OP according to CAU.
		leave,	Supervisor	counselled by OP in order to				NR	wellbein	Guideline-directed
Netherlands	To reduce sick	patients		prepare, draw up, and evaluate					g	and consists of
	leave	were	Face-to-	an exposure- based RTW plan;				High	measure	problem-solving
Mental Health:		informed	face,	Process structured by giving					s linked	strategies and graded
common mental		about the	Individual	patients 'homework' assignments					and not	activities. Aims to
disorders		RTW-E	sessions	and supporting realistic and					directly	help workers regain
		programme		acceptable RTW arrangements in					linked to	control and rebuild
		by their OP	Patients on	cooperation with supervisor;					reason	social and
			sick leave	RTW arrangements had to consist					for sick	occupational
			between	of a gradual increase in the					leave	contacts and
			2-8 weeks,	amount of working hours,					(Sympto	activities. OP uses
			supervisor	feasible tasks, and exposure to					ms of	recommended
				increasing levels of stress associated with the listed work					distress,	methods such as
									anxiety,	stress inoculation
				situations					depressi on and	training, cognitive
									on and somatiza	restructuring, graded activity, and time
									tion,	contingency during
									satisfacti	the RTW
									on with	HIC INT VV
									the OP)	
									tile OF	

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Schene	Occupational	NR	OT, OP	Not fully reported: TAU+OT;	Visits lasted 30 min	In	WP,	NR	Yes -	TAU: usual OP
(2007)(31)	therapy		from	Includes contact with an OP from	every 2-3wks.	Gr	Hospital		includes	treatment for
	T (111) DTM		patient's	the patient's employer and plan	Diagnostic phase (4		-OP,	NR	wellbein	depression. Clinical
Netherlands	To facilitate RTW and recovery		employer	for work re-integration	weeks): 5 contacts. Therapeutic phase		Other- unclear	Medium	g measure	management according to the APA
Mental Health:	from depression		Face-to-		(24 weeks): 24		uncieai	Mediaiii	s linked	Guideline and
work-related			face, video		weekly 2hr group				and not	antidepressants;
depression			observatio		sessions (8-10				directly	Treated by three
			n, role-		patients) and 12				linked to	supervised senior
			play, group		individual sessions.				reason	psychiatric residents;
			sessions		Follow up: 3 visits				for sick	Visits lasted 30 min
			and individual		over 20 weeks				leave	every 2-3 weeks and consisted of
			sessions							symptom
			303310113							assessment, psycho-
			Employee							education, general
										support and cognitive
										behavioural
										techniques &
										medication
										prescription. Decisions regarding
										treatment type,
										intensity and
										duration were made
										by patients and
										treating physicians

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Skisak	Disability	All absence	9	CM trained to act as advocate for	1xcorporate OP and	SE	WP	Shell Oil	Yes -	Business units not
(2006)(32)	Management	days	Occupatio	employee. CM assists employees	1xprogram manager	SS		Company	related	participating in the
	Program	recorded:	nal nurses,	to navigate internal and external	each assisted the	In			to	program
USA		only	2xfull-time	medical and benefit plans,	corporate CMs part-			Large (250+	reason	
	To reduce non-	absences	corporate-	assume personal ownership of	time. Expected			employees)	for sick	
NR	occupational	lasting 4 or	certified	health, understand medical and	refinery nurses				leave	
	absences	more days	CMs. Critical to	recovery aspects of illness/injury,	would devote at least 20% of time to			High	(Satisfac	
		in duration were	involve	and understand company policies and implied expectations. Also	DMP				tion)	
		identified	senior	provide on-going health	DIVIP					
		for case	manageme	professional availability, even						
		managemen	nt, and	after employee RTW. CM						
		t and	they must	determines availability of						
		required	consider	transitional duty. DMP						
		submission	themselve	performance shared monthly						
		of a medical	s as part of	throughout company. A						
		certification	the DMP	commercially available case						
		form	team	management tool, Medgate,						
				purchased to manage all cases;						
			NR assume	Training programs were						
			face-to-	developed for employees,						
			face,	supervisors, timekeepers, and HR						
			telephone	representatives. Supervisors						
			and	encouraged to work toward						
			written	returning the employee to work						
			contact across	as soon as medical and safety conditions would allow. The need						
			involved	for correct and prompt time						
			parties	entry and timely submission of a						
			parties	completed medical certification						
			Employees	form was emphasized						
			Linployees	101111 Was Citipilasizea						

Staal (2004)(33) Netherlands Musculo- skeletal: low back pain	Behaviour oriented graded activity programme To reduce absence from work	Workers listed as absent from work because of LBP invited for consultation with OP. Those who were thought to be eligible for inclusion were referred to the research assistant	3xPTs working in a private practice at Schiphol Airport provided the treatment according to graded activity protocol. 2xPTs also trained as manual therapists, 1 also human movement scientist. PTs trained to treat patients with LBP according to behavioura I principles. A research PT experience d in	Intervention group received usual guidance from OP about work-related problems and barriers to RTW as well as the graded activity intervention supervised by a PT; The PT and participant decided on a set of general exercises and individually tailored exercises; Both types of exercises had to be performed during each session; Participant asked to propose date for full RTW, which would then be the end point of the physical exercise program; Before returning to full regular work, participants could RTW with modified hours and duties; Advised by the PT, the participant then decided on a gradually increasing quota for each exercise to achieve a preset exercise goal immediately before the proposed date of full RTW; Participants could also consult their GPs, as well as the OP, for their LBP during study period; GPs were informed about the study and principles of the graded activity program; OPs guide disabled workers who are absent from work through their disability period; Employed	Graded activity: 2x1-hr/wk exercise sessions with PTs who emphasized operant- conditioning principles." Attended until returned completely to regular work or until maximum therapy duration of 3 months	In SE	WP: OHS departm ent of airline compan y in the Netherl ands	KLM Dutch airlines Large (250+ employees) High	No - outcome s focus on RTW or costs	UC: received usual guidance and advice from the OP. Other types of treatment were not required. Participants not allowed to attend treatment sessions at the same physiotherapy practice where the participants in the graded activity group were treated. The GPs of all participants were requested to treat participants according to the LBP guide- lines of the Dutch College of GPs
			A research PT experience	OPs guide disabled workers who are absent from work through						

communicating with other

on centers

stakeholders (such as health care instructed the PTs in providers and representatives of three 2the WP) hour sessions and practiced patienttherapist interaction s with them PT and participant decided on a set of general

exercises and individuall y tailored exercises

Workers absent from work due to LBP

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Steenstra (2006;2006)(17, 34) Netherlands Musculo- skeletal: low back pain	Multi-stage RTW programme (WP implemented vs UC or clinical intervention) To evaluate the cost-effectiveness and cost-utility of program sick-leave	From October 2000 till October 2002, workers with LBP were recruited by 55 OPs	Supervisor and a specially trained work and health profession al (ergonomi st, OH nurse, OT or occupation al PT) from the OHS, GP In-person (Not clearly reported) Workers sick-listed for a period of 2 to 6 weeks due to LBP	Modified Canadian Sherbrooke intervention model to Dutch OH care and Dutch disability legislation; Difference in the work-place intervention consisted of participative ergonomics and that the Dutch situation required a small special committee formed with every case; The WP intervention: took place right after inclusion and before 8 weeks of sick-leave; Consisted of: 1; UC and in addition; 2; A WP assessment and work modifications based on participative ergonomics, which involved all important stakeholders: the OHS ergonomist or OH nurse, the worker on sick-leave, the workers supervisor and possible others; 3; Communication between the OP and the GP, to reach consensus on counselling the worker in RTW; Clinical intervention: graded activity program based on operant behavioural therapy based on the findings from patient history, physical examination, functional capacity evaluation, demands from patients work and the patient's	The entire program consisted of 26 1-hour sessions maximally, with a frequency of two sessions a week	In Gr SE	Execute d in 13 OHS	NR specific employer NR Medium	Yes - includes wellbein g measure s not directly linked to reason for sick leave (Quality of life)	UC: In the Netherlands, workers who are absent from work due to LBP are guided throughout their sick-leave according to the Dutch OP guidelines for LBP. In this guideline good prognosis of LBP is emphasized, resuming daily activities and work within two weeks. WP interventions are menti1d as an option and a clinical intervention is recommended after 12 weeks of sick- leave. By informing the patient GP we tried to minimize co- interventions. Workers in all groups were not restricted in obtaining additional care for their LBP

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Verbeek	Early OH	Administrati	OP, PT, GP	Each patient scheduled for an	1x appointment	In	WP,	Academic	Yes -	Reference Group:
(2002)(35)	Management	ve worker		appointment with OP could	with OP as soon as	SE	Eight	and	related	supervisors of all
		or OH nurse	NR	receive usual medical treatment	possible after giving		differen	peripheral	to	patients informed
Netherlands	To reduce	of the		by GP, therapists, and specialists;	informed consent.		t	hospitals	reason	about research
	absence from	specific OH	Employee,	Trained OPs on use of the	Follow-up		academi	NB	for sick	project via leaflet
Musculo-	work and	service	employer	guidelines in 10 monthly sessions	consultations within		c and	NR	leave	(information about
skeletal: back	improve other BP related	informed eligible		during year patients included in study to assess factors with a	3 weeks, repeated until the worker		peripher al	Low		their responsibilities in the patient's RTW
pain	health outcomes	subjects		supposed relation to the duration	returns to work		aı hospital	LOW		process). Advised to
	nearth outcomes	about		of disability: The second part of	returns to work		S			stay in contact with
		project		the guidelines deals with			3			worker, to allow
		project		interventions aimed at removing						gradual RTW, and if
				barriers for return to normal						care was needed, to
				work; In case of a disparity						refer a worker to GP.
				between the worker's abilities						Patients did not visit
				and work demands, OP advised						OP during first 3
				about exercise and education or						months of sick leave.
				modifying work demands; Other						If employee insisted
				interventions involved conferring						on seeing OP, this
				with the GP or PT and advising or						was allowed.
				consulting the employer						Supervisors received
										same information as
										supervisors of the
										patients from the
										intervention group. All the patients
										received standard
										medical TAU by GP. If
										patient did not work
										full-time after 3
										months, still invited
										to visit OP

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Volker (2015)(36) Netherlands Common Mental Health disorders	Health module embedded in Collaborative OH care (ECO) as a blended Webbased intervention To advance RTW	Internet	OP, trained by researcher /psychiatri st Online, face-to- face meetings Sick-listed employees	Employee follows an eHealth module, known as Return to Work, which focuses on the employee's cognitions. Regarding RTW with physical or psychological symptoms and options to resume work; recovery process of employee monitored. OP receives automated suggestions by email for referral to adequate treatment	5 modules, 16 sessions. OP and employee met each other face-to-face on regular basis	In	Own home/p rivate residenc e	NR fully (GGz Bregurg, other employers not stated) Small (10-49 employees) Medium (50-249 employees) Large (250+employees) Low (Although OH physician based at WP, involvemen t very low)	Yes - related to reason for sick leave	CAU: OPs provided usual sickness guidance to their employees

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				Case Management and two other	r professional groups					
Haldorsen (1998) (37) Musculo- skeletal: LBP	Multi-modal cognitive behavioural treatment program To improve pain coping skills and changing illness behaviour to health related behaviours	NR	Neurologis t, GP, a Psych, two registered nurses, 4 PTs Face-to- face, Telephone Employee, supervisor	Treatment based on cognitive-behavioural approach. Patients encouraged to take responsibility for own health and lifestyle. Program included physical treatment, cognitive behavioural modification, education, and WP-based interventions. Physical and psychological strains at the work place were examined by a structured interview. Telephone conferences with the company health service and/or the work supervisor and a visit to the work site, were done in certain cases	4 weeks, with 6hr sessions 5 days/wk	In Gr SE	NR Not clear	NR NR High	Yes - includes wellbein g measure s not directly linked to reason for sick leave	Control group: followed up by GP, without any feed- back or advice on therapy. Subject to ordinary treatments as given by GP, particularly PT

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Haldorsen (2002); Skouen 2002; 2006;2006(38, 39) Norway Musculo- skeletal pain	Extensive or light MD treatment	Sickness insurance records of the municipality of Bergen and surrounding municipaliti es	Neurologis t, GP, a Psych, nurse, PT Group and individual elements. Delivered face-to- face Employee	Light MD treatment with follow- ups: Education on exercise and fear avoidance. Individual information and feedback by the team. Individually based graded exercise program based on physical tests. Some patients referred to external PT, max of 12 additional sessions. A few patients referred to external Psych. All patients followed up to 1 year with individual pain management given by different team members as required, and occasional work place interventions. On an average, each patient received three individual follow-ups as required by one of the team members. Extensive MD treatment program with follow-ups: More extensive MD treatment program at the clinic. Included CBT, education, exercise, and occasional WP interventions. CBT: employees encouraged to take responsibility for own health and lifestyle, cognitive coping strategies discussed and advice given. Education: anatomy, pain, physical and mental coping strategies, work, and lifestyle.	High intensity programme: lasted 4 weeks 6hr sessions 5 days per week. (CBT group sessions: 2hr/wk; education sessions: 2hr/wk, lectures followed by group sessions, delivered by all MDT professionals, Exercise: Group and individual activity, 1.5-3.5hr/day, supervised by PT). Patients followed up to 1 year with individual pain management given by different team members as required	In Gr	Hospital -OP	NR (Multiple employers) Low	No - outcome s focus on RTW or costs	Ordinary treatment: referred back to GP after clinical examination and screening at the OP Spine Clinic. GP's give most patients with long-lasting musculoskeletal pain medication, advice, and refer to PTs or chiropractors

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Exercise: individual graded exercise program based on physical tests. At end of 4-weeks program, the patients developed their own rehabilitation plan. All patients were offered individual appointments with the team at 3, 6, and 10 months

Hees (2013)(40) Netherlands Mental Health: Depression	Adjuvant occupational therapy To improve RTW and depressive symptoms	OPs referred potential participants for a teleph1 screening, where eligibility criteria are assessed by psychiatrist. Potential eligible participants receive standard three-hour psychiatric intake at OP department of the Mood Disorders Program of the Academic Medical Center. Structured Clinical Interview for DSM-IV disorders is administere d to check participant meets	OT, OP, Resident treating psychiatric Mixed: group and individual sessions face-to- face, video and telephone contact Employee, supervisor	Three phases: 1) intake assessment, occupational anamnesis, and video-observation; Patient's current work situation, treatment goals and expectations regarding treatment examined; Patient's education and occupational history analysed; Patient recorded within simulated work environment while performing tasks relevant to job; Experiences regarding current tasks, workload, and relationships with colleagues discussed 2) OT discusses content and goals of the intervention with the OP by teleph1; Therapist informs OP patients required to work at least 2hrs/wk when starting the second phase of the intervention which consists of individual and group sessions; Quality of Work model based; (five factors that affect work performance: Work Load, Autonomy, Relationships at Work, Job Perspective, and Work-Home Interference); Patients taught how to evaluate positive and negative factors in own work situation; Each group member decides what dimension within the model most important to change own work situation; This forms basis for their individual work-reintegration	Phase 1: 1xintake session, 3xoccupational anamnesis session, 1xvideo observation session. Phase 2: 8xgroup session, 4x individual. Phase 3: 1xfollow up session. Overall: 6x individual sessions, 8xgroup sessions and a work-place visit over 16wks"	In Gr SE	WP visit, Not clearly reporte d where other sessions take place	NR specific employer NR Medium	Yes - related to reason for sick leave (work functioni ng, sympto matolog y, health- related quality of life, and neuroco gnitive functioni ng)	TAU: treatment by psychiatric residents in the OP clinic according to a treatment protocol consistent with the APA guidelines. Visits consist of clinical management, including psychoeducation, supportive therapy, and cognitive behavioural interventions. Therapies supervised by experienced senior psychiatrist on weekly basis. Pharmacotherapy is started according to a protocolized algorithm. If patient's condition is deteriorating and OP treatment is no longer adequate, patient may be referred to day treatment or inpatient treatment at the same Mood Disorders department. If the physician wishes to treat in a way that is deviating from the
				,						, ,
		DSM-IV		plan; Group sessions used to						CAU protocol, he/she
		criteria for		prepare for meeting with						is required to contact
		Major		employer and develop						the research group
		iviajoi		employer and develop						the research group

prevention plan; During

Depressive Disorder

individual sessions, therapist tries to relate the presently occurring work stressors to the patient's ineffective coping-pattern; Patient's progress with workreintegration plan monitored during individual sessions; OT educates supervisor regarding content of occupational intervention and consequences of depression for work performance; During this meeting, patient has the opportunity to openly discuss work-related difficulties with the employer 3) Follow-up: within four to six weeks after the completion of the occupational intervention, patients receive a follow-up session to discuss potential problems during the work resumption process

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Jensen	MD	Patients	CM,	MD intervention: visit scheduled	NR	In	Hospital	NR	No -	Brief intervention:
(2012)(41)	interevention	from nine	rehabilitati	with CM who conducted a		SE	-OP: The	(Multiple	outcome	continued treatment
		municipaliti	on plan	comprehensive interview			Spine	employers)	s focus	and rehabilitation
Denmark	To promote RTW	es in Central	discussed 	covering aspects of work and			Center,	NB	on RTW	with GP
Musculo-		Denmark	entire	private life and designed a			Region	NR	or costs	
skeletal: LBP		Region were referred to	team at The Spine	tailored rehabilitation plan to RTW. Rehabilitation plan			Hospital Silkebor	Medium		
skeletal. LDF		The Spine	Center	discussed by the entire team at			g,	Medium		
		Center by	(specialist	The Spine Center. CM contacted			ים			
		their GP	of social	work place and the municipal job						
			medicine,	centre to discuss and coordinate						
			rheumatol	relevant initiatives. Main task of						
			ogy and	CM was to coordinate RTW						
			rehabilitati	initiatives based on knowledge of						
			on, PT, a SW and an	legislation, WP conditions and the health status of the						
			OT. CM	participants. The CM arranged						
			contacted	meetings between the						
			work place	participant and each of the other						
			and .	specialists, meetings at work						
			municipal	place and meetings with job						
			job centre	centre						
			In person							
			Employee							

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Karjalainen	Mini-	36 health	PT,	Full details NR:	Mini-Intervention	In	Finnish	NR	Yes -	UC: Not examined at
(2003;2004)(42,	intervention and	care centers	Supervisor,	Mini-Intervention Group: light	Group (A): First part		Institute		related	FIOH. Received
43)	the incremental	in Helsinki	Company	mobilization program; Physician	45min, latter part		of OH	NR	to	leaflet on BP, seen by
	effect of a work	metropolita	nurse,	specializing in physiatry first	15min		(FIOH)		reason	their GPs in primary
Finland	site visit	n area	Physician	interviewed and examined the	March City Minit			Medium	for sick	health care in the
N.A	Ta :		F+-	patients in the mini-intervention	Work Site Visit				leave	usual manner,
Musculo- skeletal: low	To improve pain, perceived		Face to	group; Specialist in physiatry and a PT confirmed diagnosis and	Group (B): 75min. Feedback from				(patient satisfacti	including specialist consultations and
back pain	disability,		face, Group	informed patient	FIOH visit and				on with	physiotherapy. Not
back pairi	satisfaction with		discussion	Work Site Visit Group: Same as	written report				medical	restricted from
	care, healthcare		aiscassion	mini-intervention group, but with	describing findings				care)	seeking specialist
	costs,		Employees	PT WP visit - appraised patient's	sent to the patients				· · · · · · · · · · · · · · · · · · ·	treatment privately
	consumption		with LBP	daily back-straining activities and	company physicians					, ,
	and BP-related			meeting with stakeholders	and t GPs. PT					
	sick leave				input:1x1.5hr					
					session					

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Karrholm (2006)(44) Mixture: Musculo- skeletal, mental health, other	Systematic multi- professional co- ordinated rehabilitation: improve sick leave	Employer, the OH service, the social insurance office, the employee's union or employee could initiate a case in the project	Initial assessmen t: OP. Discussion with: nurse, social scientist, ergonomis t, work environme nt engineer	Prior to rehabilitation coordination: immediate superiors offered 1-day training course on possibilities and economic gains in the rehabilitation process. Rehabilitation co-ordination started with medical exam. Patients referred to other care providers where needed. Rehabilitation problems discussed with other staff at the OH care unit. Employee's attitude to sick listing and disability pension assessed. Where appropriate, employee referred to multi-professional rehabilitation team. Employee met team in a rehabilitation meeting involving employee, his or her immediate superior, a social insurance office representative, and one from the employer's personnel department, a company physician and, if the employee wanted one, a support person. The meeting set up a rehabilitation plan with the option of using all kinds of ordinary rehabilitation activity. Follow-up meetings also scheduled	MRT met every 2 weeks. 1 initial meeting with team and Employee met team in a rehabilitation meeting involving employee, his or her immediate superior, a social insurance office representative, and one from the employer's personnel department, a company physician and, if the employee wanted one, a support person. Follow-up meetings: number varied from case to case from only one to several, where the problems were more complex	In SE	NR	Two department s were selected: social services administrati on and one Stockholm district administrati on Large: 6000 employees, Medium	No - outcome s focus on RTW or costs	Comparison group: ordinary rehabilitation. Co-operation and meetings with participants of more than one profession occurred only at conventional level, not with a structured, regular programme as in the study group

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Lagerveld	Work-focused	Recruited by	Psychother	Work-focused CBT: regular	11.4 sessions over	In	Hospital	Participants	Yes -	CBT: Each version of
(2012)(45)	treatment	clinical therapists	apists, OP, Employers	treatment CBT plus a module focusing on work and RTW; The	the course of 5.7 months		-OP	worked in a variety of	related to	this CBT protocol consists of a basic
Netherlands Mental Health: common mental disorders	To facilitate RTW	from an OP mental health center	Face-to- face, individual sessions (assumed) Employee	work-focused module was integrated in each session;; Therapists addressed work issues in an early phase and used work (and the WP) as a mechanism or a context to reach their treatment goals (such as activation, time structure, social contact, regular activity, and increasing self-esteem); In each session clients were encouraged to discuss their plans with their OP and employer				jobs: administrati ve (13%), commercial service (19%), health care (20%), education (6%), trade (6%), constructio n (5%), civil services (5%), and transport (3%) Small (10- 49 employees); Medium (50-249 employees)	reason for sick leave	module that focuses on identification of the problem and on reduction of symptoms. After this disorder-specific basic module (covering about six sessions), 1 or more optional modules were chosen in dialogue with the client for the remaining sessions. It is possible that regular CBT incorporated work issues when clients decided to address this topic

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Lambeek (2010)(46) Netherlands Musculo- skeletal: low back pain	Integrated care To restore occupational functioning and achieve lasting RTW	Patients visiting OP clinic of the five par- ticipating hospitals because of LBP were approached.	OP, Medical specialist, OT, PT, clinical OP Face-to- face discussions Patients visiting OP clinic due to LBP	WP intervention protocol and a graded activity protocol; The WP intervention protocol, based on participatory ergonomics, was a stepwise process involving the participant and supervisor and aimed to formulate a consensus based plan for adaptations at work to facilitate RTW; Graded activity was a time contingent programme based on cognitive behavioural principles	Max three months	In SE	WP Hospital -OP CPC	NR NR Medium	Yes - includes wellbein g measure s linked and not directly linked to reason for sick leave (Quality adjusted life years (QALYs), pain)	UC: referred to their OP and GP with a letter containing advice to treat according to Dutch guidelines for patients with LBP
Loisel (2002)(47) Canada Musculo- skeletal: back pain	1) Experimental clinical rehabilitation intervention; 2) Experimental occupational intervention; 3) Sherbrook model (combination of 1&2) To facilitate RTW and measure costeffectiveness	Workers absent > 4 weeks from their regular work for occupationa I BP were recruited from all WPs with more than 175 employees and <30km away from	OM physician, Ergonomis t, Supervisor, Managem ent and union representa tives, BP medical specialist, Psych, OT, OP Not	Sherbrook model: The occupational intervention - visits to the study OM physician and a participatory ergonomics intervention with the study ergonomist, the injured worker, his supervisor, and management and union representatives; Participatory ergonomics intervention, was not an extensive ergonomics intervention but limited in scope and duration; 26 modifications recommended to the employer; The clinical rehabilitation intervention consisted of a	NR	In Gr SE	BP clinic	Medium (50-249 employees); Large (250+ employees) Medium	No - outcome s focus on RTW or costs	Standard care: Attending physicians of the workers received no advice about RTW

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		study BP clinic	explicitly stated - Individual session Workers absent from work for 4 weeks with BP	clinical examination by a BP medical specialist, participation in a back school after eight weeks of absence from regular work and, if necessary, a MD work rehabilitation intervention (Psych and/or OT who oversaw RTW)						
Moll (2018)(48) Denmark Musculo- skeletal: neck/shoulder pain	MD intervention (MDI): To facilitate RTW and reduce pain and disability	GPs, PTs and chiropractor s in the primary sector from seven municipaliti es received written information about the study to display in their waiting rooms. GPs encouraged	Team conference s: rheumatol ogist, 3x CMs (SW's, specialist clinical social medicine or OT), PTs and in relevant cases Psych. Other: GP specialized	CM assigned with responsibility of coordinating communication among stakeholders. Standardized interview on work history, private life, pain and disability, rehabilitation plan. If relevant, consultations with Psych arranged. CM discussed relevant matters at regular team conferences not attended by participant. Roundtable discussions arranged at the WP. Randomly allocated to one of two home-based exercise groups. 1) general physical activity group (GPA) OR 2) both general physical	Participant met with the CM once or repeatedly depending on need and progress	In Gr	Hospital -OP	NR NR Medium	Yes - related to reason for sick leave	Brief Intervention: Rheumatologist recorded medical history and performed clinical examination. Followed by information and imaging of the cervical spine. If necessary, lab tests were done, and analgesic treatment adjusted. Steroid injection. PT examined all participants. A

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		to refer patients that fulfilled inclusion criteria	in cognitive therapy Exercise: group. Face-to- face meeting with CM Patient	exercise and specific strength training (SST)						follow-up visit 3-6 weeks after enrolment: rheumatologist explained the MRI findings. Copies of medical records sent to the participant, the GP and the municipal social services. No further intervention
Salomonsson (2017)(49) Sweden Common Mental Health disorders	CBT+RTW-I+COMBO intervention To reduce sick leave	GP	14 licensed Psychs, supervisio n by supervisor s Individual, face-to- face Employee	Combination treatment: starting with three RTW-I sessions (the first three modules), followed by CBT for the specific disorder where brief follow-up on the RTW progress added at end of each session. Graded exposure to the WP and early contact with the WP included	RTW-I sessions scheduled according to needs of patient. COMBO CBT treatment varied between 10- 25 sessions over max. 25wks	In SE	WP, Primary care: primary health care centres	NR NR Medium	Yes - related to reason for sick leave Includin g treatme nt satisfacti on	CBT: Based on evidence-based CBT protocols for each specific disorder. Depending on psychiatric disorder, length of CBT between 8 -20 weekly sessions

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Smedley (2013)(50) UK Mixture: most common Musculo-skeletal and Mental Health	Return to Health Intensive Case Management To restore function	4 weeks of continuous sickness absence; referral initiated by either employee or line manager	MDT: CMs (OH nurses and OT), OPs and PTs, who were trained in motivation al interviewin g and CBT, HR profession als, managers and employees , clinicians with relevant expertise (a clinical Psych, consultant psychiatris t and consultant in chronic pain manageme nt) Face-to-	Case management programme optimising joint working between OH and HR departments. Signposted or provided input from a broad portfolio of support and treatments including on-line CBT, fast-tracked medical or surgical care, physical therapies and advice on exercise. OPs involved early in management of complex cases and in case reviews, including all cases who had not RTW within 8 weeks. Both CMs and OPs interacted with line managers and HR advisers, depending on the complexity of the case. PTs administered early physical treatments for clients with musculoskeletal disorders and exercise therapy for all clients, Following initial assessment, CMs supported employees to plan a series of goals, gradually increasing activities at home in preparation for RTW. Emphasis placed on optimising communication outside the core team, particularly with line manager, HR team, and treating clinicians. Evidence of conflicting messages from treating clinicians in respect of increasing activities	NR	In Gr SE	WP	University Hospital Southampto n NHS Foundation Trust Large (250+ employees) High	No - outcome s focus on RTW or costs	Control hospital trust

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			face, online Employees	or RTW was addressed by constructive discussion with GPs or specialists. CMs or OPs gave practical interactive input into planning of work adjustments. Regular active meetings with divisional HR advisors were key part of the intervention						

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Tamminga	Hospital-Based	Treating	Oncology	1) Delivering patient education	Integrated patient	ln	Hospital	NR	Yes -	Control group
(2013)(51)	Work Support	physician or	nurse or	and support at the hospital, as	education and	Gr	-OP	ND	includes	
Netherlands	Intervention	nurse informed	medical SW	part of usual psycho-oncology	support regarding RTW into the usual	SE		NR	wellbein	
Netherlands	To enhance RTW	the cancer	344	care; 2) Improving communication between the	psycho-oncological			Medium	g measure	
Cancer	To childrice it iv	patients of	Face-to-	treating physician and the OP; 3)	care: 4x15min			Wicalam	s not	
		the study	face	Drawing up a concrete and	meetings.				directly	
		,		gradual RTW plan in	Intervention began				linked to	
			Patient	collaboration with the cancer	a few weeks after				reason	
			and	patient, the OP, and the	the onset of the				for sick	
			employer	employer	study and spread across a maximum of 14 months				leave	

Tan (2016)(52) Singapore Injury due to work related accidents	RTWC model of care To facilitate early RTW	Shortlisted for recruitment into the study via a public general hospital Emergency Department (TTSH ED) database	4 RTWCs: all OTs with at least three years of clinical experience and specialized training in occupation al assessmen t Face-to-face in hospital setting followed by potential modified WP. Intervention varied on individual basis. Note that the intervention is a single person - RTWC, but they facilitate	RTWC model of care incorporated four interventions: work accommodation offers, contact between healthcare provider and WP, ergonomic worksite visits and presence of a RTWC. At initial contact RTWC conducted a biopsychosocial assessment of the physical, cognitive and psychosocial functions, interviewed regarding job demands and identified potential challenges upon RTW post injury. RTWC attended the first OP medical review with the subject to update treating doctor on work place demands, and discussed rehabilitation and RTW plans. Suggested referrals to rehabilitation services, estimated timeframe for subject to return to either pre-injury full or modified work duties. RTWC maintained active communication with other healthcare and rehabilitation professionals in the care of the subject via face-to-face, telephone and written communications. RTWC provided regular updates of the subject's recovery to employers throughout medical treatment, while reviewing the RTW plan with the employer based on the subject's functional readiness to	Frequency and duration of the RTWC intervention varied, depending on the complexity of the RTW process of each subject. Follow up of 2wks post RTW.	In SE	General hospital -OP	NR (Multiple employers) NR Medium	Yes - includes wellbein g measure s not directly linked to reason for sick leave (QoL)	Control group: received standard care in hospital. Included routine medical and rehabilitation treatment and did not include any established protocol or standard clinical practice to coordinate RTW process. The doctors made the RTW decisions, based on the biomedical recovery process of the injury. Employers were typically not involved in the care or in the RTW decision-making process
			•							
			MD	RTW. When medical condition						
			treatment	was no longer acute, RTWC						
				performed a brief functional						
			Subjects	capacity evaluation to determine						

(Singapore if the subject's work ability

ans and Permanent Residents) who sustained injuries due to a workrelated accident

matched full job demands. If the work ability and job demands matched, the RTWC would recommend to the treating doctor for the subject to RTW to the pre-injury duties with necessary precautions to protect the injury. If the job demands were higher than the subject's work ability, the RTWC would explore and negotiate with employers on modifying preinjury work duties or arranging suitable temporary work assignments to encourage early RTW while the subject recovered from the injury. After subject returned to some form of work, RTWC contacted the subject and/or employer within two weeks. The case was closed when subject remained at work two weeks after RTW

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Vlasveld (2012;	Collaborative	Workers	OP,	In both groups, participants	12 sessions of PSTs	ln	WP	NR	Yes -	UC: participants
2013)(53, 54)	care	sick list for 4 -12 weeks	psychiatris +	received sickness guidance as usual by their company's OP.		SE		NR	related to	received sickness guidance as usual by
Netherlands	To reduce sick	screened	ι	Participants allocated to				INIX	reason	their company's OP
	leave and	with	NR fully -	intervention group also received				High	for sick	, , , , , , , , , , , , , , , , , , , ,
Mental health:	depressive	depression	Mix of	collaborative care: problem-					leave	
Major	symptoms	subscale of	Face-to-	solving treatment, manual-					(Depress	
depressive disorder		PHQ-9. Workers	face, manual-	guided self-help, WP intervention and anti-depressant medication.					ive sympto	
district		who	based and	Web-based tracking system					ms)	
		reached cut-	medication	supported the OP care manager					,	
		off score of		in monitoring and adhering to						
		10 contacted	Workers on the sick	the protocol. Psychiatrist available for consultation						
		for	list for	available for consultation						
		diagnostic	between 4							
		interview.	and 12							
		Those who	weeks							
		met DSM-IV criteria for								
		major								
		depressive								
		disorder and								
		gave informed								
		consent								
		were								
		included								

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Yassi (1995)(55) Canada Musculo- skeletal: Back injury	WP-based disability management programme To prevent back injury and facilitate RTW	Nurses who sustained a back injury filed injury report ASAP after injury. Early intervention programme offered to nurses employed on ten wards at highest risk for back injury.	Nurse coordinato r, PT, OT/ergono mist, Rehabilitat ion physician Face-to- face, Individual sessions Nurses on wards at high risk for back injury	A two-year WP-based disability management pilot programme, targeting nurses on wards at high risk for back injury; Programme consisted of: 1) gathering data with respect to targeting and upgrading prevention efforts, and 2) interdisciplinary early therapeutic intervention with provision for return to modified work; Prompt assessment, treatment and rehabilitation through modified work; Wards suitable for modified work for back-injured nurses identified through ergonomic evaluation; Supernumerary positions made available on modified work wards for maximum period of 7 wks; Work activities determined by tolerance level of individual nurse; Modified work started within 7wks of lost-time injury; Recommendation based on evaluation by team members on if nurse should remain off work, return to modified work or return to regular work; Gradual programme of work hardening	Two-year WP-based disability management pilot programme. Weekly reassessment with nurses receiving work hardening interventions. Modified work received for max 7wks. Once return to regular work, monitored weekly by OT for first month	In Gr SE	WP	The Health Sciences Centre (HSC) in Winnipeg, Manitoba, Canada Large (250+ employees) High	Yes - related to reason for sick leave (Who was injured, How, When, Why injuries occurred)	Control wards: received face-to-face interviews using open-ended questions to determine their perceptions of the injury. Injuries in remaining nurses employed on non- participating wards monitored concurrently for comparison

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Bender	Best Practice	Self-referral	CBT:	BPI broadened existing	NR	In	WP,	The urban	Yes -	TAU: No
(2016)(56)	Intervention	+ Staff in OH	Psychs. BPI	Psychological Trauma Program		SE	Hospital	public	related	interventions
		and Claims	included:	(PTP). Comprised: 1. Educational				transit	to	provided. They were
USA	To improve	Managemen	OT,	programs for exposed workers				system	reason	expected to seek and
	health and rates	t	physiother	and promotion of self-screening				. (250	for sick	receive care from
Exposure to WP based traumatic	of recovery	department at transit	apy,	and help seeking 2. Referral to				Large (250+	leave	community care providers, and
event:		system	consulting psychiatric	"evidence-based" MDT program for injured workers with				employees)		interact with the staff
Occupation		contacted	care, and	occupational-related anxiety and				High		in the OH and Claims
related anxiety/		workers	RTWC	mood disorders. Provides				6		Management
mood disorder		who had		comprehensive psychiatric and						department at the
		experienced	Individual,	psychological assessment,						transit system.
		a traumatic	Employees	treatment and disability						Referred to family
		incident and		management services. 3.						doctor who then
		completed a		Specialized RTW strategies in						proceeded with their
		WP		collaboration with the transit						usual care approach
		Insurance		company. A provincial WCB MD						and made referrals to
		and Safety Board claim		assessment and treatment program for workers						Psych or psychiatrist when necessary
		form.		experiencing trauma-related						when necessary
		Workers		psychological symptoms and						
		who agreed		addressed the deficiencies						
		to		identified by the workers in their						
		participate		interviews. Overseen by RTWC at						
		referred to		the PTP, who assessed the						
		research		workers readiness to RTW using						
		team		the stages of change model						

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Bultmann	Coordinated and	Through	OP,	Work disability screening: a	Work disability	In	Job	NR	Yes -	CCM: same
(2009)(57)	Tailored Work Rehabilitation	Information meeting at	occupation al PT,	systematic, MD assessment of disability and functioning,	screening: 2.5h per discipline, followed	SE	centre	NR	related to	information about study and same
Denmark	nendomedion	the	chiropract	identification of barriers for RTW,	by a 30min				reason	questionnaires as the
	To reduce sick	municipality	or, Psych,	formulation and implementation	interdisciplinary			Medium	for sick	CTWR participants.
Musculo- skeletal	leave and to facilitate a safe,		SW who has the	of a coordinated, tailored and action-oriented work	team conference, with case worker				leave	Did not receive any additional
skeletal	facilitate a safe, healthy & sustainable RTW		role of case worker establishin g and maintainin g contact with the WP and the municipal case manager Individual	action-oriented work rehabilitation plan collaboratively developed by an interdisciplinary team using a feedback-guided approach	participation. Coordinated, tailored and action- oriented work rehabilitation plan is collaboratively developed and discussed with worker. CTWR lasts max. 3 months					assessment or action. Accordingly, CCM controls received the conventional case management as provided by the municipality
			Workers on sick leave for at least 4 weeks							

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de Buck	Job-retention	Recruited at	Rheumatol	Systematic assessment followed	Between 4 and 12	In	Hospital	NR	Yes -	Usual OP care:
(2005)(58)	vocational	OP	ogist,	by education, vocational	weeks		-OP	NR	includes	treated and referred
	rehabilitation	rheumatolo	Psych,	counselling, guidance, and			Other -		wellbein	to other health
Netherlands	program	gy	coordinato	medical or nonmedical treatment			assume	Low	g	professionals in
		department	r, OP, SW,				d, based		measure	relation to their
Chronic	To prevent job	s of Leiden	PT, OT				on .		s linked	working problem if
rheumatic	loss and improve	University					exercise		and not	regarded necessary
disease (RA, AS,	quality of life	Medical	Minimum				therapy		directly	by their
psoriatic		Center and	of two				or		linked to	rheumatologist. In
arthritis, reactive		10 non- academic	visits to the				training		reason for sick	addition, all patients received the same
arthritis, SLE, or		hospitals	hospital						leave	written information
scleroderma)		within the	Hospital						(Job	about the Dutch
scieroderria)		region of	Employees						satisfacti	social security system
		Leiden	(18 - 63)						on,	regard- ing sick leave
		20.00	years						Physical	and work disability as
			,						and	patients in the VR
									mental	group
									functioni	- •
									ng &	
									QoL)	

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Jensen	Hospital-based	GPs	CM,	Hospital-based MD intervention:	Seen 1 or more	In	NR	NR	Yes -	Brief intervention:
(2011)(59)	MD intervention	encouraged	rehabilitati	In addition to brief clinical	times by CM,			NB	includes	clinical examination
Denmark	To promote	to refer patients to	on physician,	intervention, participants allocated to MD intervention	discussed several times by MDT.			NR	wellbein	and advice given by a rehabilitation
Delilliark	RTW, physical	Research	a specialist	group were scheduled for an	Appointments with			Low	g measure	physician and a
Musculo-	and mental	Unit	in clinical	interview with a CM within two	other members of			2011	s not	physiotherapist.
skeletal: LBP	health and		social	to three workdays. Participant	team and meetings				directly	Relevant imaging and
	reduce pain, and		medicine,	seen once or more times by the	at the WP or at				linked to	examinations
	disability		PT, SW,	CM depending on need and	social service center				reason	ordered and
			OT, GP	progress. CM and the participant	were regularly				for sick	treatment options
				together made a tailored	arranged				leave	were discussed,
			Face-to-	rehabilitation plan aiming at full or partial RTW. If this was						participants advised to resume work
			face-to-	deemed unrealistic, a plan						when possible. PT
			idee	toward staying on the labour						examination included
			Employee	market in other ways was made,						standardized,
				for instance by jobs supported by						mechanical
				the social system. Each case						evaluation, and
				discussed several times by entire						advice on exercise
				MDT including: rehabilitation						was chosen
				physician, a specialist in clinical						accordingly. General
				social medicine, PT, SW, and OT. Appointments with other						advice given to increase physical
				members of team and meetings						activity and exercise,
				at the work place or at the social						a follow-up PT visit
				service center were regularly						was scheduled 2wks
				arranged						later, and a follow-
										up visit at the
										physician was
										arranged for
										participants needing
										answers in relation to
										test results

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Jensen	Counselling and	Patients	OP	(1) Initial counselling session by	OP counselling: 45	In	Hospital	NR	Yes -	Brief Intervention
(2012)(41)	removing	were referred	Face to	an OP (2) WP visit if required (3) A 6-week status interview with	min-1hr, WP visit:		- innation	NR	related	
Denmark	experienced WP barriers as well	from GPs or	Face-to- face	focus on compliance and	1hr. Follow-up counselling session		inpatien +	INK	to reason	
Definition	as at enhancing	other	iacc	adherence to the plan made	with OP lasted 45-		Hospital	Low/Mediu	for sick	
Musculo-	physical activity	hospital	Patients	together with the OP and (4) A 3-	60 min. 6 weeks		-OP	m	leave	
skeletal: low		wards		month follow-up concluding	after initial					
back pain	To improve pain,			counselling session with the OP	counselling session					
	function and sick				with the OP, a 45					
	leave				min midway interview with the					
					patient was					
					performed by an					
					independent					
					research associate					

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Meyer	Work	Subjects	Rehabilitat	Work-specific exercises,	Lasted 8 weeks,	In	WP, Not	NR	Yes -	Progressive exercise
(2005)(60)	rehabilitation	with an	ion	progressive exercise therapy with	3.5hr/day, 5	Gr	clearly		related	therapy: Referring
	programme	inability to	physicians,	training devices, education in	days/wk		reporte	NR	to	physician of patient
Netherlands		work due to	Psych, SW,	ergonomics, learning strategies			d		reason	to hospital
	To increase	chronic non-	OT, PT,	to cope with pain and increase				Medium	for sick	administered
Musculo-	functional	specific	Therapist	self-efficacy, a group intervention					leave	treatment. Physician
skeletal	capacity and	pain> 3	as case	with the Psych, sports activities					(function	received
disorders: pain	improve self-	months with	manager	for recreation and a WP visit to					al 	recommendations
more than three	efficacy using an	musculoskel		develop appropriate workload-					capacity,	concerning work
months	operant	etal	Group	related exercises for the					intensity	reintegration,
	behavioural therapy	disorders were	Patient	programme; The up- take of work was designed to be gradual and					of pain) Yes -	medication and training. The best-
	approach	referred	Patient	started 4 weeks after the					includes	rated therapeutic
	арргоасп	referred		programme began					wellbein	interventions were
				programme began					g	exercise therapy such
									measure	as progressive
									s not	exercise therapy
									directly	(with training
									linked to	devices, 3xwk for
									reason	8wks) in a
									for sick	physiotherapy
									leave	practice, or an
										interdisciplinary pain
										programme in a clinic
										for pain patients or
										sports activities
										undertaken on own
										initiative.
										Information about
										coping with pain
										given by physician,
										medication (e.g.
										antidepressants

Low)

and/or analgesics), and recommendations for the physician how he should instruct the patient concerning the uptake of work

delivery, Recipient WPI (High/N Low)	ed/	
Momsen Danish National Asked to RTWCs Three core components: 1) NR Inl Job NR	No -	Ordinary SA
(2016)(61) RTW program meet at job and health Establishment of MD RTW team, Gro centre centre after profession 2) Introduction of standardized NR	outcome s focus	management: social benefit officers
Denmark To facilitate RTW first sickness als (e.g., work ability assessment	on RTW	obliged to make RTW
and Health absence ((n Psych, a procedures and tools 3) Low (see Mixture: Status Denmark PT, a Comprehensive RTW training to be so		plan, and the municipalities were
Musculoskeletal municipal psychiatris course for all team members; In coordinate coordin		responsible for
disorder, CMD, jobcentres t and a first interview, RTWCs used n but		initiating RTW
stress, responsible physician assessment tool, including a largely r	n	activities. However,
functional for paying specialised screening questionnaire for through	Brd	in ordinary sickness
somatic sickness in mental health problems; Based party) syndrome or benefits and occupation on assessment, RTWC decided		benefit management social insurance
syndrome or benefits and occupation on assessment, RTWC decided unknown, heart initiating al, social or whether or not to refer		officers do not have
disorder, lung occupationa general beneficiaries to other team		access to a MDT
disorder, cancer, I medicine) members; The RTW team		within municipal job
other rehabilitatio discussed these cases at weekly		center. Therefore in
n) Not meetings and developed an RTW		ordinary sickness
explicitly plan tailored to needs of the stated - beneficiary; RTWCs could also		benefit management social insurance
Face-to- involve the RTW team members		officers do not have
face, in RTW activities, e;g in the		the possibility to
Interview, cooperation with GPs and		discuss cases with a
Assessmen employers; Psychs and PT		team of health
t tool, responsible to establish group Weekly education and training sessions		professionals or include them directly
meetings, e;g, on psycho-education,		in contacts with
Group ergonomics training, physical		other physicians or
session exercises, stress and pain		employers
management		
Beneficiary between		
18-65		
years		

Author (Date) Country Condition of interest	Name, Aim	How accessed	Who delivers, Method of delivery, Recipient	Key features	Intensity	LOI	Setting	Name and size of employer, Extent of WPI (High/Med/Low)	Other outcome measure	Control Group
Ntsiea (2015)(62)	WP intervention programme	Recruited from 2009-	SW, Psych, ST, PT, OT	Week 1: Assessment for work skill using the Therapist Portable	1x1hr/wk per session except for	In SE	WP	NR	Yes - related	UC: All stroke survivors continued
South Africa Stroke survivors	To facilitate RTW	2012 from three hospitals which offer stroke rehabilitatio n services within the Gauteng province of South Africa	Face-to-face, Individual sessions Patients aged between 18 and 60 year, < 8wks post-stroke	Assessment Lab and administration of the job content questionnaire; Assessment included work modules which identified potential problems such as: visual discrimination; eye hand coordination; form and spatial perception; manual dexterity; colour discrimination; cognitive problems, and job specific physical demand factors; Interview of the stroke survivor and employer separately to establish perceived barriers and enablers of RTW; Followed by meeting between the therapist, stroke survivor and employer/supervisor to discuss and develop a plan to overcome identified barriers and to strengthen identified enablers; Working on barriers identified during week two: Differed between individuals and WPs; It was mainly work visit for the stroke survivor to demonstrate what they do at work and identify what they can still do safely; included vocational counselling and coaching; emotional support; adaptation of	work skill assessment sessions which took at least 4hr			NR High	to reason for sick leave (ADLs, stroke specific QoL, mobility, cognitive functioni ng) Yes - includes wellbein g measure s not directly linked to reason for sick leave	with usual stroke care while participating in this programme. UC included general activities to improve impairments and activity limitations and prepare the stroke survivor for return home. The treatment took into consideration the stroke survivor's job requirements, but without work visits and WP intervention

Author (Date) Country Condition of interest	Name, Aim	How accessed	Who delivers, Method of delivery, Recipient	Key features	Intensity	LOI	Setting	Name and size of employer, Extent of WPI (High/Med/Low)	Other outcome measure	Control Group
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the working environment; advice on coping strategies to compensate for mobility and upper limb functional limitations, and fatigue management; The programme was individual specific

Schultz	Early	Sample sites	OH nurse	Interdisciplinary, multimodal,	Session with worker	In	Workers	NR (Not	Yes -	No intervention
(2008)(63)	intervention	selected	from the	clinical, occupational and case	conducted by a	Grp	compen	employer	includes	comparison: case
		from large	workers	management-based early	nurse advisor. WP	SE	sation	specific)	wellbein	management in the
Canada	To improve RTW	urban	compensat	intervention at two different	visit by nurse		setting		g	usual manner of the
		British	ion case	levels of risk for disability. El	advisor (37%). 26%			Large	measure	worker's
Musculo-		Columbia,	manageme	informed by the evidence-based	received one			(Unclear)	s not	compensation
skeletal: back		Canada,	nt team	management model advocated in	component of				directly	system in British
injury		worker's	initiated	the literature: integrated	intervention (i.e.,			Low/Mediu	linked to	Columbia
		compensati	EI. Case	occupational, CCM approach	the one-to-one			m	reason	
		on (Work	manageme	within a biopsychosocial	session with a nurse				for sick	
		Safe BC)	nt team:	rehabilitation context. Key	advisor), 37%				leave	
		Service	nurse	elements 1) Multi-system	received two					
		Delivery	advisor,	Interaction: to ensure and	components (i.e.,					
		Locations (SDLs).	and physician.	facilitate communication and coordination of RTW activities	the one-to-one session and a WP					
		Referrals to	Psych,	between the worker and primary	visit by a nurse					
		the case	vocational	care physician and specialists,	advisor),					
		managemen	rehabilitati	employer(s), other service	37%)received all					
		t team at	on	providers, unions, advocates and	three components					
		the	consultant,	representatives, and the case	(one-to-one					
		intervention	team	management team 2) Multi-	session, a WP visit					
		site made	administra	method Approach: to remove/	by a nurse advisor					
		once	tive	reduce barriers to RTW 3)	and RTW-related					
		workers	assistant.	Enhancement of Capabilities: to	contact of worker's					
		consented	Interaction	provide referral services,	physician by a					
		to	with family	support, education and	worker's					
		participate	physician:	reassurance to assist workers in	compensation					
			communic	achieving recovery and RTW	physician					
			ation	goals, including WP support and						
			between a	advice to stay active; to aid case						
			workers	management team in resolving						
			compensat	RTW issues, and; to offer						
			ion	consultation to other						
			physician	stakeholders 4) Resource Use and						
			and .	Coordination: to ensure						
			workers	appropriate referrals and						
			primary	resources to support injured						
			healthcare	workers; to identify and take						
			practitione	action to address gaps in, and						
			r	barriers to, services, and						
				maintain provider consistency,						

Face-toface, Individual sessions issues resolution and goaldirectedness. CM available to answer worker claim- related questions and participate in development of RTW plan: WF

Worker

answer worker claim- related questions and participate in development of RTW plan; WP visit: nurse advisor available for WP visit to participants and Interaction with family physician: communication between a workers compensation physician and primary healthcare practitioner. Intervention focused on individual workers and on three critical systems within which workers interacted during the course of a back injury recovery: the WP, the workers compensation system and the primary health care providers

Author (Date) Country Condition of interest	Name, Aim	How accessed	Who delivers, Method of delivery, Recipient	Key features	Intensity	LOI	Setting	Name and size of employer, Extent of WPI (High/Med/Low)	Other outcome measure	Control Group
Schultz	Early	Workers'	Case	Integrated occupational, clinical,	NR fully; Early	In	WP	NR	Yes -	Flexible group:
(2013)(64)	intervention	compensati on	manageme nt teams:	and case management approach within a biopsychosocial	referrals: One-to- one sessions, WP	Gr	CPC	NR	includes wellbein	applied flexibly in respect to timing,
Canada	To enhance	(WorkSafeB	composed	rehabilitation context.	visits, Interaction				g	intervention
Muscolo- skeletal: LBP	recovery from LBP and RTW status	C) Service Delivery Locations in urban centers in British Columbia, Canada	of a physician, nurse advisor, registered Psych, VR consultant, CM, and team administra tive assistant One-to-one sessions Workers 4-10 wks post-compensa ble injury. Had to be at high (<33 % probability of RTW within 3 months) or	Multisystem interaction: Multimethod approach Enhancement of capabilities: Resource use and coordination. Both interventions focused on individual workers and their interactions with three critical systems during recovery from a back injury: the WP (employer, co-workers, and unions), the workers' compensation system (case manager and advisors), and primary health care providers (family physician)	with family physician			Medium	measure s directly and not directly linked to reason for sick leave	protocol, and number and types of interventions, in a way that was deemed suitable to individual clinical and RTW needs of workers

Author (Date) Country Condition of interest	Name, Aim	How accessed	Who delivers, Method of delivery, Recipient	Key features	Intensity	LOI	Setting	Name and size of employer, Extent of WPI (High/Med/ Low)	Other outcome measure	Control Group
			moderate risk (34- 65% probability of RTW within 3 months) of disability							
Stapelfeldt (2011)(65) Denmark Musculo- skeletal: LBP	MD intervention To promote RTW	Patients from nine municipaliti es in Central Denmark Region were referred by their GP	Specialist of social medicine, a specialist of rehabilitati on, PT, SW, OT, CM	Full details NR. Visit with CM was scheduled a couple of days after first consultation. After comprehensive interview covering aspects of work life and private life, a tailored rehabilitation plan was designed to facilitate RTW. Rehabilitation plan discussed by team at The Spine Centre. CM also contacted the work place and the social	Median duration of intervention was 18 weeks. CM met participants four times on average	In Gr SE	Hospital -OP	NR NR Low	Yes - includes wellbein g measure s directly and not directly linked to reason	Brief intervention: care management stopped at last visit at the PT or doctor. Treatment and rehabilitation were continued by the GP

Author (Date) Country Condition of interest	Name, Aim	How accessed	Who delivers, Method of delivery, Recipient	Key features	Intensity	LOI	Setting	Name and size of employer, Extent of WPI (High/Med/Low)	Other outcome measure	Control Group
			face	service centre to discuss and					for sick	
				coordinate relevant initiatives.					leave	
			Patient	The CM could arrange meetings between the participant and each of the other specialists, meetings at the work place and meetings with the social service centre, if relevant						

Vikane (2017)(66) Norway Mild traumatic brain injury	MD OP follow-up programme To evaluate the efficacy of programme	Allocated to a MD OP treatment programme or a follow-up by a GP after a MD examination . Adult patients admitted consecutivel y to Department of Neurosurger y for TB with sustained	MD examinatio n two months post-MTBI: specialist in rehabilitati on medicine, neuro- Psych, OT, SW, nurse. Referral to specialists or therapists as needed.	Individual contacts and a psychoeducational group intervention. Schedule for RTW and other activities developed during the first consultation within two weeks after the MD examination. Concerns about RTW, employers and benefits addressed. Patient's capabilities and job demands evaluated and plan made for gradually RTW or alternative activities. OT provided support re: memory aids and structuring the day. Psychological distress or cognitive difficulties were followed-up by a neuro-Psych. Principles of CBT used if appropriate. Physician cared for	Individual contacts and a psycho-educational group intervention 1xwk over 4wks. 1x MDT examination. Additional follow-ups during first year individually tailored to the individual's needs: conducted as long as participants sick-listed. 3 team members performed additional assessments	In Gr	Hospital in- patient, Hospital -OP	NR (Multiple employers) NR Low	Yes - related to reason for sick leave (cognitiv e, emotion al and physical sympto ms)	Control group: Control group followed-up by a GP after the MD examination and offered typical treatment (not standardised). Recommendation from MD examination gave some directions for further treatment in control group. GP could refer to specialists, PTs or other health-care providers when
		sustained symptoms at six to	as needed. GP received	appropriate. Physician cared for medical problems. For a few patients, meetings with	additional assessments					other health-care providers when needed
		eight weeks post mild TBI	report from the MD examinatio	Norwegian Labour and Welfare Service (NAV) or employer to facilitate RTW. Group sessions started 9-16wks post-injury.						
			n at baseline, and responsibl	Focused on education and problem solving: shared experiences and problems after injury, and discussed different						
			e for managing the patients	strategies for lessening impact and facilitating RTW. Schedule for RTW and other activities developed during first						
			sick-leave certificates . Concerns	consultation within 2wks after MDT examination. 3 team members conducted additional						
			about RTW, employers and	assessment if needed; including neuropsychological assessment if needed for clarifying the diagnosis, defining the						
			benefits: SW, OT or	relationship to the employer or school, and identifying working						

skills and routines in daily living. a nurse. OT helped patients with memory Team led aids and structuring day. GP by specialist received a report from each follow-up. WP involvement: in rehabilitati individually tailored model for RTW; however, regular work on medicine visits to employers not performed. Telephone meeting with the employer to facilitate Individual RTW

and group componen ts. Face-toface visits. Telephone calls

At-risk or sick-listed adult patients (16-55 years) with persistent postconcussion symptoms 2 months after mild TBI admitted consecutiv ely to the Departme nt of Neurosurg ery for TBI

Author (Date) Country Condition of interest	Name,	How accessed	Who delivers, Method of delivery, Recipient	Key features	Intensity	LOI	Setting	Name and size of employer,	Other	•
	Aim							Extent of WPI (High/Med/ Low)	outcome measure	

ACT – Acceptance and Commitment Therapy; BP – Back pain; BPI – Best Practice Intervention; CAU – Care as Usual; CBT – Cognitive Behavioural Therapy; CCM - Conventional Case Management; CM – Care Manager; CTWR - Coordinated and Tailored Work Rehabilitation; COMBO – Combination; DSM - Diagnostic and Statistical Manual of Mental Disorders; EI - Early Intervention; EQ - EuroQol; FIOH - Finnish Institute of OH; FR - Functional Restoration; GP – General Practitioner; Gr – Group; HR – Human Resources; ICM - Integrated case management; In – Individual; MBSR – Mindfulness-Based Stress reduction; LBP - Low Back Pain; MD – Multidisciplinary; MDT – Multidisciplinary Treatment; NR – Not Reported; OH – OH; OP – Occupational Physician; OT – Occupational Therapist; PHQ-9 - Patient Health Questionnaire; PREVICAP - Prevention of work handicap program; PT – Physiotherapist; PST – Problem Solving Therapy; QoL – Quality of Life; QWCB - Quebec (Canada) Workers Compensation Board; RTW – Return to Work; RTWC – Return to Work Coordinator; RTW-I – Return to Work Intervention; SA – Sickness Absence; SE – Social Environmental; SW - Social Worker; TAU – Treatment as Usual; TBI - Traumatic brain injury; TRTW- Therapeutic Return to Work; TTSH ED - Tan Tock Seng Hospital's Emergency Department; UC – Usual Care; WCB – Workers Compensation Board; WDI - WP Dialogue Intervention; WP-Workplace; WPI – Workplace Involvement; WRUED – Work-related Upper Extremity Disorder

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