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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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**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:**

**X**

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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 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 multi-disciplinary professionals are effective for different populations.

## Aim

To review the effectiveness and cost-effectiveness systematic review evidence that evaluates multi-disciplinary 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](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](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 disability<sup>1</sup> and approximately 42 percent of the 50-64 year olds within the UK living with a chronic condition.<sup>2</sup> Two-thirds of long-term sickness absence has been attributed to common health problems such as musculoskeletal, mental health and cardio-respiratory conditions,<sup>3</sup> with 27% of Europeans of working age reporting living with a mental disorder.<sup>4</sup> 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.<sup>5</sup> 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.<sup>6</sup>

The aging UK population,<sup>7</sup> accompanied by the removal of default retirement age,<sup>8</sup> increased prevalence of chronic conditions and comorbidities<sup>9</sup> and concerns regarding the impact of the COVID-19 pandemic<sup>10-13</sup> 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.<sup>2,9</sup> 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.<sup>14</sup> The recent COVID-19 pandemic is also likely to have implications for the workforce, both in terms of increased prevalence of mental ill-health,<sup>15</sup> and 'long-Covid' symptoms,<sup>16</sup> and changes to working patterns, which may affect the support requirements of employees.<sup>17</sup>

### Role of Occupational Health services

Occupational Health (OH) services ensure that workplaces meet the physical and mental health needs of their employees.<sup>18</sup> Whilst there is no internationally agreed definition of the OH services,<sup>19</sup> 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,<sup>20</sup> 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.<sup>9</sup> However, the number of existing clinical occupational health specialists available are insufficient to meet current demand for services,<sup>9</sup> 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,<sup>9</sup> 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<sup>2</sup> 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.<sup>21</sup> 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 multi-disciplinary 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?
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### Specific research objectives:

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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:

1. 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).<sup>22</sup> 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.<sup>22</sup> 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.<sup>23</sup> 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.<sup>24</sup>

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 studies<sup>25</sup> 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 sickness 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

<b>PICO criteria</b>	<b>Potential uncertainties</b>
Population	Was there population employed prior to receiving occupational health support? Was there 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
<b>Author, date</b>	
<b>Review title</b>	
<b>Review aim</b>	As reported in the abstract or end of introduction
<b>Type of review</b>	Most common review types included systematic and scoping reviews
<b>Type of primary studies included in review</b>	As described in the review inclusion criteria or results section
<b>Description of intervention and how it may work</b>	This included any theory, rationale or model supporting the intervention provided within the background and/or methods section of the review
<b>Outcome of interest/How RTW measured</b>	Brief description of outcome of interest (RTW or cost) and how this was measured
<b>Synthesis method</b>	Method used to synthesise data within the review, including meta-analysis, narrative or 'best-evidence' synthesis or descriptive analysis
<b>Queries regarding relevance of review PICO to our umbrella review</b>	Any queries regarding how the population, intervention, outcome or setting of the review aligned with the inclusion criteria of our umbrella review were identified here. These queries often arose through a lack of/unclear reporting of required detail within the included review
<b>Review inclusion/exclusion criteria</b>	From the methods section of each included review
<b>Review quality: Is approach to searching clearly defined, systematic and transparent?</b>	One criterion from the CEESAT. This item required that all search terms, Boolean operators ('AND', 'OR' etc.) and wildcards were clearly stated so that the exact search is repeatable by a third party AND 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)]
<b>Review quality: Is search comprehensive?</b>	The original item from the CEESAT requires that sources of articles 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
<b>Review quality: Does the review critically appraise each study?</b>	This CEESAT item states that an effort should be made to identify relevant sources of bias (threats to internal and external validity) 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
<b>Review quality: During critical appraisal is an effort made to minimise subjectivity?</b>	The original item from the CEESAT requires that an effort was made to minimise subjectivity by predefining critical appraisal process in a protocol AND



	<p>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.</p> <p>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</p>
<b>Overall quality rating</b>	<p>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</p>
<b>Relevance of aim of review to umbrella review</b>	<p>This encompasses how the aim of the included review relates to the aim and PICO of our umbrella review.</p> <p>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?);</p> <p>Medium = Two queries, or aim of study not completely compatible with the aims of our review;</p> <p>Low = Two to three queries regarding review inclusion criteria and/or limited quantity of relevant included primary studies</p>
<b>Number of relevant/total number of included studies</b>	<p>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.</p> <p>The total number of included primary studies was also extracted for these reviews.</p>

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 criteria. 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);<sup>27</sup>
- 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.<sup>28</sup> 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):<sup>29</sup>

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 studiesreviews 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 bibliographic 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 de-duplication 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](http://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 strategies 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 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 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:
  - o Clinical and non-clinical professionals (e.g. psychiatrist and case-manager);
  - o 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 non-clinical;
- 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 Effects<sup>26</sup> 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 reviews

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.<sup>24</sup>

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*

<b>PICO criteria</b>	<b>Potential uncertainties</b>
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

	<b>Description</b>
<b>Author, date</b>	
<b>Review title</b>	
<b>Review aim</b>	As reported in the abstract or end of introduction
<b>Type of review</b>	Most common review types included systematic and scoping reviews
<b>Type of primary studies included in review</b>	As described in the review inclusion criteria or results section
<b>Description of intervention and how it may work</b>	This included any theory, rationale or model supporting the intervention provided within the background and/or methods section of the review
<b>Outcome of interest/How RTW measured</b>	Brief description of outcome of interest (RTW or cost) and how this was measured
<b>Synthesis method</b>	Method used to synthesise data within the review, including meta-analysis, narrative or 'best-evidence' synthesis or descriptive analysis
<b>Queries regarding relevance of review PICO to our umbrella review</b>	Any queries regarding how the population, intervention, outcome or setting of the review aligned with the inclusion criteria of our umbrella review were identified here. These queries often arose through a lack of/unclear reporting of required detail within the included review
<b>Review inclusion/exclusion criteria</b>	From the methods section of each included review
<b>Review quality: Is approach to searching clearly defined, systematic and transparent?</b>	One criterion from the CEESAT. This item required that all search terms, Boolean operators ('AND', 'OR' etc.) and wildcards were clearly stated so that the exact search is repeatable by a third party AND 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)]
<b>Review quality: Is search comprehensive?</b>	The original item from the CEESAT requires that sources of articles 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
<b>Review quality: Does the review critically appraise each study?</b>	This CEESAT item states that an effort should be made to identify relevant sources of bias (threats to internal and external validity) 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
<b>Review quality: During critical appraisal is an effort made to minimise subjectivity?</b>	The original item from the CEESAT requires that an effort was made to minimise subjectivity by predefining critical appraisal process in a protocol AND

	<p>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.</p> <p>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</p>
<b>Overall quality rating</b>	<p>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</p>
<b>Relevance of aim of review to umbrella review</b>	<p>This encompasses how the aim of the included review relates to the aim and PICO of our umbrella review.</p> <p>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?);</p> <p>Medium = Two queries, or aim of study not completely compatible with the aims of our review;</p> <p>Low = Two to three queries regarding review inclusion criteria and/or limited quantity of relevant included primary studies</p>
<b>Number of relevant/total number of included studies</b>	<p>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.</p> <p>The total number of included primary studies was also extracted for these reviews.</p>

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 criteria. 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);<sup>27</sup>

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.<sup>28</sup>

## 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.<sup>28</sup>



## Quality appraisal

### Systematic reviews

In a deviation to our protocol, we used two different methods to appraise the quality of included 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.<sup>29</sup> 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,<sup>30</sup> supported by EPPI-Reviewer.<sup>28</sup> 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 may choose other items as critical depending on the context of the review.<sup>30</sup> 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.<sup>29</sup> 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 extracted 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
<b>Protocol development</b>	<p>DHSC and DWP [Group meetings/email, &gt; 4]</p> <p>Project co-applicant with lived experience of accessing OH services, both as an employee and as a manager [email]</p>	<p>Stakeholders informed the development of the protocol, including:</p> <ul style="list-style-type: none"> <li>- Clarifying the aims/objectives of the umbrella review;</li> <li>- Identifying key inclusion criteria;</li> <li>- Identifying key outcomes of interest;</li> <li>- Outlining desired impact of review;</li> <li>- Outlining plan for further stakeholder and PPI engagement.</li> </ul>	<p>Collaborative development of umbrella review protocol which was agreed prior to commencement of the review</p>
<b>Screening</b>	<p>DHSC and DWP [Group meetings/email, &gt; 4]</p> <p>Occupational Health personnel [Group meeting, 3]</p>	<p>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</p>	
<b>Data extraction</b>	<p>DHSC and DWP [Group meetings, &gt; 4]</p> <p>Occupational Health personnel [Group meeting, 3]</p> <p>People with lived experience of accessing OH services as an employee and/or manager [Group meeting, 4 people]</p>	<p>Supported the identification of key data to be extracted from High/Medium relevance systematic reviews</p>	<p>Identification of data regarding intervention characteristics and context of delivery to be extracted.</p> <p>Identified additional outcome data to be collected, particularly wellbeing outcomes</p>

<b>Synthesis/ Presentation of findings</b>	DHSC and DWP [Draft report, email, face to face meeting, 1]  Occupational Health personnel [Individual meeting, 1]  People with lived experience of accessing OH services as an employee and/or manager [Group meeting, 4]	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, content and delivery of intervention	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  Relabelling of axis in evidence and gap map
<b>Dissemination</b>	People with lived experience of accessing OH services as an employee and/or manager [Group meeting, 4]	Discussed how format of report could be adapted 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 of 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,<sup>31-33</sup> and one contained data where it was difficult to determine the relevance to the aims of our umbrella review.<sup>34</sup> 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:<sup>68</sup>

- 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.<sup>28</sup>

### 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 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!**

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*Table 8: Primary study intervention categories*

Staff Category	Description
<b>Case Management</b>	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
<b>Musculoskeletal</b>	Professionals involved with supporting the musculoskeletal health of employees, including; non-specified health professionals, rheumatologists, neurologists, chiropractors, PTs, OPs, pain management and rehabilitation specialists
<b>Mental Health</b>	Professionals involved with supporting the MH of employees, including non-specified MH professionals, BT, psychologists, and psychiatrists
<b>Industrial Hygiene</b>	Professionals involved with supporting the health of the employee within the workplace, including OTs, ergonomists, industrial hygienists, OH specialists and vocational rehabilitation consultants
<b>Social care</b>	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

Primary article (author, date)	Included in reviews(n)	Reviews reporting Overall QA Score (n)	Quality Appraisal rating awarded by review					NOS (n)	NR (n)	Average quality appraisal rating
			High quality (n)	Moderate quality (n)	Low quality (n)	Unclear (n)				
Haldorsen 1998 <sup>58</sup>	1	1	0	0	1	0	0	0	1	
Haldorsen 2002 <sup>61</sup>	1	1	0	0	1	0	0	0	1	
Kaapa 2006 <sup>62</sup>	2	1	0	0	1	0	1	0	1	
Lindstrom 1992 <sup>63</sup>	1	1	0	0	1	0	0	0	1	
Purdon 2006 <sup>65,58</sup> (37)37(37)	4	3	0	0	3	0	1	0	1	
Schultz 2008 <sup>66</sup>	1	1	0	0	1	0	0	0	1	
Tamminga 2013 <sup>67</sup>	2	1	0	0	1	0	0	1	1	
Bernaards 2011 <sup>69</sup>	3	2	0	1	1	0	1	0	2	
Durand 2000 <sup>70</sup>	2	2	0	1	1	0	0	0	2	
Lagerveld 2012 <sup>71</sup>	2	2	0	1	1	0	0	0	2	
Martin 2013 <sup>72</sup>	2	2	0	1	1	0	0	0	2	
Netterstrom 2013 <sup>73</sup>	2	2	0	1	1	0	0	0	2	
Noordik 2013 <sup>74</sup>	5	4	0	2	2	0	1	0	2	
Skouen 2006a <sup>60</sup>	2	2	0	1	1	0	0	0	2	
Vlasveld 2012 <sup>75</sup>	2	2	0	1	1	0	0	0	2	
Cheng 2007 <sup>76</sup>	3	3	0	2	1	0	0	0	2	
van den Hout 2003 <sup>77</sup>	4	3	1	0	2	0	1	0	2	
Arnetz 2003 <sup>78</sup>	8	6	2	2	2	0	1	1	2	
de Buck 2005 <sup>79</sup>	2	1	0	1	0	0	1	0	2	
Hees 2013 <sup>80</sup>	5	3	1	1	1	1	1	0	2	
Jensen 2012b <sup>81</sup>	1	1	0	1	0	0	0	0	2	
Karrholm 2006 (from Tompa 2007) <sup>82</sup>	1	1	0	1	0	0	0	0	2	



Primary article (author, date)	Included in reviews(n)	Reviews reporting Overall QA Score (n)	Quality Appraisal rating awarded by review						Average quality appraisal rating
			High quality (n)	Moderate quality (n)	Low quality (n)	Unclear (n)	NOS (n)	NR (n)	
Lemstra 2003 <sup>83</sup>	2	1	0	1	0	0	1	0	2
Lemstra 2004 <sup>84</sup>	2	1	0	1	0	0	1	0	2
Linton 1992 <sup>85</sup> ;	1	1	0	1	0	0	0	0	2
Loisel 1997 <sup>86</sup>	9	6	2	2	2	2	0	1	2
Momsen 2016 <sup>87</sup>	1	1	0	1	0	0	0	0	2
Netterstrom 2010 <sup>88</sup>	1	1	0	1	0	0	0	0	2
Schene 2007 <sup>89</sup>	4	2	0	2	0	1	1	0	2
Shultz 2013 <sup>90</sup>	1	1	0	1	0	0	0	0	2
Skouen 2006b <sup>59</sup>	1	1	0	1	0	0	0	0	2
Spekle 2010 <sup>91</sup>	1	1	0	1	0	0	0	0	2
van Oostrom 2009 <sup>92</sup>	2	2	1	0	1	0	0	0	2
Yassi 1995b <sup>93</sup>	4	3	1	1	1	0	1	0	2
Skouen 2002 <sup>51</sup>	3	3	2	0	1	0	0	0	2
Staal 2004 <sup>94</sup>	3	3	2	0	1	0	0	0	2
Volker 2015 <sup>95</sup>	5	3	2	0	1	1	1	0	2
van Oostrom 2010 <sup>96</sup>	6	5	3	1	1	0	0	1	2
Bültmann 2009 <sup>97</sup>	8	4	2	2	0	2	1	1	3
Goorden 2014 <sup>98</sup>	2	2	1	1	0	0	0	0	3
Jensen 2005 <sup>99</sup>	4	4	2	2	0	0	0	0	3
Jensen 2011 <sup>100</sup>	3	2	1	1	0	0	1	0	3
Loisel 2002 <sup>101</sup>	4	4	2	2	0	0	0	0	3
Meijer 2006 <sup>102</sup>	2	2	1	1	0	0	0	0	3
Stapelfeldt 2011 <sup>103</sup>	2	2	1	1	0	0	0	0	3
Vlasveld 2013 <sup>104</sup>	5	2	1	1	0	1	1	1	3
Jensen 2001 <sup>105</sup>	3	3	2	1	0	0	0	0	3
Lambeek 2010a <sup>106</sup>	8	4	3	1	0	0	3	1	3
Anema 2007 <sup>107</sup>	8	5	4	0	1	1	1	1	3
Bender 2016 <sup>108</sup>	1	1	1	0	0	0	0	0	3

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



Study [Condition]	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	Case Management				Musculoskeletal								Mental Health			Industrial Hygiene				Social Care				
					CM NS	Primary care/GP	Other	Nurse	HP	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO
Ntsiea (2015) <sup>117</sup> South Africa, [Stroke]	E		3	PT and OT			x								x				x							x		
Haldorsen (2002) <sup>61</sup> Norway [MSK]	M	CE	1	NR		x		x		x						x				x								
Hees (2013) <sup>80</sup> Netherlands , [MH]	M		2	OT			x										x			x								
Skouen (2002) <sup>61</sup> Norway [MSK]	M		2	NR		x		x		x						x					x							
Skouen (2006) <sup>59, 60</sup> Norway, [MSK]	M		2	NR		x		x		x						x					x							
Karrholm (2006) <sup>82</sup> Sweden [MSK]	M	CE	2	OP			x	x																		x		





Study [Condition]	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	Case Management				Musculoskeletal								Mental Health			Industrial Hygiene				Social Care			
					CM NS	Primary care/GP	Other	Nurse	HP	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW
Jensen (2011) <sup>100</sup> Denmark, [MSK]	NI		3	Case manager NS	x										x	x				x					x		
Meyer (2005) <sup>114</sup> Netherlands, [MSK]	NI		3	Therapist (NS)		x	x								x	x	x			x					x		
Momsen (2016) <sup>87</sup> Denmark, [Mix]	NI		2	SBO		x	x				?				x		x		x	x			x				
Schultz (2013) <sup>90</sup> Canada, [MSK]	NI	CE	2	Nurse		x											x		x					x			x
Vikane (2017) <sup>125</sup> Norway, [mTBI]	NI		3	Specialist in rehab medicine		x	x	x		x				x						x					x		
Jensen (2012) <sup>81</sup> Denmark, [MSK]	H		3	Case manager NS	x							x			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, 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







Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	Case Management				Musculoskeletal									Mental Health			Industrial Hygiene				Social Care											
					CM NS	Primary care/GP	Other	Nurse	HP	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP							
Goorden (2014) <sup>98</sup> Netherlands, [MH]	NI	Not CE	3	OP			x												x																	
Kenning (2018) <sup>127</sup> UK, [NR]	NI		CD	Case manager NS	x														x																	
Myhre (2014) <sup>116</sup> Norway, [MSK]	NI		3	OP			x												x																	
Verbeek (2002) <sup>124</sup> Netherlands, [MSK]	NI		3	OP		x	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, 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









## 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.

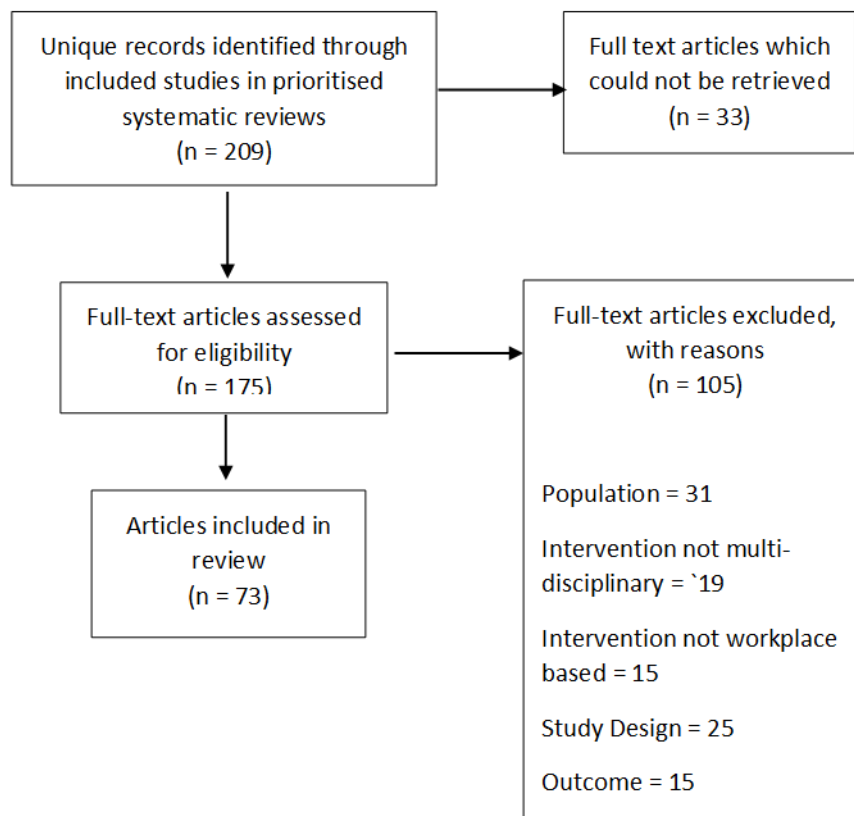


Figure 3: Primary study PRISMA diagram

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),<sup>67, 75, 79, 80, 91, 94, 95, 98, 104, 107, 114, 120-122, 128 71, 102, 124 77, 89, 92, 96, 131</sup> Denmark(n=12),<sup>97 81, 100, 103, 109, 115 72-74, 87, 88, 111</sup> Sweden (n=6),<sup>63, 82, 99, 105, 118, 132</sup> Norway (n=4),<sup>58, 59, 61, 116, 125</sup> and Finland(n=2).<sup>62, 112, 113</sup> Other countries included Canada (n=8),<sup>66, 90, 93 70, 83, 84, 86, 101</sup> the UK (n=2),<sup>65, 127</sup>, the USA (n=2),<sup>108, 119</sup> and one study each for Singapore,<sup>123</sup> Hong Kong,<sup>76</sup> various countries,<sup>129</sup> and South Africa,<sup>117</sup> with one study not reporting this information.<sup>126</sup>

### 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),<sup>58-67</sup> 31 received a score of 2 (Moderate quality),<sup>59-61, 69-96</sup> and 30 articles received a score of 3 (High quality).<sup>81, 97-125</sup> 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.<sup>93, 126, 128, 129</sup>

### 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.<sup>69, 85</sup>



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),<sup>75, 81, 97, 100, 101, 103, 104, 106, 108, 112-115, 117, 118, 123, 125, 128, 129</sup>

Moderate(n=11),<sup>59-61, 79, 80, 82, 87, 90, 91, 93</sup> and Low(n=5).<sup>58, 61, 65-67</sup> Two articles could not be awarded an average quality rating.<sup>129, 130</sup> Employees accessing the interventions were experiencing

musculoskeletal difficulties(n=14),<sup>58-61, 66, 81, 82, 90, 91, 93, 97, 100, 101, 103, 106, 112-115, 128, 130</sup> mental health difficulties(n=4),<sup>75, 80, 104, 108, 118</sup> a mix of conditions/diagnoses (n=3),<sup>65, 87, 129</sup> injury(n=1),<sup>123</sup>

cancer(n=1).<sup>67</sup> mild traumatic brain injury(n=1),<sup>125</sup> stroke(n=1),<sup>117</sup> and rheumatic disease(n=1).<sup>79</sup>

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.<sup>58-61, 65, 67, 75, 80, 82, 91, 93, 101, 104, 106, 112, 113, 115, 118, 123, 128-130</sup> Ten studies (twelve articles) evaluated

interventions which included case managers working alongside professionals from more than two other professional categories.<sup>66, 79, 81, 87, 90, 97, 100, 108, 114, 117, 125</sup>

#### 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.<sup>93, 106, 123, 128-130</sup> Three of these studies also reported that the intervention was cost-effective,<sup>93, 106, 128-130</sup> although one of these did not conduct formal statistical comparison.<sup>129</sup>

The case management role within these studies was fulfilled by a nurse and/or OT(n=4),<sup>93, 129, 130</sup> or Occupational Physician(n=1).<sup>106, 128</sup> These case managers worked with professionals from the 'Musculoskeletal' and 'Industrial Hygiene' categories(n=2),<sup>93, 106, 123, 128, 130</sup> or 'Musculoskeletal' and 'Mental Health' categories (n=1).<sup>129</sup>

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<sup>97, 117</sup> with one study reporting the intervention as being cost-effective.<sup>97</sup> Case managers within these studies were social workers,<sup>97</sup> and a combination of physiotherapists and OTs.<sup>117</sup> Case managers in both studies worked alongside professionals from the 'Musculoskeletal' and 'Mental Health' categories and either 'Industrial Hygiene'<sup>97</sup> or 'Social care'.<sup>117</sup>

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<sup>59-61, 80, 82</sup> Two of these studies reported that the intervention was cost effective.<sup>59-61, 82</sup> Professionals within the 'Case Management' category in these studies included primary care professionals and nurses (n=1),<sup>59-61</sup> OT(n=1)<sup>80</sup> and occupational physicians and nurses(n=1)<sup>82</sup> and they worked alongside individuals from both the categories of 'Industrial Hygiene' and 'Social Care' (n=1),<sup>82</sup> and 'Musculoskeletal' and 'Mental Health'(n=2).<sup>59-61, 80</sup>

Two studies where case management professionals worked with more than two other professional categories reported mixed effects of the intervention on RTW outcomes.<sup>66, 103</sup> Professionals within the 'Case management' category included primary care clinicians and nurses<sup>66</sup> or were not specified.<sup>103</sup> 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.<sup>103</sup>

#### 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,<sup>58, 65, 67, 75, 91, 101, 104, 112, 113, 115, 118</sup> with one low quality study reporting that the intervention was not cost-effective and another High quality study stating it was cost-effective.<sup>67, 112, 113</sup> Articles were rated as High(n=5<sup>101, 104, 112, 113, 115, 118</sup> Moderate(n=2<sup>75, 91</sup>) or Low(n=3<sup>58, 65, 67</sup> quality. Professionals within the case management role in these studies included; Nurses alone(n=3<sup>65, 67, 112, 113</sup>), primary care clinicians and nurses(n=1<sup>58</sup>) Social worker and primary care clinicians (n=1<sup>115</sup>), psychologists and GP (n=1<sup>118</sup>), OT and/or psychiatrists(n=1<sup>101</sup>) or were unspecified professionals (n=2).<sup>75, 91, 104</sup> Case managers worked with the following professional groups: 'Musculoskeletal' and 'Mental health'(n=4<sup>58, 65, 75, 104, 115</sup>), Musculoskeletal and 'Industrial hygiene'(n=2<sup>101, 112, 113</sup>) 'Musculoskeletal' and 'Social care'(n=1<sup>67</sup>), Mental Health and Social care (n=1<sup>118</sup>) and not reported (n=1<sup>91</sup>).

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,<sup>79, 87, 90, 100, 108, 114, 125</sup> with one reporting improved effects of the control group over the intervention group.<sup>81</sup> Professionals working within the 'Case management' category included: Case manager not specified(n=3<sup>79, 81, 100, 108</sup>), Therapist and primary care clinicians(n=1<sup>114</sup>), Sickness benefit officer and primary care clinicians(n=1<sup>87</sup>), Nurse (n=1<sup>90</sup> and Specialist in rehabilitation medicine, primary care clinicians and nurses(n=1<sup>125</sup>). Case Management professionals worked with professionals from the other four staff categories in two studies,<sup>79, 90</sup> with individuals from 'Musculoskeletal', 'Mental Health' and 'Industrial Hygiene' in two studies<sup>87, 108</sup> and staff from 'Musculoskeletal', 'Industrial Hygiene' and 'Social Care' categories in three studies.<sup>81, 100, 114, 125</sup>

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

Reported interventi on effect	Case Management				Musculoskeletal									Mental Health			Industrial Hygiene					Social Care			
	Case manager NS	Primary care/GP	Other	Nurse	Healthcare professionals	Neurologist	Secondary care/consultant/ specialists	Pain management specialist	Rheumatologists	Chiropractor	Speech therapist	Physical or physio therapist	Rehab specialist	Occupational Physician	Mental health professional	Behaviour therapist/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist occupational medicine	Vocational rehab consultant	Social worker/specialist clinical social medicine	Sickness benefits officer	Workers compensation physician
<b>Beneficial effect</b>			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	0[	1[1	1[1		1[1	0[		
<b>n[%]</b>	0[0]	0[0]	3]	0]	7]	0[0]	7]	7]	0[0]	7]	7]	7]	3]	7]	3]	7]	3]	7]	0]	7]	7]	7]	0]	0[0]	
<b>No effect</b>	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
<b>n[%]</b>	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.**<sup>14</sup> 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.<sup>74, 78, 83, 84, 88, 89, 94, 95, 98, 107, 116, 119, 120, 122, 124, 126, 127</sup> Six of these studies were High quality,<sup>98, 119, 120, 122, 107, 116, 124</sup> 8 of Moderate quality,<sup>74, 78, 83, 84, 88, 89, 94, 95</sup> 1 of Low quality<sup>63, 64</sup> and two could not be given an average quality rating.<sup>126, 127</sup> Eight of the studies evaluated interventions aimed at employees with musculoskeletal problems,<sup>63, 64, 78, 94, 106, 107, 116, 121, 122, 124, 128</sup> 5 with mental health difficulties,<sup>74, 88, 89, 95, 98</sup> 1 with chronic pain,<sup>126</sup> and 2 studies did not specify the reason for sick-leave.<sup>119, 127</sup>

### 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<sup>127</sup>) GP (n=6 Gice<sup>63, 64, 83, 84, 107, 121, 122, 124, 126</sup>), nurse (n=1<sup>120</sup>). 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<sup>78, 83, 84, 119</sup>), specialist in occupational medicine (n=1<sup>88</sup>), Occupational Physician (n=7<sup>74, 89, 94, 95, 98, 116, 124</sup>), Ergonomist (n=2<sup>107, 121, 122</sup>) and nurse (n=1<sup>119</sup>).

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<sup>63, 64, 83, 84, 94, 107, 119, 121, 122, 124</sup>), 'Mental Health' (n=6<sup>74, 88, 89, 95, 98, 116, 127</sup>) or 'Industrial Hygiene' (n=3<sup>78, 89, 126</sup>) 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<sup>83, 84, 94, 107, 124</sup>) Neurologists (n=1<sup>107</sup>), Chiropractors (n=1<sup>107</sup>), PT (n=5<sup>63, 64, 83, 94, 107, 121, 122</sup>) and OP (n=2<sup>107, 119</sup>). Within the 'Mental Health' category, 2 studies involved Behavioural Therapists with delivering the intervention,<sup>74, 127</sup> and four studies involved a psychiatrist.<sup>88, 89, 95, 98, 116</sup> Professionals in the 'Industrial Hygiene' category included Occupational Therapists (2 studies (Arnetz, 2003 #46)) Ergonomists (1 study<sup>78</sup>) and Occupational Health specialists not otherwise specified (1 study<sup>126</sup>).

### 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.<sup>74, 78, 84, 88, 89, 94, 95, 119, 121, 122, 126</sup> Four of these studies also indicated that these interventions were cost-effective,<sup>78, 89, 119, 126</sup> although one of these did not conduct any formal statistical comparison.<sup>126</sup> One study indicated the intervention, while effective, could be delivered at a slightly higher cost than the control intervention.<sup>121, 122</sup> **Error! Reference source not found.**<sup>15</sup> 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<sup>74, 89, 94, 95</sup>), Ergonomists (n=1,<sup>121, 122</sup>), specialist in occupational medicine (n=1<sup>88</sup>) and PTs (n=1<sup>63, 64</sup>), but also included Nurses /corporate case managers(n=1<sup>119</sup>) and case managers from employing organisation and/or union (n=2<sup>78, 84</sup>). Other additional professionals included within this category included nurse(n=1<sup>121, 122</sup>) and GP/Primary care clinicians(n=3<sup>63, 64, 121, 122, 126</sup>). 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<sup>63, 64, 83, 84, 94, 119, 121, 122</sup>), 'Mental Health' (n=3<sup>74, 88, 95</sup>) and 'Industrial Hygiene'(n=3<sup>78, 89, 126</sup>) categories.

#### Intervention deliverers: studies reporting mixed effects

Two studies, one moderate quality<sup>83, 84</sup> and one High<sup>107</sup> 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.<sup>83</sup> Case Managers were reported to be Ergonomists<sup>107</sup> or GPs,<sup>83</sup> 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,<sup>98, 116, 124, 127</sup> with 1 of these studies indicating that the intervention was not cost-effective.<sup>98</sup> Where interventions reported a named case managers, the role was fulfilled predominantly OPs(n=3<sup>98, 116, 124</sup>), 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,<sup>124</sup> whilst the other three involved professionals from the 'Mental Health' category. Only one study targeted employees with mental health difficulties,<sup>98</sup> the others included employees with musculoskeletal difficulties(n=2<sup>116, 124</sup>) or condition was not specified.<sup>127</sup>

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.





## 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.<sup>62, 73, 77, 86, 99, 102, 105, 109</sup> The average quality appraisal ratings awarded by reviewers were High (n=2<sup>99, 102, 105, 109</sup>), Moderate (n=3<sup>73, 77, 86</sup>) and Low(n=1<sup>62</sup>). The majority of the interventions were intended for employees with musculoskeletal difficulties, with one intervention aimed at individuals with mental health difficulties.<sup>73</sup>

## Intervention deliverers: overall summary

Four of the interventions being evaluated included individuals from two professional categories.<sup>62, 73, 86, 99, 105, 109</sup> The most common combination of professional categories were 'Musculoskeletal' and 'Mental Health' (n=3<sup>62, 73, 99, 105, 109</sup>). One study reporting a significant beneficial effect of the intervention included individuals working across 'Musculoskeletal' and 'Industrial hygiene' staff categories.<sup>86</sup> Two studies, one reporting a beneficial effect of the intervention<sup>77</sup> and the other no effect<sup>102</sup> included individuals across 'Musculoskeletal', 'Mental Health' and 'Industrial Hygiene' categories.

Within the 'Musculoskeletal' category, most common staff included physiotherapists (n=4<sup>62, 73, 86, 99, 105, 109</sup>) and Occupational Physicians (n=3<sup>62, 73, 86, 99, 105, 109</sup>) The number of professionals within this category ranged from 1<sup>73</sup> to 3.<sup>62</sup> All except one study<sup>86</sup> included at least one professional from the 'Mental Health' category, with the most common being a behavioural therapist or psychologist(n=5<sup>62, 73, 77, 99, 102, 105, 109</sup>). In addition to a behavioural therapist/psychologist, one study also involved a psychiatrist.<sup>73</sup> Within the 'Industrial Hygiene' category, two studies included an occupational therapist<sup>77, 102</sup> and one included an ergonomist and a vocational rehabilitation consultant.<sup>86</sup> 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.<sup>109</sup> Two of these articles represented three<sup>99</sup> and ten year<sup>109</sup> follow ups of an original study, which showed no significant difference between intervention and control groups over an eighteen month period.<sup>105</sup>

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

#### 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.<sup>70, 72, 76, 81, 92, 96, 110, 111, 120, 131</sup> Three studies were of High quality,<sup>110, 111, 120</sup> and 5 studies were of Moderate quality.<sup>70, 72, 76, 81, 92, 96, 131</sup> Four of the interventions were intended to support individuals with musculoskeletal problems<sup>70, 76, 81, 120</sup> and the other four individuals with mental health difficulties.<sup>72, 92, 96, 110, 111, 131</sup>

#### Intervention deliverers: studies reporting beneficial effect

Four Moderate quality studies reported significant benefits of the intervention for employees with Musculoskeletal difficulties.<sup>70, 76, 81, 92, 96, 131</sup> 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.<sup>76</sup> This style of intervention was not cost-effective as measured by one study.<sup>131</sup>

#### Intervention deliverers: studies reporting no effect

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

workplace component<sup>110, 111</sup> or a gradually increasing exercise programme for employees with musculoskeletal problems<sup>120</sup> 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.<sup>110</sup> One study evaluating the effects of a RTW plan reported benefits in favour of the control condition.<sup>72</sup> 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 job-centre by a psychologist following a MDT assessment, with some contact with the workplace.<sup>72</sup>

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

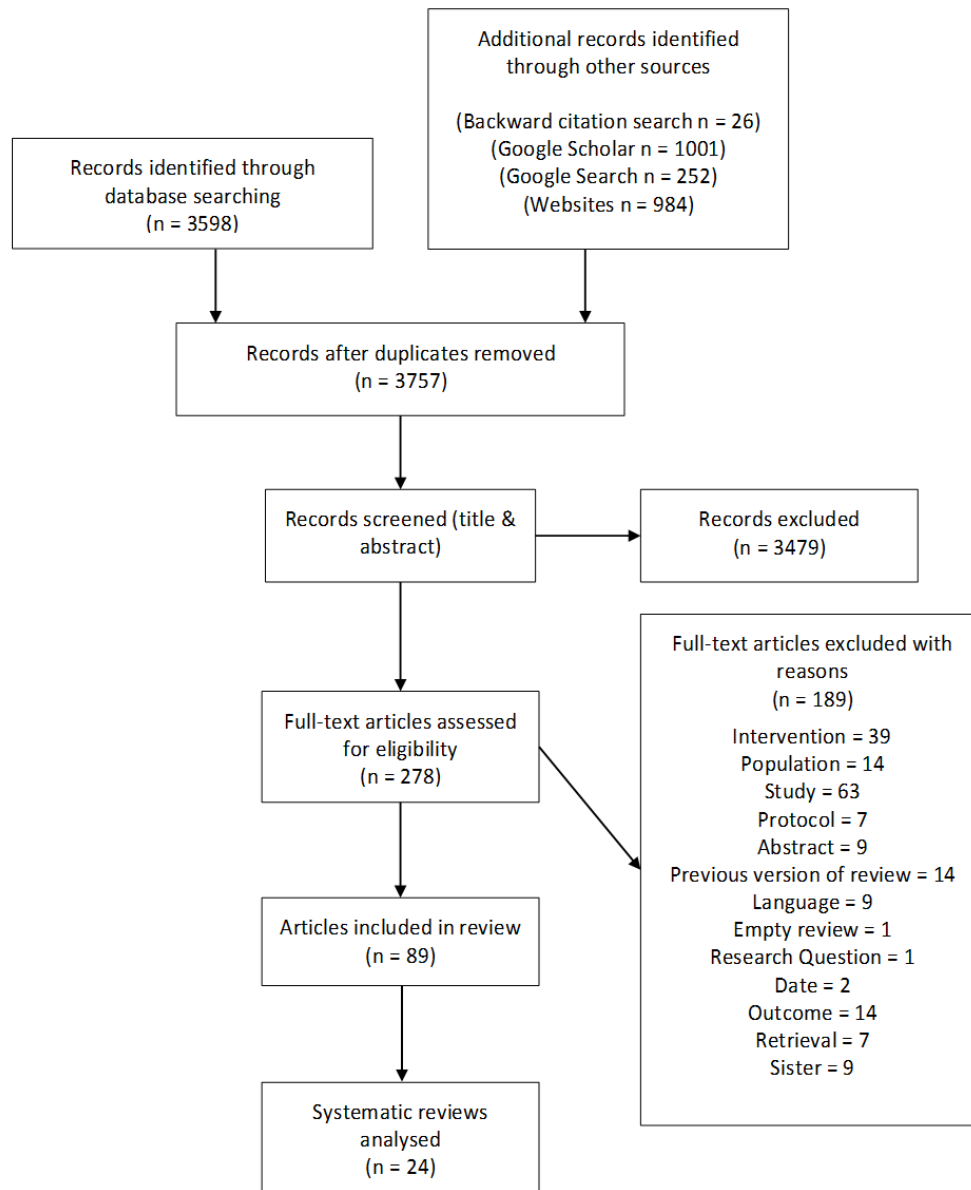


Figure 1: PRISMA diagram showing study selection process for systematic reviews with a return to work outcome

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 2005<sup>35</sup> with 12 published since 2016.<sup>36-47</sup> Reviews were conducted by teams from 10 different

countries, with five publications coming from The Netherlands,<sup>44, 46, 48-50</sup> four from Canada,<sup>35, 39, 51, 52</sup> three from the UK,<sup>38, 53, 54</sup> two from each of Norway,<sup>55, 56</sup> Denmark,<sup>21, 43</sup> and Australia,<sup>40, 45</sup> and one each from Sweden,<sup>36</sup> Ireland,<sup>37</sup> Japan,<sup>41</sup> Belgium,<sup>42</sup> Switzerland,<sup>46</sup> and between Canada and Switzerland.<sup>57</sup> Regarding geographical restrictions imposed as part of the inclusion criteria in included reviews, only Oakman and colleague enforced any.<sup>45</sup> 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<sup>38, 48, 57</sup> up to 70 years old.<sup>40</sup> 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.<sup>21, 38, 42, 47, 50, 52, 56, 57</sup> Of those that were more focused, there were nine reviews with a focus on workers with musculoskeletal conditions and/or chronic pain<sup>35, 37, 45, 48, 49, 51, 53-55</sup> and three that looked exclusively at mental health conditions.<sup>39, 43, 44</sup> 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.<sup>51</sup> It was assumed that any industry or workplace would be of interest in the remaining reviews.

The systematic review conducted by NICE<sup>38</sup> considered race/ethnicity/culture/language, gender/sex, and socio-economic status in their synthesis; Nieuwenhuijsen and colleagues<sup>44</sup> considered the influence of gender/sex in their synthesis; and Schaafsma and colleagues had inclusion criteria relating to gender/sex.<sup>48</sup> Aside from these three reviews, the PROGRESS criteria did not appear in the inclusion criteria or synthesis strategy for any review.<sup>27</sup>

### Intervention characteristics

Interventions were categorised as staff-specific in 2 reviews.<sup>36, 57</sup> 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.<sup>37, 39, 40, 42, 47-49, 51</sup> 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);<sup>51</sup> Cochrane and colleagues were interested in any biopsychosocial interventions;<sup>37</sup>

Gaillard et al sought interventions aiming to change work-related factors;<sup>39</sup> Heathcote and colleagues looked for any intervention targeting worker resilience;<sup>40</sup> Lefever and colleagues sought biopsychosocial disability management programmes;<sup>42</sup> Schaafsma et al included physical conditioning programmes;<sup>48</sup> 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);<sup>49</sup> and Vogel and colleagues included any return-to-work coordination programmes.<sup>47</sup>

## Quality, relevance, and findings

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

Study	Interventions evaluated [Condition]	Synthesis methods*	Summary statement on cost-effectiveness
Carroll 2010 <sup>53</sup>	Interventions involving workplace [BP]	Narrative	<b>Evidence of positive effect:</b> Economic evaluations indicated that interventions with a workplace component are likely to be more cost effective than those without
Cochrane 2017 <sup>37</sup>	Interventions containing two or more elements of biopsychosocial model delivered as co-ordinated programme [MSK]	Descriptive	<b>Mixed evidence:</b> Methodological differences in terms of the interventions, health systems and the types of economic analyses make it difficult to make direct comparisons across the trials. Three trials reported cost savings in health service costs and limiting productivity losses and also by reducing the number of patients transitioning to long-term disability...Five trials reported no overall benefits in terms of cost savings
Franche 2005 <sup>35</sup>	Workplace based return-to-work interventions [MSK/Other pain]	Best-evidence synthesis	<b>Evidence of positive effect:</b> strong evidence that work disability duration is significantly reduced by work accommodation offers and contact between healthcare provider and workplace; and moderate 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 2020 <sup>39</sup>	Mental health interventions with work-focused components [MH]	Best-evidence synthesis	<b>Evidence of positive effect:</b> Strong evidence of positive economic results for RTW interventions from employer and societal perspective. Interventions could take different forms: structured 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 2018 <sup>42</sup>	Disability Management [Disability]	Descriptive/ Narrative	<b>No supporting evidence:</b> Not much evidence that Disability Management is cost-effective
NICE 2019 <sup>38</sup>	Interventions, programmes, policies or strategies that aim to increase RTW [MH, MSK, Other]	MA/narrative/	<b>Evidence of mixed-effect:</b> The committee noted the lack of health economic literature directly applicable to the UK. And even though it was mixed, they were mindful that overall it suggested interventions for people on sick leave due to musculoskeletal disorders including back pain or common mental health conditions to support them to return to work could be cost effective
Oakman 2016 <sup>45</sup>	Workplace interventions (focused)	GRADE, narrative	<b>Evidence of mixed-effect:</b> Individually focused interventions may make little or no difference to cost benefit. Multilevel focused interventions will probably increase cost benefit

	on individual or multi-level) [MSK]		
Palmer 2012 <sup>54</sup>	Interventions in community/ workplace settings to reduce sickness absence/job loss [MSK]	Descriptive, narrative	<b>Inconclusive/weak evidence:</b> No study clearly proved or disproved a positive return on investment. No cost-benefit analyses established statistically significant net economic benefits
Tompa 2008 <sup>52</sup>	Disability Management Interventions [Mixed]	Best-evidence synthesis	<b>Evidence of positive effect:</b> 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<sup>49</sup> and 20<sup>38</sup> 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,<sup>38</sup> 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 10<sup>48</sup> and 12<sup>50</sup> 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,<sup>35, 37, 39-44, 46, 49, 51-53, 55, 57</sup> five were of High quality,<sup>39, 40, 44, 46, 57</sup> and two were of Moderate quality.<sup>37, 43</sup>

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).<sup>35, 37-39, 42, 45, 52-54</sup> Four of these reviews indicated that the interventions provided value for money,<sup>35, 39, 52, 53</sup> 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.<sup>53</sup> With the exception of one,<sup>38</sup> 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) <sup>39</sup> [Canada]	Other (working age adults)	Anxiety, Depression, common mental disorders	Specific – programme: work related factors	NR	High	5/5	Positive effect
Gensby (2012) <sup>21</sup> [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) <sup>40</sup> [Australia]	18-70	Traumatic Brain Injury, Traumatic Physical Injury, Musculoskeletal	Specific – programme: worker resilience	NR	High	4/4	Positive effect
NICE (2019) <sup>38</sup> [UK]	16+	Anxiety, Depression, Stress or burnout, Musculoskeletal, anything causing long term sickness absence	Broad	NR	High	20/20	Inconclusive/ weak evidence
Nieuwenhuijsen (2020) <sup>44</sup> [Netherlands]	17+	Depression	Broad	Any	High	6/6	Positive effect
Schaafsma (2013) <sup>48</sup> [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) <sup>57</sup> [Switzerland, Canada]	16-65	Other (any recorded disability status)	Specific – staff: involve RTW co-ordinator	NR	High	3/3	Positive effect
van Vilsteren (2015) <sup>50</sup> [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) <sup>47</sup> [Switzerland]	16-65	Other (not stated)	Specific – programme: RTW co-ordination	NR	High	7/7	No effect
Cochrane (2017) <sup>37</sup> [Ireland]	18+	Chronic Pain, Musculoskeletal. Excluded inflammatory conditions	Specific – programme: biopsychosocial	NR	Moderate	9/9	Positive effect
Mikkelsen (2018) <sup>43</sup> [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) <sup>52</sup> [Canada]	Adults unspecified	Other (not stated)	Broad	NR	Moderate	11/8	Positive effect
Brewer (2007) <sup>51</sup> [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) <sup>42</sup> [Belgium]	NR	Other (all disabilities)	Specific – programme: biopsychosocial DMP	NR	Low	4/4	Positive effect
Odeen (2013) <sup>56</sup> [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) <sup>53</sup> [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) <sup>35</sup> [Canada]	Adults unspecified	Chronic pain, musculoskeletal	Broad	NR	Critically Low	6/5	Positive effect
Kojimahara (2020) <sup>41</sup> [Japan]	NR	Musculoskeletal, mental health disorders	Broad	NR	Critically Low	9/9	Positive effect
Neverdal (2015) <sup>55</sup> [Norway]	Adults unspecified	Musculoskeletal	Specific - setting	NR	Critically Low	7/7	Positive effect
Oakman (2016) <sup>45</sup> [Australia]	Adults unspecified	Musculoskeletal	Broad	NR	Critically Low	7/6	Inconclusive/ weak evidence
Palmer (2012) <sup>54</sup> [UK]	Other (working age adults)	Musculoskeletal	Broad	NR	Critically Low	19/14	Inconclusive/ weak evidence
van Geen (2007) <sup>49</sup> [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 evaluated [Condition]	Synthesis methods*	Summary statement on cost-effectiveness
Carroll 2010 <sup>53</sup>	Interventions involving workplace [BP]	Narrative	<b>Evidence of positive effect:</b> Economic evaluations indicated that interventions with a workplace component are likely to be more cost effective than those without
Cochrane 2017 <sup>37</sup>	Interventions containing two or more elements of biopsychosocial model delivered as co-ordinated programme [MSK]	Descriptive	<b>Mixed evidence:</b> Methodological differences in terms of the interventions, health systems and the types of economic analyses make it difficult to make direct comparisons across the trials. Three trials reported cost savings in health service costs and limiting productivity losses and also by reducing the number of patients transitioning to long-term disability...Five trials reported no overall benefits in terms of cost savings
Franche 2005 <sup>35</sup>	Workplace based return-to-work interventions [MSK/Other pain]	Best-evidence synthesis	<b>Evidence of positive effect:</b> strong evidence that work disability duration is significantly reduced by work accommodation offers and contact between healthcare provider and workplace; and moderate 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 2020 <sup>39</sup>	Mental health interventions with work-focused components [MH]	Best-evidence synthesis	<b>Evidence of positive effect:</b> Strong evidence of positive economic results for RTW interventions from employer and societal perspective. Interventions could take different forms: structured 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 2018 <sup>42</sup>	Disability Management [Disability]	Descriptive/ Narrative	<b>No supporting evidence:</b> Not much evidence that Disability Management is cost-effective
NICE 2019 <sup>38</sup>	Interventions, programmes, policies or strategies that aim to increase RTW [MH, MSK, Other]	MA/narrative/	<b>Evidence of mixed-effect:</b> The committee noted the lack of health economic literature directly applicable to the UK. And even though it was mixed, they were mindful that overall it suggested interventions for people on sick leave due to musculoskeletal disorders including back pain or common mental health conditions to support them to return to work could be cost effective
Oakman 2016 <sup>45</sup>	Workplace interventions (focused on individual or multi-level) [MSK]	GRADE, narrative	<b>Evidence of mixed-effect:</b> Individually focused interventions may make little or no difference to cost benefit. Multilevel focused interventions will probably increase cost benefit
Palmer 2012 <sup>54</sup>	Interventions in community/ workplace settings to reduce sickness absence/job loss [MSK]	Descriptive, narrative	<b>Inconclusive/weak evidence:</b> No study clearly proved or disproved a positive return on investment. No cost-benefit analyses established statistically significant net economic benefits
Tompa 2008 <sup>52</sup>	Disability Management Interventions [Mixed]	Best-evidence synthesis	<b>Evidence of positive effect:</b> 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

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,<sup>21, 38-40, 44, 46-48, 50, 57</sup> 2 of 'Moderate' quality,<sup>37, 43</sup> 3 of 'Low' quality<sup>42, 52, 56</sup> and 9 of 'Critically Low' quality.<sup>35, 36, 41, 45, 49, 51, 53-55</sup>

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.<sup>35, 36, 45, 49, 51, 53-55</sup>

Across the 24 reviews, only two provided a justification for the study designs they chose to include,<sup>21, 39</sup> only four reported funding sources in their included studies,<sup>38, 39, 44, 47</sup> 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<sup>41, 49, 51-55</sup>) or data extraction (n=5 studies<sup>36, 41, 45, 49, 55</sup>) 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) <sup>36</sup>	Yes	No	No	Yes	Yes	No	No	Yes	No	No	No	NA	NA	NA	No	No	NA	Yes	Critically low
Brewer (2007) <sup>51</sup>	Yes	No	No	Yes	No	Yes	No	Yes	No	Yes	No	NA	NA	NA	Yes	Yes	NA	No	Critically low
Carroll (2010) <sup>53</sup>	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	NA	NA	NA	Yes	Yes	NA	No	Critically low
Cochrane (2017) <sup>37</sup>	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	NA	No	Yes	NA	No	Yes	Yes	No	Yes	Moderate
NICE (2019) <sup>38</sup>	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	No	Yes	High
Franche (2005) <sup>35</sup>	Yes	No	No	No	Yes	Yes	No	Yes	No	No	No	NA	NA	NA	Yes	Yes	NA	No	Critically low
Gaillard (2020) <sup>39</sup>	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) <sup>21</sup>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	NA	NA	NA	Yes	Yes	NA	Yes	High
Heathcote (2019) <sup>40</sup>	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	NA	No	Yes	NA	Yes	Yes	Yes	Yes	Yes	High
Kojimahara (2020) <sup>41</sup>	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes	No	Yes	NA	No	Yes	No	Yes	Yes	Critically low
Lefever (2018) <sup>42</sup>	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	NA	NA	NA	No	Yes	NA	Yes	Low
Mikkelsen (2018) <sup>43</sup>	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Moderate
Neverdal (2015) <sup>55</sup>	Yes	No	No	No	No	No	No	Yes	Yes	NA	No	NA	NA	NA	Yes	Yes	NA	No	Critically low
Nieuwenhuisen (2020) <sup>44</sup>	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	High
Oakman (2016) <sup>45</sup>	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) <sup>56</sup>	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	NA	No	NA	NA	NA	Yes	Yes	NA	Yes	Low
Palmer (2012) <sup>54</sup>	Yes	No	No	Yes	No	Yes	No	Yes	Yes	Yes	No	NA	NA	NA	Yes	Yes	Yes	Yes	Critically low
Schaafsma (2013) <sup>48</sup>	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	NA	No	Yes	NA	Yes	Yes	Yes	Yes	Yes	High
Schandelmaier (2012) <sup>57</sup>	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	NA	No	Yes	NA	Yes	Yes	Yes	No	Yes	High
Tompa (2008) <sup>52</sup>	Yes	Yes	No	No	No	Yes	No	No	Yes	Yes	No	NA	NA	NA	Yes	Yes	NA	No	Low
van Geen (2007) <sup>49</sup>	Yes	No	No	No	No	No	No	Yes	Yes	NA	No	NA	NA	NA	Yes	Yes	NA	Yes	Critically low
van Vilsteren (2015) <sup>50</sup>	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) <sup>46</sup>	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	NA	No	Yes	NA	Yes	Yes	Yes	Yes	Yes	High
Vogel (2017) <sup>47</sup>	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](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,<sup>40, 46</sup> with one appraised as Moderate quality,<sup>37</sup> one as Low quality<sup>51</sup> and five as Critically low quality.<sup>35, 41, 49, 53, 55</sup> 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<sup>21, 38, 48</sup> and two were of Critically-Low quality.<sup>45, 54</sup>

The quantity of systematic review evidence across the other 13 conditions were as follows: Other (n=13<sup>21, 36, 38, 39, 41-43, 46, 47, 50, 52, 56, 57</sup>), Depression (n=7<sup>21, 36, 38, 39, 43, 44, 50</sup>), Anxiety (n=6<sup>21, 36, 38, 39, 43, 50</sup>), Stress/burnout (n=5<sup>21, 36, 38, 43, 46</sup>), Chronic pain (n=3<sup>35, 37, 46</sup>), TBI (n=3<sup>21, 40, 46</sup>), Traumatic physical injury (n=2<sup>21, 40</sup>), Stroke (n=2<sup>21, 46</sup>), Arthritis (n=2<sup>21, 46</sup>), Cancer (n=1<sup>21</sup>), Multiple sclerosis (n=1<sup>21</sup>). No systematic review evidence met our inclusion criteria 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.



● High ● Moderate ● Low ● Critically-low

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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),<sup>58-67</sup> 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 cost-effectiveness 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 delivery models for OH services 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](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.<sup>21</sup> 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 taxonomy to guide future evaluation of WPDM programmes.<sup>21</sup>

### 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 multi-disciplinary, 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 map grey 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 intervention features or professional groups.

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## 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 there population employed prior to receiving occupational health support? Was there 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

	<b>Description</b>
<b>Author, date</b>	
<b>Review title</b>	
<b>Review aim</b>	As reported in the abstract or end of introduction
<b>Type of review</b>	Most common review types included systematic and scoping reviews
<b>Type of primary studies included in review</b>	As described in the review inclusion criteria or results section
<b>Description of intervention and how it may work</b>	This included any theory, rationale or model supporting the intervention provided within the background and/or methods section of the review
<b>Outcome of interest/How RTW measured</b>	Brief description of outcome of interest (RTW or cost) and how this was measured
<b>Synthesis method</b>	Method used to synthesise data within the review, including meta-analysis, narrative or 'best-evidence' synthesis or descriptive analysis
<b>Queries regarding relevance of review PICO to our umbrella review</b>	Any queries regarding how the population, intervention, outcome or setting of the review aligned with the inclusion criteria of our umbrella review were identified here. These queries often arose through a lack of/unclear reporting of required detail within the included review
<b>Review inclusion/exclusion criteria</b>	From the methods section of each included review
<b>Review quality: Is approach to searching clearly defined, systematic and transparent?</b>	One criterion from the CEESAT. This item required that all search terms, Boolean operators ('AND', 'OR' etc.) and wildcards were clearly stated so that the exact search is repeatable by a third party AND 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)]
<b>Review quality: Is search comprehensive?</b>	The original item from the CEESAT requires that sources of articles 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
<b>Review quality: Does the review critically appraise each study?</b>	This CEESAT item states that an effort should be made to identify relevant sources of bias (threats to internal and external validity) 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
<b>Review quality: During critical appraisal is an effort made to minimise subjectivity?</b>	The original item from the CEESAT requires that an effort was made to minimise subjectivity by predefining critical appraisal process in a protocol AND

	<p>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.</p> <p>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</p>
<b>Overall quality rating</b>	<p>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</p>
<b>Relevance of aim of review to umbrella review</b>	<p>This encompasses how the aim of the included review relates to the aim and PICO of our umbrella review.</p> <p>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?);</p> <p>Medium = Two queries, or aim of study not completely compatible with the aims of our review;</p> <p>Low = Two to three queries regarding review inclusion criteria and/or limited quantity of relevant included primary studies</p>
<b>Number of relevant/total number of included studies</b>	<p>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.</p> <p>The total number of included primary studies was also extracted for these reviews.</p>

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 criteria. 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);<sup>27</sup>
- 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.<sup>28</sup> 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):<sup>29</sup>

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 studiesreviews 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
- #13 <sup>1-#12</sup>
- #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
- #17 (occupational near/2 (health or medicine or therap\*)):ti,ab,kw
- #18 MeSH descriptor: [Occupational Health] this term only
- #19 MeSH descriptor: [Occupational Therapy] this term only
- #20 {or #17-#19}
- #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) N0 rehabilitation) OR AB ((work OR occupational) N0 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) N0 rehabilitation) OR AB ((work OR occupational) N0 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) N0 rehabilitation) OR AB ((work OR occupational) N0 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/](http://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:((reentry OR "re entry" OR "re enter" AND (work OR employ\* OR occupation\*))) OR abstract:((reentry 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 syntheses\* ) )
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
<b>Total records retrieved</b>	<b>3582</b>
<b>Duplicate records</b>	<b>1603</b>
<b>Unique records retrieved</b>	<b>1979</b>

## 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: [www.google.co.uk](http://www.google.co.uk)

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
<b>Author, date</b>	
<b>Review title</b>	
<b>Review aim</b>	As reported in the abstract or end of introduction
<b>Type of review</b>	Most common review types included systematic and scoping reviews
<b>Type of primary studies included in review</b>	As described in the review inclusion criteria or results section
<b>Description of intervention and how it may work</b>	This included any theory, rationale or model supporting the intervention provided within the background and/or methods section of the review
<b>Outcome of interest/How RTW measured</b>	Brief description of outcome of interest (RTW or cost) and how this was measured
<b>Synthesis method</b>	Method used to synthesise data within the review, including meta-analysis, narrative or 'best-evidence' synthesis or descriptive analysis
<b>Queries regarding relevance of review PICO to our umbrella review</b>	Any queries regarding how the population, intervention, outcome or setting of the review aligned with the inclusion criteria of our umbrella review were identified here. These queries often arose through a lack of/unclear reporting of required detail within the included review
<b>Review inclusion/exclusion criteria</b>	From the methods section of each included review
<b>Review quality: Is approach to searching clearly defined, systematic and transparent?</b>	One criterion from the CEESAT. This item required that all search terms, Boolean operators ('AND', 'OR' etc.) and wildcards were clearly stated so that the exact search is repeatable by a third party AND 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)]
<b>Review quality: Is search comprehensive?</b>	The original item from the CEESAT requires that sources of articles 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
<b>Review quality: Does the review critically appraise each study?</b>	This CEESAT item states that an effort should be made to identify relevant sources of bias (threats to internal and external validity) 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
<b>Review quality: During critical appraisal is an effort made to minimise subjectivity?</b>	The original item from the CEESAT requires that an effort was made to minimise subjectivity by predefining critical appraisal process in a protocol AND

	<p>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.</p> <p>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</p>
<b>Overall quality rating</b>	<p>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</p>
<b>Relevance of aim of review to umbrella review</b>	<p>This encompasses how the aim of the included review relates to the aim and PICO of our umbrella review.</p> <p>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?);</p> <p>Medium = Two queries, or aim of study not completely compatible with the aims of our review;</p> <p>Low = Two to three queries regarding review inclusion criteria and/or limited quantity of relevant included primary studies</p>
<b>Number of relevant/total number of included studies</b>	<p>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.</p> <p>The total number of included primary studies was also extracted for these reviews.</p>

## 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:<sup>68</sup>

- 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.<sup>28</sup>

### 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 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!**

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*Table 8: Primary study intervention categories*

Staff Category	Description
<b>Case Management</b>	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
<b>Musculoskeletal</b>	Professionals involved with supporting the musculoskeletal health of employees, including; non-specified health professionals, rheumatologists, neurologists, chiropractors, PTs, OPs, pain management and rehabilitation specialists
<b>Mental Health</b>	Professionals involved with supporting the MH of employees, including non-specified MH professionals, BT, psychologists, and psychiatrists
<b>Industrial Hygiene</b>	Professionals involved with supporting the health of the employee within the workplace, including OTs, ergonomists, industrial hygieneists, OH specialists and vocational rehabilitation consultants
<b>Social care</b>	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

Primary article (author, date)	Included in reviews(n)	Reviews reporting Overall QA Score (n)	Quality Appraisal rating awarded by review						Average quality appraisal rating
			High quality (n)	Moderate quality (n)	Low quality (n)	Unclear (n)	NOS (n)	NR (n)	
Haldorsen 1998 <sup>58</sup>	1	1	0	0	1	0	0	0	1
Haldorsen 2002 <sup>61</sup>	1	1	0	0	1	0	0	0	1
Kaapa 2006 <sup>62</sup>	2	1	0	0	1	0	1	0	1
Lindstrom 1992 <sup>63</sup>	1	1	0	0	1	0	0	0	1
Purdon 2006 <sup>65,58</sup> (37)37(37)	4	3	0	0	3	0	1	0	1
Schultz 2008 <sup>66</sup>	1	1	0	0	1	0	0	0	1
Tamminga 2013 <sup>67</sup>	2	1	0	0	1	0	0	1	1
Bernaards 2011 <sup>69</sup>	3	2	0	1	1	0	1	0	2
Durand 2000 <sup>70</sup>	2	2	0	1	1	0	0	0	2
Lagerveld 2012 <sup>71</sup>	2	2	0	1	1	0	0	0	2
Martin 2013 <sup>72</sup>	2	2	0	1	1	0	0	0	2
Netterstrom 2013 <sup>73</sup>	2	2	0	1	1	0	0	0	2
Noordik 2013 <sup>74</sup>	5	4	0	2	2	0	1	0	2
Skouen 2006a <sup>60</sup>	2	2	0	1	1	0	0	0	2
Vlasveld 2012 <sup>75</sup>	2	2	0	1	1	0	0	0	2
Cheng 2007 <sup>76</sup>	3	3	0	2	1	0	0	0	2
van den Hout 2003 <sup>77</sup>	4	3	1	0	2	0	1	0	2
Arnetz 2003 <sup>78</sup>	8	6	2	2	2	0	1	1	2
de Buck 2005 <sup>79</sup>	2	1	0	1	0	0	1	0	2
Hees 2013 <sup>80</sup>	5	3	1	1	1	1	1	0	2
Jensen 2012b <sup>81</sup>	1	1	0	1	0	0	0	0	2
Karrholm 2006 (from Tompa 2007) <sup>82</sup>	1	1	0	1	0	0	0	0	2

Primary article (author, date)	Included in reviews(n)	Reviews reporting Overall QA Score (n)	Quality Appraisal rating awarded by review						Average quality appraisal rating
			High quality (n)	Moderate quality (n)	Low quality (n)	Unclear (n)	NOS (n)	NR (n)	
Lemstra 2003 <sup>83</sup>	2	1	0	1	0	0	1	0	2
Lemstra 2004 <sup>84</sup>	2	1	0	1	0	0	1	0	2
Linton 1992 <sup>85</sup> ;	1	1	0	1	0	0	0	0	2
Loisel 1997 <sup>86</sup>	9	6	2	2	2	2	0	1	2
Momsen 2016 <sup>87</sup>	1	1	0	1	0	0	0	0	2
Netterstrom 2010 <sup>88</sup>	1	1	0	1	0	0	0	0	2
Schene 2007 <sup>89</sup>	4	2	0	2	0	1	1	0	2
Shultz 2013 <sup>90</sup>	1	1	0	1	0	0	0	0	2
Skouen 2006b <sup>59</sup>	1	1	0	1	0	0	0	0	2
Spekle 2010 <sup>91</sup>	1	1	0	1	0	0	0	0	2
van Oostrom 2009 <sup>92</sup>	2	2	1	0	1	0	0	0	2
Yassi 1995b <sup>93</sup>	4	3	1	1	1	0	1	0	2
Skouen 2002 <sup>51</sup>	3	3	2	0	1	0	0	0	2
Staal 2004 <sup>94</sup>	3	3	2	0	1	0	0	0	2
Volker 2015 <sup>95</sup>	5	3	2	0	1	1	1	0	2
van Oostrom 2010 <sup>96</sup>	6	5	3	1	1	0	0	1	2
Bültmann 2009 <sup>97</sup>	8	4	2	2	0	2	1	1	3
Goorden 2014 <sup>98</sup>	2	2	1	1	0	0	0	0	3
Jensen 2005 <sup>99</sup>	4	4	2	2	0	0	0	0	3
Jensen 2011 <sup>100</sup>	3	2	1	1	0	0	1	0	3
Loisel 2002 <sup>101</sup>	4	4	2	2	0	0	0	0	3
Meijer 2006 <sup>102</sup>	2	2	1	1	0	0	0	0	3
Stapelfeldt 2011 <sup>103</sup>	2	2	1	1	0	0	0	0	3
Vlasveld 2013 <sup>104</sup>	5	2	1	1	0	1	1	1	3
Jensen 2001 <sup>105</sup>	3	3	2	1	0	0	0	0	3
Lambeek 2010a <sup>106</sup>	8	4	3	1	0	0	3	1	3
Anema 2007 <sup>107</sup>	8	5	4	0	1	1	1	1	3
Bender 2016 <sup>108</sup>	1	1	1	0	0	0	0	0	3

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



Study [Condition]	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	Case Management				Musculoskeletal								Mental Health			Industrial Hygiene				Social Care			
					CM NS	Primary care/GP	Other	Nurse	HP	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW
Ntsiea (2015) <sup>117</sup> South Africa, [Stroke]	E		3	PT and OT			x								x			x							x		
Haldorsen (2002) <sup>61</sup> Norway [MSK]	M	CE	1	NR		x		x		x						x			x								
Hees (2013) <sup>80</sup> Netherlands , [MH]	M		2	OT			x										x		x								
Skouen (2002) <sup>61</sup> Norway [MSK]	M		2	NR		x		x		x						x			x								
Skouen (2006) <sup>59, 60</sup> Norway, [MSK]	M		2	NR		x		x		x						x			x								
Karrholm (2006) <sup>82</sup> Sweden [MSK]	M	CE	2	OP			x	x																	x		







Study [Condition]	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	Case Management				Musculoskeletal								Mental Health			Industrial Hygiene				Social Care				
					CM NS	Primary care/GP	Other	Nurse	HP	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO
Jensen (2011) <sup>100</sup> Denmark, [MSK]	NI		3	Case manager NS	x											x	x									x		
Meyer (2005) <sup>114</sup> Netherlands, [MSK]	NI		3	Therapist (NS)		x	x									x	x	x								x		
Momsen (2016) <sup>87</sup> Denmark, [Mix]	NI		2	SBO		x	x				?					x		x					x					
Schultz (2013) <sup>90</sup> Canada, [MSK]	NI	CE	2	Nurse		x												x							x			x
Vikane (2017) <sup>125</sup> Norway, [mTBI]	NI		3	Specialist in rehab medicine		x	x	x		x					x											x		
Jensen (2012) <sup>81</sup> Denmark, [MSK]	H		3	Case manager NS	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, 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 11: Intervention deliverers - case management with one other professional category

Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	Case Management				Musculoskeletal									Mental Health			Industrial Hygiene			Social Care											
					CM NS	Primary care/GP	Other	Nurse	HP	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP						
Gice (1989) <sup>126</sup> NR, [Chronic pain]	E	CE*	CD	NR		x																													
Lemsstra (2004) <sup>84</sup> , Canada, [MSK]	E		2	Manager/ union			x		x																										
Lindstrom (1992) <sup>63, 64</sup> Sweden, [MSK]	E		1	PT		x									x																				
Netterstrom (2010) <sup>88</sup> Denmark, [MH]	E		2	Specialist in OM			x												?	x															
Noordik (2013) <sup>74</sup> Netherlands, [MH]	E		2	OP			x													x															
Schene (2007) <sup>89</sup> Netherlands, [MH]	E	CE	2	OP			x														x (also part of TAU)	x													

Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	Case Management				Musculoskeletal								Mental Health			Industrial Hygiene				Social Care										
					CM NS	Primary care/GP	Other	Nurse	HP	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP					
Skisak (2006) <sup>119</sup> USA, [NR]	E	CE	3	Nurses, corporate case managers			x	x									x																	
Staal (2004) <sup>94</sup> Netherlands, [MSK]	E		2	OP			x		x							x																		
Steenstra (2006; 2009) <sup>121, 122</sup> Netherlands, [MSK]	E	Slightly increased cost	3	OH Erg/ OH nurse		x	x	x							x																			
Volker (2015) <sup>95</sup> Netherlands, [MH]	E		2	OP			x												x															
Anema (2007) <sup>107</sup> Netherlands, [MSK]	M		3	Erg	x	x			x	x					x		x																	
Lemstra (2003) <sup>83</sup> Canada, [MSK]	M	Reduced cost	2	PT	x										x																			

Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	Case Management				Musculoskeletal									Mental Health			Industrial Hygiene				Social Care												
					CM NS	Primary care/GP	Other	Nurse	HP	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW	SBO	WCP								
Goorden (2014) <sup>98</sup> Netherlands, [MH]	NI	Not CE	3	OP			x												x																		
Kenning (2018) <sup>127</sup> UK, [NR]	NI		CD	Case manager NS	x														x																		
Myhre (2014) <sup>116</sup> Norway, [MSK]	NI		3	OP			x												x																		
Verbeek (2002) <sup>124</sup> Netherlands, [MSK]	NI		3	OP		x	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, 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 12: Intervention deliverers - no case management

Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	Case Management				Musculoskeletal								Mental Health			Industrial Hygiene							
					CM NS	Primary care/GP	Other	Nurse	HP	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	
Jensen (2005) <sup>99</sup> Sweden: Jensen 2001 follow up, [MSK]	E		3	NR											x		x		x								
Loisel (1997) <sup>86</sup> Canada, [MSK]	E		2	NR						x							x				x						x
Netterstrom (2013) <sup>73</sup> Denmark, [MH]	E		2	NS													x		x	x							
van den Hout (2003) <sup>77</sup> Netherlands, [MSK]	E		2	NR										x					x		x						
Jensen (2001) <sup>105</sup> Sweden, [MSK]	NI		3	NR										x			x		x								

Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	Case Management				Musculoskeletal								Mental Health			Industrial Hygiene										
					CM NS	Primary care/GP	Other	Nurse	HP	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist OM	VRC				
Kaapa (2006) <sup>62</sup> Finland, [MSK]	NI		1	NR													x	x	x		x	1								
Meijer (2006) <sup>102</sup> Netherlands, [MSK]	NI	CE	3	NR						x							x				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

Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	Musculoskeletal									Mental Health			Industrial Hygiene			Social Care			
					HP	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW
Cheng (2007) <sup>76</sup> Hong Kong, [MSK]	E		2	Job coach														x					
Durand (2001) <sup>70</sup> Canada, [MSK]	E		2	OT														x					
Jensen (2012) <sup>81</sup> Denmark, [MSK]	E		2	OP									x										
Lagerveld (2012) <sup>71</sup> Netherlands, [MH]	E	CE*	2	PsychTh										x									
van Oostrom (2009, 2010) <sup>92, 96, 131</sup> Netherlands, [MH]	E	Not CE	2	SW or labour expert																			x

Study	Effectiveness	Cost-effectiveness	Average QA rating	Work led by	Musculoskeletal										Mental Health			Industrial Hygiene				Social Care						
					HP	Neurologist	Secondary care	Pain management	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist	OP	MH professional	BT/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist OM	VRC	SW					
Finnes (2017) <sup>110</sup> Sweden, [MH]	NI	Not CE	3	2 different therapists													x											
Glasscock (2018) <sup>111</sup> Denmark, [MH]	NI		3	Psych													x											
Steenstra (2006) <sup>120</sup> Netherlands, [MSK]	NI		3	PT								x																
Martin (2013) <sup>72</sup> Denmark, [MH]	H		2	Psych									?				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, 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, 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.

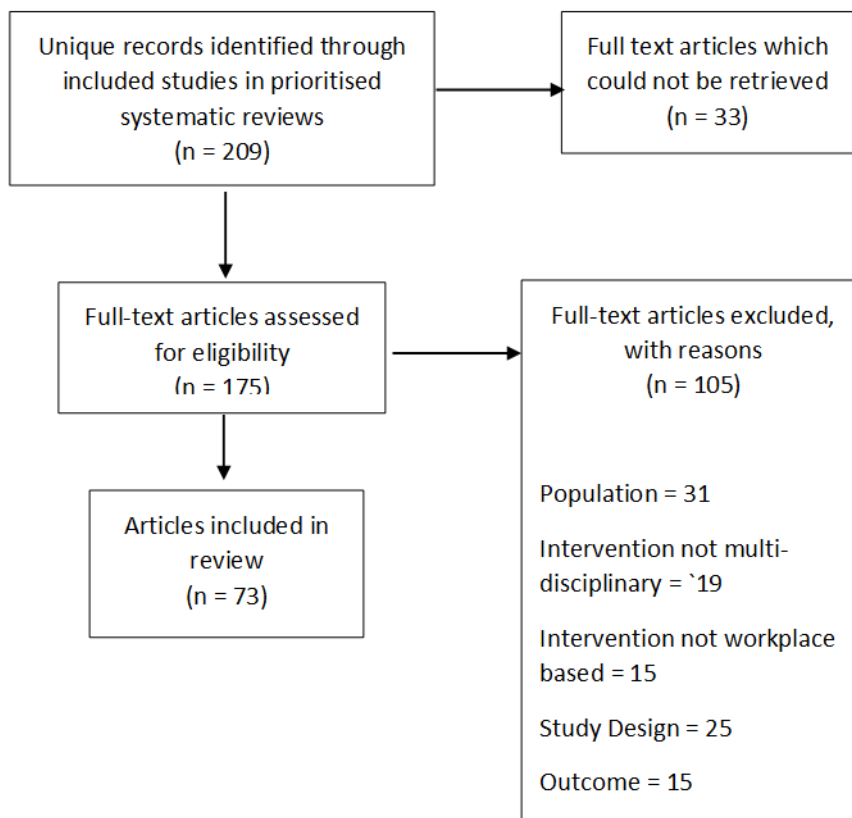


Figure 3: Primary study PRISMA diagram

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),<sup>67, 75, 79, 80, 91, 94, 95, 98, 104, 107, 114, 120-122, 128 71, 102, 124 77, 89, 92, 96, 131</sup> Denmark(n=12),<sup>97 81, 100, 103, 109, 115 72-74, 87, 88, 111</sup> Sweden (n=6),<sup>63, 82, 99, 105, 118, 132</sup> Norway (n=4),<sup>58, 59, 61, 116, 125</sup> and Finland(n=2).<sup>62, 112, 113</sup> Other countries included Canada (n=8),<sup>66, 90, 93 70, 83, 84, 86, 101</sup> the UK (n=2),<sup>65, 127</sup>, the USA (n=2),<sup>108, 119</sup> and one study each for Singapore,<sup>123</sup> Hong Kong,<sup>76</sup> various countries,<sup>129</sup> and South Africa,<sup>117</sup> with one study not reporting this information.<sup>126</sup>

### 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),<sup>58-67</sup> 31 received a score of 2 (Moderate quality),<sup>59-61, 69-96</sup> and 30 articles received a score of 3 (High quality).<sup>81, 97-125</sup> 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.<sup>93, 126, 128, 129</sup>

### 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.<sup>69, 85</sup>

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),<sup>75, 81, 97, 100, 101, 103, 104, 106, 108, 112-115, 117, 118, 123, 125, 128, 129</sup>

Moderate(n=11),<sup>59-61, 79, 80, 82, 87, 90, 91, 93</sup> and Low(n=5).<sup>58, 61, 65-67</sup> Two articles could not be awarded an average quality rating.<sup>129, 130</sup> Employees accessing the interventions were experiencing

musculoskeletal difficulties(n=14),<sup>58-61, 66, 81, 82, 90, 91, 93, 97, 100, 101, 103, 106, 112-115, 128, 130</sup> mental health difficulties(n=4),<sup>75, 80, 104, 108, 118</sup> a mix of conditions/diagnoses (n=3),<sup>65, 87, 129</sup> injury(n=1),<sup>123</sup>

cancer(n=1).<sup>67</sup> mild traumatic brain injury(n=1),<sup>125</sup> stroke(n=1),<sup>117</sup> and rheumatic disease(n=1).<sup>79</sup>

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.<sup>58-61, 65, 67, 75, 80, 82, 91, 93, 101, 104, 106, 112, 113, 115, 118, 123, 128-130</sup> Ten studies (twelve articles) evaluated

interventions which included case managers working alongside professionals from more than two other professional categories.<sup>66, 79, 81, 87, 90, 97, 100, 108, 114, 117, 125</sup>

#### 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.<sup>93, 106, 123, 128-130</sup> Three of these studies also reported that the intervention was cost-effective,<sup>93, 106, 128-130</sup> although one of these did not conduct formal statistical comparison.<sup>129</sup>

The case management role within these studies was fulfilled by a nurse and/or OT(n=4),<sup>93, 129, 130</sup> or Occupational Physician(n=1).<sup>106, 128</sup> These case managers worked with professionals from the 'Musculoskeletal' and 'Industrial Hygiene' categories(n=2),<sup>93, 106, 123, 128, 130</sup> or 'Musculoskeletal' and 'Mental Health' categories (n=1).<sup>129</sup>

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<sup>97, 117</sup> with one study reporting the intervention as being cost-effective.<sup>97</sup> Case managers within these studies were social workers,<sup>97</sup> and a combination of physiotherapists and OTs.<sup>117</sup> Case managers in both studies worked alongside professionals from the 'Musculoskeletal' and 'Mental Health' categories and either 'Industrial Hygiene'<sup>97</sup> or 'Social care'.<sup>117</sup>

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<sup>59-61, 80, 82</sup> Two of these studies reported that the intervention was cost effective.<sup>59-61, 82</sup> Professionals within the 'Case Management' category in these studies included primary care professionals and nurses (n=1),<sup>59-61</sup> OT(n=1)<sup>80</sup> and occupational physicians and nurses(n=1)<sup>82</sup> and they worked alongside individuals from both the categories of 'Industrial Hygiene' and 'Social Care' (n=1),<sup>82</sup> and 'Musculoskeletal' and 'Mental Health'(n=2).<sup>59-61, 80</sup>

Two studies where case management professionals worked with more than two other professional categories reported mixed effects of the intervention on RTW outcomes.<sup>66, 103</sup> Professionals within the 'Case management' category included primary care clinicians and nurses<sup>66</sup> or were not specified.<sup>103</sup> 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.<sup>103</sup>

#### 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,<sup>58, 65, 67, 75, 91, 101, 104, 112, 113, 115, 118</sup> with one low quality study reporting that the intervention was not cost-effective and another High quality study stating it was cost-effective.<sup>67, 112, 113</sup> Articles were rated as High(n=5<sup>101, 104, 112, 113, 115, 118</sup> Moderate(n=2<sup>75, 91</sup>) or Low(n=3<sup>58, 65, 67</sup> quality. Professionals within the case management role in these studies included; Nurses alone(n=3<sup>65, 67, 112, 113</sup>), primary care clinicians and nurses(n=1<sup>58</sup>) Social worker and primary care clinicians (n=1<sup>115</sup>), psychologists and GP (n=1<sup>118</sup>), OT and/or psychiatrists(n=1<sup>101</sup>) or were unspecified professionals (n=2).<sup>75, 91, 104</sup> Case managers worked with the following professional groups: 'Musculoskeletal' and 'Mental health'(n=4<sup>58, 65, 75, 104, 115</sup>), Musculoskeletal and 'Industrial hygiene'(n=2<sup>101, 112, 113</sup>) 'Musculoskeletal' and 'Social care'(n=1<sup>67</sup>), Mental Health and Social care (n=1<sup>118</sup>) and not reported (n=1<sup>91</sup>).

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,<sup>79, 87, 90, 100, 108, 114, 125</sup> with one reporting improved effects of the control group over the intervention group.<sup>81</sup> Professionals working within the 'Case management' category included: Case manager not specified(n=3<sup>79, 81, 100, 108</sup>), Therapist and primary care clinicians(n=1<sup>114</sup>), Sickness benefit officer and primary care clinicians(n=1<sup>87</sup>), Nurse (n=1<sup>90</sup> and Specialist in rehabilitation medicine, primary care clinicians and nurses(n=1<sup>125</sup>). Case Management professionals worked with professionals from the other four staff categories in two studies,<sup>79, 90</sup> with individuals from 'Musculoskeletal', 'Mental Health' and 'Industrial Hygiene' in two studies<sup>87, 108</sup> and staff from 'Musculoskeletal', 'Industrial Hygiene' and 'Social Care' categories in three studies.<sup>81, 100, 114, 125</sup>

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

Reported interventi on effect	Case Management				Musculoskeletal									Mental Health			Industrial Hygiene					Social Care			
	Case manager NS	Primary care/GP	Other	Nurse	Healthcare professionals	Neurologist	Secondary care/consultant/ specialists	Pain management specialist	Rheumatologists	Chiropractor	Speech therapist	Physical or physio therapist	Rehab specialist	Occupational Physician	Mental health professional	Behaviour therapist/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist occupational medicine	Vocational rehab consultant	Social worker/specialist clinical social medicine	Sickness benefits officer	Workers compensation physician
<b>Beneficial effect</b>			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	0[	1[1	1[1		1[1	0[		
<b>n[%]</b>	0[0]	0[0]	3]	0]	7]	0[0]	7]	7]	0[0]	7]	7]	7]	3]	7]	3]	7]	3]	7]	0]	7]	7]	7]	0]	0[0]	
<b>No effect</b>	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
<b>n[%]</b>	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.**<sup>14</sup> 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.<sup>74, 78, 83, 84, 88, 89, 94, 95, 98, 107, 116, 119, 120, 122, 124, 126, 127</sup> Six of these studies were High quality,<sup>98, 119, 120, 122, 107, 116, 124</sup> 8 of Moderate quality,<sup>74, 78, 83, 84, 88, 89, 94, 95</sup> 1 of Low quality<sup>63, 64</sup> and two could not be given an average quality rating.<sup>126, 127</sup> Eight of the studies evaluated interventions aimed at employees with musculoskeletal problems,<sup>63, 64, 78, 94, 106, 107, 116, 121, 122, 124, 128</sup> 5 with mental health difficulties,<sup>74, 88, 89, 95, 98</sup> 1 with chronic pain,<sup>126</sup> and 2 studies did not specify the reason for sick-leave.<sup>119, 127</sup>

### 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<sup>127</sup>) GP (n=6 Gice<sup>63, 64, 83, 84, 107, 121, 122, 124, 126</sup>), nurse (n=1<sup>120</sup>). 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<sup>78, 83, 84, 119</sup>), specialist in occupational medicine (n=1<sup>88</sup>), Occupational Physician (n=7<sup>74, 89, 94, 95, 98, 116, 124</sup>), Ergonomist (n=2<sup>107, 121, 122</sup>) and nurse (n=1<sup>119</sup>).

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<sup>63, 64, 83, 84, 94, 107, 119, 121, 122, 124</sup>), 'Mental Health' (n=6<sup>74, 88, 89, 95, 98, 116, 127</sup>) or 'Industrial Hygiene' (n=3<sup>78, 89, 126</sup>) 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<sup>83, 84, 94, 107, 124</sup>) Neurologists (n=1<sup>107</sup>), Chiropractors (n=1<sup>107</sup>), PT (n=5<sup>63, 64, 83, 94, 107, 121, 122</sup>) and OP (n=2<sup>107, 119</sup>). Within the 'Mental Health' category, 2 studies involved Behavioural Therapists with delivering the intervention,<sup>74, 127</sup> and four studies involved a psychiatrist.<sup>88, 89, 95, 98, 116.</sup> Professionals in the 'Industrial Hygiene' category included Occupational Therapists (2 studies (Arnetz, 2003 #46)) Ergonomists (1 study<sup>78</sup>) and Occupational Health specialists not otherwise specified (1 study<sup>126</sup>).

### 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.<sup>74, 78, 84, 88, 89, 94, 95, 119, 121, 122, 126</sup> Four of these studies also indicated that these interventions were cost-effective,<sup>78, 89, 119, 126</sup> although one of these did not conduct any formal statistical comparison.<sup>126</sup> One study indicated the intervention, while effective, could be delivered at a slightly higher cost than the control intervention.<sup>121, 122</sup> **Error! Reference source not found.**<sup>15</sup> 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<sup>74, 89, 94, 95</sup>), Ergonomists (n=1,<sup>121, 122</sup>), specialist in occupational medicine (n=1<sup>88</sup>) and PTs (n=1<sup>63, 64</sup>), but also included Nurses /corporate case managers(n=1<sup>119</sup>) and case managers from employing organisation and/or union (n=2<sup>78, 84</sup>). Other additional professionals included within this category included nurse(n=1<sup>121, 122</sup>) and GP/Primary care clinicians(n=3<sup>63, 64, 121, 122, 126</sup>). 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<sup>63, 64, 83, 84, 94, 119, 121, 122</sup>), 'Mental Health' (n=3<sup>74, 88, 95</sup>) and 'Industrial Hygiene'(n=3<sup>78, 89, 126</sup>) categories.

#### Intervention deliverers: studies reporting mixed effects

Two studies, one moderate quality<sup>83, 84</sup> and one High<sup>107</sup> 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.<sup>83</sup> Case Managers were reported to be Ergonomists<sup>107</sup> or GPs,<sup>83</sup> 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,<sup>98, 116, 124, 127</sup> with 1 of these studies indicating that the intervention was not cost-effective.<sup>98</sup> Where interventions reported a named case managers, the role was fulfilled predominantly OPs(n=3<sup>98, 116, 124</sup>), 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,<sup>124</sup> whilst the other three involved professionals from the 'Mental Health' category. Only one study targeted employees with mental health difficulties,<sup>98</sup> the others included employees with musculoskeletal difficulties(n=2<sup>116, 124</sup>) or condition was not specified.<sup>127</sup>

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

Reported effect of intervention	Case Management				Musculoskeletal							Mental Health				Industrial Hygiene				Social Care					
	Case manager NS	Primary care/GP	Other	Nurse	Healthcare professionals	Neurologist	Secondary care/consultant/ specialists	Pain management specialist	Rheumatologists	Chiropractor	Speech therapist	Physio / PT	Rehab specialist (UNCATEGORISED)	Occupational Physician	Mental health professional	Behaviour therapist/ Psych	Psychiatrist	OT	Ergonomist	Industrial hygienist	OH/specialist occupational medicine	Vocational rehab consultant	Social worker/specialist clinical social medicine	Sickness benefits officer	Workers compensation physician
Beneficial effect n[%]	1[9]	3[27]	8[73]	2[18]	2[18]	0[0]	0[0]	0[0]	0[0]	0[0]	0[0]	2[18]	0[0]	1[9]	0[0]	1[9]	2[18]	1[9]	0[0]	1[9]	0[0]	0[0]	0[0]	0[0]	0[0]
No effect n[%]	1[25]	1[25]	3[75]	0[0]	1[25]	0[0]	0[0]	0[0]	0[0]	0[0]	1[25]	0[0]	0[0]	0[0]	1[25]	2[50]	0[0]	0[0]	0[0]	0[0]	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.<sup>62, 73, 77, 86, 99, 102, 105, 109</sup> The average quality appraisal ratings awarded by reviewers were High (n=2<sup>99, 102, 105, 109</sup>), Moderate (n=3<sup>73, 77, 86</sup>) and Low(n=1<sup>62</sup>). The majority of the interventions were intended for employees with musculoskeletal difficulties, with one intervention aimed at individuals with mental health difficulties.<sup>73</sup>

## Intervention deliverers: overall summary

Four of the interventions being evaluated included individuals from two professional categories.<sup>62, 73, 86, 99, 105, 109</sup> The most common combination of professional categories were 'Musculoskeletal' and 'Mental Health' (n=3<sup>62, 73, 99, 105, 109</sup>). One study reporting a significant beneficial effect of the intervention included individuals working across 'Musculoskeletal' and 'Industrial hygiene' staff categories.<sup>86</sup> Two studies, one reporting a beneficial effect of the intervention<sup>77</sup> and the other no effect<sup>102</sup> included individuals across 'Musculoskeletal', 'Mental Health' and 'Industrial Hygiene' categories.

Within the 'Musculoskeletal' category, most common staff included physiotherapists (n=4<sup>62, 73, 86, 99, 105, 109</sup>) and Occupational Physicians (n=3<sup>62, 73, 86, 99, 105, 109</sup>) The number of professionals within this category ranged from 1<sup>73</sup> to 3.<sup>62</sup> All except one study<sup>86</sup> included at least one professional from the 'Mental Health' category, with the most common being a behavioural therapist or psychologist(n=5<sup>62, 73, 77, 99, 102, 105, 109</sup>). In addition to a behavioural therapist/psychologist, one study also involved a psychiatrist.<sup>73</sup> Within the 'Industrial Hygiene' category, two studies included an occupational therapist<sup>77, 102</sup> and one included an ergonomist and a vocational rehabilitation consultant.<sup>86</sup> 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.<sup>109</sup> Two of these articles represented three<sup>99</sup> and ten year<sup>109</sup> follow ups of an original study, which showed no significant difference between intervention and control groups over an eighteen month period.<sup>105</sup>

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

#### 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.<sup>70, 72, 76, 81, 92, 96, 110, 111, 120, 131</sup> Three studies were of High quality,<sup>110, 111, 120</sup> and 5 studies were of Moderate quality.<sup>70, 72, 76, 81, 92, 96, 131</sup> Four of the interventions were intended to support individuals with musculoskeletal problems<sup>70, 76, 81, 120</sup> and the other four individuals with mental health difficulties.<sup>72, 92, 96, 110, 111, 131</sup>

#### Intervention deliverers: studies reporting beneficial effect

Four Moderate quality studies reported significant benefits of the intervention for employees with Musculoskeletal difficulties.<sup>70, 76, 81, 92, 96, 131</sup> 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.<sup>76</sup> This style of intervention was not cost-effective as measured by one study.<sup>131</sup>

#### Intervention deliverers: studies reporting no effect

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

workplace component<sup>110, 111</sup> or a gradually increasing exercise programme for employees with musculoskeletal problems<sup>120</sup> 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.<sup>110</sup> One study evaluating the effects of a RTW plan reported benefits in favour of the control condition.<sup>72</sup> 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 job-centre by a psychologist following a MDT assessment, with some contact with the workplace.<sup>72</sup>

## 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. <i>Journal of occupational rehabilitation</i> , 31(1), 63-71. doi: <a href="https://dx.doi.org/10.1007/s10926-020-09892-0">https://dx.doi.org/10.1007/s10926-020-09892-0</a>	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. <i>Cochrane database of systematic reviews</i> , (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. <i>British Journal of Occupational Therapy</i> . doi:10.1177/0308022620980683	Pop
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. <i>Burnout Research</i> , 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. <i>JBISIRIR</i> database of systematic reviews and implementation reports, 17(10), 1999-2019. doi: <a href="https://dx.doi.org/10.11124/JBISIRIR-2017-003747">https://dx.doi.org/10.11124/JBISIRIR-2017-003747</a>	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. <i>JBISIRIR</i> database of systematic reviews and implementation reports, 15(6), 1518-1521. doi: <a href="https://dx.doi.org/10.11124/JBISIRIR-2016-003133">https://dx.doi.org/10.11124/JBISIRIR-2016-003133</a>	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: <a href="https://www.researchsquare.com">researchsquare.com</a> .	WP
Amatya, B., Khan, F., & Galea, M. (2019). Rehabilitation for people with multiple sclerosis: an overview of Cochrane Reviews. <i>The Cochrane database of systematic reviews</i> , 1, CD012732. doi: <a href="https://dx.doi.org/10.1002/14651858.CD012732.pub2">https://dx.doi.org/10.1002/14651858.CD012732.pub2</a>	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]. <i>Facilitadores del reintegro laboral en trabajadores con patologia mental de origen laboral: una revision sistematica.</i> , 143(1), 85-95. doi: <a href="https://dx.doi.org/10.4067/S0034-98872015000100011">https://dx.doi.org/10.4067/S0034-98872015000100011</a>	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.	Pop
Bethge, M. (2017). [Work-Related Medical Rehabilitation]. <i>Medizinisch-beruflich orientierte Rehabilitation.</i> , 56(1), 14-21. doi: <a href="https://dx.doi.org/10.1055/s-0042-118579">https://dx.doi.org/10.1055/s-0042-118579</a>	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. <i>Lupus</i> , 27(10), 1755-1756. doi: <a href="https://dx.doi.org/10.1177/0961203318777119">https://dx.doi.org/10.1177/0961203318777119</a>	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. <i>BMJ open</i> , 10(11), e040962. doi: <a href="https://dx.doi.org/10.1136/bmjopen-2020-040962">https://dx.doi.org/10.1136/bmjopen-2020-040962</a>	Protocol

Bloom, J., Dorsett, P., & McLennan, V. (2019). Occupational bonding after spinal cord injury: A review and narrative synthesis. <i>Journal of Vocational Rehabilitation</i> , 50(1), 109-120. doi:10.3233/JVR-180992	Study
Bloom, J., Dorsett, P., & McLennan, V. (2020). Vocational rehabilitation to empower consumers following newly acquired spinal cord injury. <i>Journal of Vocational Rehabilitation</i> , 53(1), 131-144. doi:10.3233/JVR-201091	Study
Boeltzig-Brown, Heike; Fleming, Allison R.; Heyman, Miriam; Gauthier, Martha; Cully, Julisa; Foley, Susan M. (2017) A Systematic Review of State Vocational Rehabilitation Agency-Based Literature <i>Rehabilitation Research, Policy, and Education</i> , v31 n4 p352-371	Retrieval
BOMEL. (2005). Occupational health and safety support systems for small and medium sized enterprises.	Study
Brakenridge, C. L., Gane, E. M., Smits, E. J., Andrews, N. E., & Johnston, V. (2019). Impact of interventions on work-related outcomes for individuals with musculoskeletal injuries after road traffic crash: a systematic review protocol. <i>Systematic reviews</i> , 8(1), 247. doi:https://dx.doi.org/10.1186/s13643-019-1178-2	Protocol
Brasure, M., Lamberty, G. J., Sayer, N. A., Nelson, N. W., Macdonald, R., Ouellette, J., & Wilt, T. J. (2013). Participation after multidisciplinary rehabilitation for moderate to severe traumatic brain injury in adults: a systematic review. <i>Archives of physical medicine and rehabilitation</i> , 94(7), 1398-1420. doi:https://dx.doi.org/10.1016/j.apmr.2012.12.019	WP
Brouns, R., Espinoza, A. V., Goudman, L., Moens, M., & Verlooy, J. (2019). Interventions to promote work participation after ischaemic stroke: A systematic review. <i>Clinical Neurology and Neurosurgery</i> , 185. doi:10.1016/j.clineuro.2019.105458	WP
Bumble, J. L., & Carter, E. W. (2020). Application of the World Café to disability issues: A systematic review. <i>Journal of Disability Policy Studies</i> . Doi:10.1177/1044207320949962	Int
Burton, A. K., Kendall, N. A., Pearce, B. G., Birrell, L. N., & Bainbridge, L. C. (2008). Management of upper limb disorders and the biopsychosocial model.	Study
Βιάρνπ, Α., & Ρόθα, Ο. (2018). Αποηλεζμαηικέρ ζηπαηηγικέρ επαγγελμαηικέρ (επαλ) ένιαξηρ ηυλ αηόμυλ με αλαπηρία/σπόλνιερ παθήζειρ και πποβλήμαηα τσυκέρ ϑγειάρ ζηηλ Εςπώπη: μια ζζζηημαηικέρ ζύνθεζη επεσυηηκώλ ποπιζμάηυλ. <i>Interscientific Health Care</i> , 10(1).	Lang
Canhete Pereira, R. M., & Monteiro, I. (2019). Vocational rehabilitation and return to work: integrative review. <i>Revista brasileira de medicina do trabalho : publicacao oficial da Associacao Nacional de Medicina do Trabalho-ANAMT</i> , 17(3), 441-455. doi:10.5327/Z1679443520190350	Not SR
Capozzoli, M. C. (2018). Predictors of Return to Work after Multidisciplinary Rehabilitation Evaluation for Prolonged Post-concussion Symptoms (Doctoral dissertation, The University of Nebraska-Lincoln).	Study
Carlson, P. M., Boudreau, M. L., Davis, J., Johnston, J., Lemsky, C., McColl, M. A., . . . Smith, C. (2006). 'Participate to learn': A promising practice for community ABI rehabilitation. <i>Brain Injury</i> , 20(11), 1111-1117. doi:10.1080/02699050600955337	Int
Carlton et al. (2015). Behavioral, psychological, educational and vocational interventions to facilitate employment outcomes for cancer survivors	Sister
Carolyn, G., Michael, W., Jessica, B., & Katherine, J. I. (2016). Employment interventions for return-to-work in working-age adults following traumatic brain injury. <i>Campbell Collaboration</i> , 12.	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. <i>Journal of Affective Disorders</i> , 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. <i>European Journal of Public Health</i> , 22(3). doi:http://dx.doi.org/10.1093/eurpub/ckr101	Outcome
Clayton, S., Bamba, 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. <i>BMC Public Health</i> , 11(170).	Pop
Clayton, S., Gosling, R., Povall, S., Misso, K., Bamba, 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. <i>Journal of Epidemiology and Community Health</i> , 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. <i>European Journal of Public Health</i> , 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. <i>Proceedings of the International Scientific Conference</i> .	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. <i>Occupational medicine (Oxford, England)</i> , 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. <i>Vocational Rehabilitation for People With Severe Mental Illness: A Systematic Review; a Survey of Practice &amp; a Naturalistic Follow Up Study</i> , 1-1.	Pop
Crowther, R., Marshall, M., Bond, G., & Huxley, P. (2001). Vocational rehabilitation for people with severe mental illness. <i>The Cochrane database of systematic reviews</i> (2), CD003080.	Pop
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. <i>Revista Estima</i> , 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



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. <i>Orthopaedic Physical Therapy Practice</i> , 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. <i>The Cochrane database of systematic reviews</i> (2), CD007569. doi: <a href="https://dx.doi.org/10.1002/14651858.CD007569.pub2">https://dx.doi.org/10.1002/14651858.CD007569.pub2</a>	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. <i>Cochrane Database of Systematic Reviews</i> (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. <i>Seminars in arthritis and rheumatism</i> , 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: <a href="http://jech.bmj.com">jech.bmj.com</a> .	Abs
Désiron, H. A., De Rijk, A., Van Hoof, E., & Donceel, P. (2011). Occupational therapy and return to work: a systematic literature review. <i>BMC Public Health</i> , 11(1), 1-14.	Study
Desmeules, F., Boudreault, J., Dionne, C. E., Fremont, P., Lowry, V., MacDermid, J. C., & Roy, J.-S. (2016). Efficacy of exercise therapy in workers with rotator cuff tendinopathy: a systematic review. <i>Journal of occupational health</i> , 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. <i>Journal of mental health (Abingdon, England)</i> , 27(2), 174-183. doi: <a href="https://dx.doi.org/10.1080/09638237.2017.1322180">https://dx.doi.org/10.1080/09638237.2017.1322180</a>	Pop
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. <i>Employee Relations</i> , 40(6), 999-1014. doi:10.1108/ER-01-2017-0023	Study
Doki, S., Harano, S., Shinada, K., Ohya, A., & Kojimahara, N. (2018). [Return-to-work support programs for workers on sick leave: a systematic review and meta-analysis]. <i>Sangyo eiseigaku zasshi = Journal of occupational health</i> , 60(6), 169-179. doi: <a href="https://dx.doi.org/10.1539/sangyoeisei.2018-008-A">https://dx.doi.org/10.1539/sangyoeisei.2018-008-A</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. <i>Brain injury</i> , 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. <i>Occupational and environmental medicine</i> , 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. <i>Journal of Substance Use</i> , 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. <i>Work: A Journal of Prevention Assessment &amp; Rehabilitation</i> , 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. <i>Journal of insurance medicine (New York, N.Y.)</i> , 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. <i>Journal of Epidemiology &amp; Community Health</i> , 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. <i>International archives of occupational and environmental health</i> , 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. <i>The Journal of head trauma rehabilitation</i> , 24(3), 195-212. doi:https://dx.doi.org/10.1097/HTR.0b013e3181a0d458	Pop
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. <i>Journal of occupational rehabilitation</i> , 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. <i>Research on Social Work Practice</i> , 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. <i>Journal of occupational rehabilitation</i> , 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. <i>Cienc. Trab</i> , 15(48), 105-113. Retrieved from <a href="http://www.epistemonikos.org/documents/8d85850f117fb91a2dff40bd337d12f101a677c">http://www.epistemonikos.org/documents/8d85850f117fb91a2dff40bd337d12f101a677c</a>	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. <i>J Occup Rehabil</i> . 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: <a href="http://ingentaconnect.com">ingentaconnect.com</a> .	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. <i>Campbell Systematic Reviews</i> , 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. <i>Journal of occupational and environmental medicine</i> , 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. <i>Work</i> , 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. <i>Cochrane Database of Systematic Reviews</i> 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. <i>Cochrane database of systematic reviews</i> , (1).	Prev
Guzmán, J., Esmail, R., Karjalainen, K., Malmivaara, A., Irvin, E., & Bombardier, C. (2001). Multidisciplinary rehabilitation for chronic low back pain: systematic review. <i>Bmj</i> , 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: <a href="http://bmcpublichealth.biomedcentral.com">bmcpublichealth.biomedcentral.com</a> .	Study
Hanif, S., Peters, H., & McDougall, C. (2017). A systematic review of vocational interventions for youth with physical disabilities. <i>Factors in Studying</i> . Doi:10.1108/S1479-354720170000010008	Pop
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
Harrison, J., Krieger, M. J., & Johnson, H. A. (2020). Review of Individual Placement and Support Employment Intervention for Persons with Substance Use Disorder. <i>Substance Use &amp; Misuse</i> , 55(4), 636-643. doi:10.1080/10826084.2019.1692035	Pop
Hesselstrand, M., & Samuelsson, K. (2015). Occupational therapy interventions in chronic pain—a systematic review. <i>Occupational therapy</i> . doi/abs/10.1002/oti.1396	Int
Heymans, M. W., van Tulder, M. W., Esmail, R., Bombardier, C., & Koes, B. W. (2004). Back schools for non-specific low-back pain. <i>The Cochrane database of systematic reviews</i> (4), CD000261.	MD
Heymans, M. W., van Tulder, M. W., Esmail, R., Bombardier, C., & Koes, B. W. (2005). Back schools for nonspecific low back pain: a systematic review within the framework of the Cochrane Collaboration Back Review Group. <i>Spine</i> , 30(19), 2153-2163.	MD
Higgins, A., O'Halloran, P., & Porter, S. (2012). Management of long term sickness absence: a systematic realist review. <i>Journal of occupational rehabilitation</i> , 22(3), 322-332. doi:https://dx.doi.org/10.1007/s10926-012-9362-4	Study
Higgins. (2006). Medical Advice on Return to Work with regard to Musculoskeletal Disorders	Study
Hillage, J., Rick, J., Pilgrim, H., Jagger, N., Carroll, C., & Booth, A. (2012). Evidence review 1: review of the effectiveness and cost effectiveness of interventions, strategies, programmes and policies to reduce the number of employees who move from short-term to long-term sickness absence and to help employees on long-term sickness absence return to work (May 2008).	Retrieval

Hoosain, M., de Klerk, S., & Burger, M. (2019). Workplace-based rehabilitation of upper limb conditions: a systematic review. <i>Journal of occupational rehabilitation</i> , 29(1), 175-193.	MD
Hou, W., Chi, C., Lo, H. D., Kuo, K. N., Chuang, H. (2013). Vocational rehabilitation for enhancing return-to-work in workers with traumatic upper limb injuries.	Prev
Hoving, J. L., Broekhuizen, M. L., & Frings-Dresen, M. H. (2009). Return to work of breast cancer survivors: a systematic review of intervention studies. <i>BMC Cancer</i> , 9, 117-117. doi:10.1186/1471-2407-9-117	Study
Jetha, A., Shaw, R., Sinden, A. R., Mahood, Q., Gignac, M. A., McColl, M. A., & Martin Ginis, K. A. (2019). Work-focused interventions that promote the labour market transition of young adults with chronic disabling health conditions: a systematic review. <i>Occupational and environmental medicine</i> , 76(3), 189-198. doi:https://dx.doi.org/10.1136/oemed-2018-105454	Pop
Jodi, E., Arunima, K., Richard, H. S. (2017). Return to Work After Young Stroke: A Systematic Review.	Abs
Joyce, S., Modini, M., Christensen, H., Mykletun, A., Bryant, R., Mitchell, P. B., & Harvey, S. B. (2016). Workplace interventions for common mental disorders: a systematic meta-review. <i>Psychological medicine</i> , 46(4), 683-697.	MD
Juszczuk, D., Doki, S., & Grime, P. (2017). ... -based interventions to increase chances of sooner and sustained return to work in workers with common mental health disorders: a systematic review of the literature. <i>Occupational and....</i>	Abs
Kamper SJ, Apeldoorn AT, Chiarotto A, Smeets RJ, Ostelo RW, Guzman J, van Tulder MW. Multidisciplinary biopsychosocial rehabilitation for chronic low back pain. <i>Cochrane Database Syst Rev</i> . 2014 Sep 2;(9):CD000963. doi: 10.1002/14651858.CD000963.pub3	Prev
Kamper, S. J., Apeldoorn, A. T., Chiarotto, A., Smeets, R., Ostelo, R., Guzman, J., & van Tulder, M. W. (2015). Multidisciplinary biopsychosocial rehabilitation for chronic low back pain: Cochrane systematic review and meta-analysis. <i>Bmj-British Medical Journal</i> , 350. doi:10.1136/bmj.h444	WP
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Kornhaber, R., Wiechula, R., & McLean, L. (2015). The effectiveness of collaborative models of care that facilitate rehabilitation from a traumatic injury: a systematic review. <i>JB I Evidence Synthesis</i> , 13(8), 190-210.	Empty
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Lounds Taylor, J., McPheeters, M. K., Sathe, N. A., Dove, D., Veenstra-VanderWeele, J., & Warren, Z. (2012). A Systematic Review of Vocational Interventions for Young Adults With Autism Spectrum Disorders. <i>Pediatrics</i> , 130(3), 531-538. doi:10.1542/peds.2012-0682	Pop
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Pérez, B. D. D., Radford, K., Evangelou, N., & Nair, R. d. A Systematic Review of Vocational Rehabilitation for People with Multiple Sclerosis.	Study
Phillips 2021 Systematic Review of Intervention Research in Rehabilitation Counseling and Related SettingsFrom 2007 to 2018 Missing	Retrieval
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Preston, A., & Prior, Y. (2013). A systematic review of work interventions for people with rheumatoid arthritis. <i>British Journal of Occupational Therapy</i> , 76, 125-126. Retrieved from <Go to ISI>://WOS:000328855900288	Abs
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Richardson, K. M., & Rothstein, H. R. (2008). Effects of occupational stress management intervention programs: a meta-analysis. <i>Journal of occupational health psychology</i> , 13(1), 69.	Outcome
Robinson, R., Okpo, E., & Mngoma, N. (2015). Interventions for improving employment outcomes for workers with HIV. <i>The Cochrane database of systematic reviews</i> (5), CD010090. doi: <a href="https://dx.doi.org/10.1002/14651858.CD010090.pub2">https://dx.doi.org/10.1002/14651858.CD010090.pub2</a>	Protocol
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Shafi, R., & Colantonio, A. (2021). Assessing the effectiveness of workplace accommodations in facilitating return to work after traumatic brain injury: a systematic review protocol. BMJ open, 11(5), e041581.	Protocol
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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.	Outcome
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Thomson, L., Neathey, F., & Rick, J. (2003). Best practice in rehabilitating employees following absence due to work-related stress. HSE Books.	Study
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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. <i>Journal of occupational and environmental medicine</i> , 51(9), 1004-1023.	Sister
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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. <i>Deutsche Medizinische Wochenschrift</i> , 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. <i>Occupational medicine (Oxford, England)</i> , 51(2), 124-135.	Study
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Weir, R., & Nielson, W. R. (2001). Interventions for disability management. <i>The Clinical journal of pain</i> , 17(4 Suppl), S128-132.	Study
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Wiese, M., Kramer, J., Becker, C., Nentwig, V., Theodoridis, T., & Teske, W. (2009). [Back school - an update]. <i>Ruckenschule heute.</i> , 147(2), 194-198. doi: <a href="https://dx.doi.org/10.1055/s-2008-1039234">https://dx.doi.org/10.1055/s-2008-1039234</a>	Lang
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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. <i>International Journal of Disability Management</i> , 1(1), 21-30.	Sister

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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. <i>Journal of Occupational Rehabilitation</i> . 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
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Yu, C. H., & Mathiowetz, V. (2014). Systematic review of occupational therapy–related interventions for people with multiple sclerosis: Part 1. Activity and participation. <i>American Journal of Occupational Therapy</i> . Retrieved from <a href="https://ajot.aota.org/article.aspx?articleid=1863111">https://ajot.aota.org/article.aspx?articleid=1863111</a>	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. <i>Australian and New Zealand journal of public health</i> , 34(2), 172-178.	MD
Zampolini, M., Bernardinello, M., & Tesio, L. (2007). RTW in back conditions. <i>Disability and rehabilitation</i> , 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. <i>Cancer nursing</i> , 36(1), 4-5. doi: <a href="https://dx.doi.org/10.1097/NCC.0b013e318277b564">https://dx.doi.org/10.1097/NCC.0b013e318277b564</a>	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

Article	Reason for exclusion
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. <i>Manual Therapy</i> 20: 666–671	IMD
Allaire SH, Li W, LaValley MP (2003) Reduction of job loss in persons with rheumatic diseases receiving vocational rehabilitation: a randomized controlled trial. <i>Arthritis Rheum</i> 48:3212–18	Outcome
Allaire SH, Niu J, LaValley MP (2005) Employment and satisfaction outcomes from a job retention intervention delivered to persons with chronic diseases. <i>Rehabil Couns Bull</i> ;48:100–9	Outcome
Allen RG & Ritzel DO (1997) Return-to-work Program. <i>Professional Safety</i> , 42(9): 24	No FT
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. <i>Pain</i> ;49:329-35	Population
Badii M, Keen DY (2006) Workplace-based Program to reduce occupational musculoskeletal injury and its associated morbidity in a large hospital. <i>Journal of Occupational &amp; Environmental Medicine</i> ; 48(11): 1159-1165	No FT
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 patients. <i>Eur Spine J</i> ;7:111–9	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. <i>Spine</i> ;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. <i>Scand J Rehabil Med</i> 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. <i>Spine</i> ;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, <i>Journal of Occupational and Environmental Medicine</i> , 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. <i>J Occup Environ Med</i> ; 41: 1032–1041	Study

Bernacki EJ, Tsai SP (1996) Managed care for workers' compensation: Three years of experience in an 'employee choice' state. <i>J Occup Environ Med</i> ; 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. <i>J Occup Environ Med</i> ; 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. <i>Work Stress</i> ;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. <i>National Association of Rehabilitation Professionals in the Private Sector</i> ; 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. <i>J Occup Environ Med</i> ; 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. <i>J Occup Rehabil</i> 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. <i>Gen Hosp Psychiatry</i> 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. <i>Occup Med (Lond)</i> ;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. <i>The American Journal of Managed Care</i> 2006; 12: 27-39	Study
Bunn WB, Pikelny DB, Slavin TJ, Paralkar S. Health, safety, and productivity in a manufacturing environment. <i>Journal of Occupational and Environmental Medicine</i> . 2001; 43:47-55.	No FT
Burton WN & Conti DJ. Disability Management: corporate medical department management of employee health and productivity. <i>Journal of Occupational -and Environmental Medicine</i> 2000; 42(10): 1006-1012	No FT
Caulfield C. Partners in health: a case study of a comprehensive disability management program. <i>Healthcare Management Forum</i> . 1996; 9(2):36-43.	Study

Collins M. A comprehensive approach to preventing occupational back pain among nurses. Journal of Occupational Health and Safety - Australia & New Zealand. 1990; 6(5):361-368.	No FT
Conti DJ & Burton WN. The economic impact of depression in a workplace. Journal of Occupational and Environmental Medicine 1994; 36 (9) 983-988	No FT
Cooper JE, Tate R, Yassi A. Work hardening in an early return to work program for nurses with back injury. Work 1997; 8:149–156.?	Study
Cooper JE, Tate RB, Yassi A, Khokar J, Effect of an early intervention program on the relationship between subjective pain and disability measures in nurses with low back injury. Spine 1996; 21: 2329-2336	Outcome
Cooper JE, Tate RB, Yassi A. Components of initial and residual disability after back injury in nurses. Spine 1998; 23: (19) 2118-2122	Outcome
Corey DT, Koepfler LE, Etlin D, Day HI. A limited functional restoration program for injured workers: A randomised trial. Journal of Occupational Rehabilitation 1996;6(4):239-49.	IWP
Crook J, Moldofsky H, Shannon H. Determinants of disability after a work related musculoskeletal injury. J Rheumatol 1998; 25: 1570–1577.	Study
D’Amato A, Zijlstra F. Toward a climate for work resumption: The nonmedical determinants of return to work. J Occup Environ Med. 2010;52(1):67-80.	Study
Dalgaard L, Eskildsen A, Carstensen O, Willert MV, Andersen JH, Glasscock DJ (2014) Changes in self-reported sleep and cognitive failures: a randomized controlled trial of a stress management intervention. Scand J Work Environ Health 40(6):569–581	Outcome
Davey C (1994) The implementation and evaluation of a rehabilitation coordinator service for personal injury claimants. Thesis. University of Edinburgh	Population
Davis PM, Badii M, Yassi A. Preventing disability from occupational musculoskeletal injuries in an urban, acute and tertiary care hospital: results from a prevention and Early Active Return-to-Work Safely Program. Journal of Occupational & Environmental Medicine 2004; 46(12): 1253-1262	No FT
de Weerd BJ, van Dijk MK, van der Linden JN, et al. The effectiveness of a convergence dialogue meeting with the employer in promoting return to work as part of the cognitive-behavioural treatment of common mental disorders: A randomized controlled trial. Work 2016;54:647–55.	IMD
Dorstyn D, Roberts R, Murphy G, et al. Work and SCI: a pilot randomized controlled study of an online resource for job-seekers with spinal cord dysfunction. Spinal Cord. 2019; 57(3):221–228.	IMD

Eriksen HR, Ihlebaek C, Mikkelsen A, Grønningsaeter H, Sandal GM, Ursin H. Improving subjective health at the worksite: a randomized controlled trial of stress management training, physical exercise and an integrated health programme. <i>Occup Med (Lond)</i> 2002;52:383–391.	Population
Evanoff BA, Bohr PC, Wolf LD. Effects of a participatory ergonomics team among hospital orderlies. <i>American Journal of Industrial Medicine</i> . 1999; 35(4):358-365.	Population
Feuerstein M, Huang GD, Ortiz JM, Shaw WS, Miller VI, et al. (2003) Integrated case management for work-related upper-extremity disorders: impact of patient satisfaction on health and work status. <i>J Occup Environ Med</i> 45: 803–812. doi:10.1097/01.jom.0000079091.95532.92.	Outcome
Feuerstein M, Callan-Harris S, Hickey P, et al. Multidisciplinary rehabilitation of chronic work-related upper extremity disorders. Long-term effects. <i>J Occup Med</i> . 1993;35(4):396–403.	no FT
Feuerstein M, Marshall L, Shaw WS, Burrell LM. Multicomponent intervention for work-related upper extremity disorders. <i>Journal of Occupational Rehabilitation</i> . 2000; 10(1):71-83.	Study
Finnes A, Ghaderi A, Dahl J, Nager A, and Enebrink P (2019) Randomized Controlled Trial of Acceptance and Commitment Therapy and a Workplace Intervention for Sickness Absence Due to Mental Disorders. <i>Journal of Occupational Health Psychology</i> ,	No FT
Franché R, Severin C, Hogg-Johnson S., Côté P, Vidmar M, Lee H. The impact of early workplace-based return-to-work strategies on work absence duration: A 6-month longitudinal study following an occupational musculoskeletal injury. <i>J Occup Environ Med</i> . 2007;49(9):960-74.	Study
Frost H, Lamb SE, Klaber Moffett JA, et al. A fitness programme for patients with chronic low back pain: two-year follow-up of a randomised controlled trial. <i>Pain</i> 1998;75:273–9.	Population
Frost P, Haahr JP, Andersen JH. Reduction of pain-related disability in working populations: a randomized intervention study of the effects of an educational booklet addressing psychosocial risk factors and screening workplaces for physical health hazards. <i>Spine</i> 2007;32:1949–1954.	Population
Gignac M, Cao X, Tang K, et al. Examination of arthritis-related work place activity limitations and intermittent disability over four-and-a-half years and its relationship to job modifications and outcomes. <i>Arthritis Care Res (Hoboken)</i> 2011;63: 953–62.	Study
Gignac M, Cao X. “Should I tell my employer and coworkers I have arthritis?” A longitudinal examination of self-disclosure in the work place. <i>Arthritis Rheum</i> 2009;61:1753–61.	Study
Goodman RC. An aggressive return-to-work program in surgical treatment of carpal tunnel syndrome: A comparison of costs. <i>Plastic and Reconstructive Surgery</i> . 1992; 89:715–717.	No FT

Green-McKenzie J, Parkerson J, Bernacki E. Comparison of workers' compensation costs for two cohorts of injured workers before and after the introduction of managed care. <i>J Occup Environ Med</i> 1998; 40: 568–572	No FT
Greenwood JG, Wolf HJ, Pearson RJ, Woon CL, Posey P, Main CF. Early intervention in low back disability among coal miners in West Virginia: negative findings. <i>J Occup Med</i> . 1990 Oct;32(10):1047-52. PMID: 2148184.	No FT
Haara-K, Mellin G, Jarvikoski A, et al. A controlled study on the outcome of inpatient and outpatient treatment of low back pain: 3. Long-term follow-up of pain, disability, and compliance. <i>Scand J Rehabil Med</i> 1990; 22:181–8.	Population
Habeck RV, Hunt HA, VanTol B. Workplace factors associated with preventing and managing work disability. <i>Rehab Counsel Bull</i> 1998; 42: 98–143	Study
Haffey W, Abrams D. Employment outcomes for participants in a brain injury work reentry program: preliminary findings. <i>J Head Trauma Rehabil</i> . 1991;6(3):24–34.	Population
Halpern CA, Dawson KD. Design and implementation of a participatory ergonomics program for machine sewing tasks. <i>International Journal of Industrial Ergonomics</i> . 1997; 20:429-440.	Outcome
Hees HL, Koeter MWJ, de Vries G, Ooteman W, Schene AH. Effectiveness of adjuvant occupational therapy in employees with depression: design of a randomized controlled trial. <i>BMC Public Health</i> 2010;10(558):1-9	Study
Hellstrome L, Bech P, Hjorthoj C, Nordentoft M, Lindschou J, Falgaard Eplow L. Effect on return to work or education of Individual Placement and Support modified for people with mood and anxiety disorders: results of a randomised clinical trial. <i>Occupational and Environmental Medicine</i> 2017;74(10):717-725. [DOI: <a href="https://dx.doi.org/10.1136/oemed-2016-104248">https://dx.doi.org/10.1136/oemed-2016-104248</a> ]	Population
Heymans MW, de Vet HCW and Bongers PM. The effectiveness of high-intensity versus low-intensity back schools in an occupational setting. A pragmatic randomised controlled trial. <i>Spine</i> 2006; 10: 1075–1082.	IMD
Hlobil H, Staal JB, Twisk J, Köke A, Ariëns G, Smid T, et al. The effects of a graded activity intervention for low back pain in occupational health on sick leave, functional status and pain: 12-month results of a randomized controlled trial. <i>Journal of Occupational Rehabilitation</i> 2005;15(4):569-80.	IMD
Hlobil H, Uegaki K, Staal B, de Bruyne M, Smid T, van Mechelen W. Substantial sick-leave costs savings due to a graded activity intervention for workers with non-specific sub-acute low back pain. <i>Eur Spine J</i> 2007;16:919–924.	IMD



Hogg-Johnson S, Cole D. Early prognostic factors for duration on benefits among workers with compensated occupational soft tissue injuries. <i>Occup Environ Med</i> 2003; 60: 244–253?	IMD
Hunt HA, Habeck RV. The Michigan disability prevention study. Kalamazoo, Michigan: WE Upjohn Institute for Employment Research, 1993	Study
Hutting N, Staal JB, Engels JA, et al. Effect evaluation of a self-management programme for employees with complaints of the arm, neck or shoulder: A randomised controlled trial. <i>Occup Environ Med</i> . Epub ahead of print 10 September 2015. DOI: 10.1136/oemed-2015-103089.	IWP
IJzelenberg H, Meerding WJ, Burdorf A. Effectiveness of a back pain prevention program: a cluster randomized controlled trial in an occupational setting. <i>Spine</i> 2007;32:711–719.	Population
Karlson B, Jönsson P, Österberg K. Long-term stability of return to work after a workplace-oriented intervention for patients on sick leave for burnout. <i>BMC Public Health</i> 2014;14:821	IMD
Karlson B, Jönsson P, Pålsson B, et al. Return to work after a workplace-oriented intervention for patients on sick-leave for burnout--a prospective controlled study. <i>BMC Public Health</i> 2010;10:301.	IMD
Kendall NAS, Thompson BF. A pilot program for dealing with the comorbidity of chronic pain and long-term unemployment. <i>J Occup Rehabil</i> . 1998;8(1):5–26.	Population
Kole-Snijders AMJ, Vlaeyen JWS, Goossens MEJB, et al. Chronic low-back pain: what does cognitive coping skills training add to operant behavioural treatment? Results of a randomized clinical trial. <i>J Consult Clin Psychol</i> 1999;67:931–44.	No FT
Koviack P. A review of the effect of an accommodation program to support nurses with functional limitations. <i>Nursing Economics</i> . 2004; 22:320-324.	Outcome
Landers M, Maguire L. Effects of a work injury prevention program for housekeeping in the hotel industry. <i>Work</i> . 2004; 22: 239-246.	IMD
Landstad BJ, Ekholm J, Broman L, Schuldt K. Working environmental conditions as experienced by women working despite pain. A prospective study with comparison groups of hospital cleaners and home help personnel receiving supportive measures at the workplace. <i>Work</i> 2000a.15:141-152.	Population
Landstad BJ, Ekholm J, Schuldt K, Bergrowth A. Health-related quality of life in women at work despite ill-health. A prospective comparative study of hospital cleaners/home-help staff before and after staff support. <i>International Journal of Rehabilitation Research</i> . 2000b; 23:91-101.	Population
Landstad BJ, Gelin G, Malmquist C, Vinberg S. A statistical human resources costing and accounting model for analysing the economic effects of an intervention at a workplace. <i>Ergonomics</i> . 2002; 45:764-787	Population
Leino P, Kivekäs J, Hänninen K. Effects of work-oriented fitness courses in lumberjacks with low back pain. <i>J Occup Rehabil</i> 1994;4:67-76.	Population

Lexis MA, Jansen NW, Huibers MJ et al. Prevention of long-term sickness absence and major depression in high-risk employees: a randomised controlled trial. <i>Occup Environ Med</i> 2011;68:400–407.	Study
Li EJ, Li-Tsang CW, Lam CS, et al. The effect of a training on work readiness program for workers with musculoskeletal injuries: a randomized control trial (RCT) study. <i>J Occup Rehabil.</i> 2006;16(4):529–541.	Population
Lindh M, Lurie M, Sanne H. A randomized prospective study of vocational outcome in rehabilitation of patients with non-specific musculoskeletal pain: a multidisciplinary approach to patients identified after 90 days of sick-leave. <i>Scand J Rehabil Med</i> 1997;29:103–112.	No FT
Lindstrom I, Ohlund C, Eek C, Wallin L, Peterson L-E, Nachemson A. Mobility, strength, and fitness after a graded activity program for patients with subacute low back pain. A randomised prospective clinical study with a behavioural approach. <i>Spine</i> 1992;17(6):641-52.	No FT
Lindstrom I, Ohlund C, Nachemson A. Physical performance, pain, pain behavior and subjective disability in patients with subacute low back pain. <i>Scandinavian Journal of Rehabilitation Medicine</i> 1995;27(3):153-60.	No FT
Linton SJ, Boersma K, Traczyk M, et al. Early workplace communication and problem solving to prevent back disability: Results of a randomised controlled trial among high-risk workers and their supervisors. <i>J Occup Rehabil</i> 2016; 26: 150–159.	Population
Linton SJ, Hellsing A-L and Larsson I. Bridging the gap: Support groups do not enhance long-term outcome in chronic back pain. <i>Clin J Pain</i> 1997; 13: 221–228.	No FT
Linton, SJ, Bradley LA, Jensen I, Spangfort E, Sundell L. The secondary prevention of low back pain: a controlled study with follow-up. <i>Pain.</i> 1989; 36:197-207.	No FT
Loisel P, Durand M-J, Diallo B, Vachon B, Charpentier N, Labelle J. From evidence to community practice in work rehabilitation: The Quebec experience. <i>Clin J Pain</i> 2003; 19: 105–113.	Study
Loisel P, Durand P, Abenhaim L, Gosselin L, Simard R, Turcotte J, Esdaile JM. Management of occupational back pain: the Sherbrooke model. Results of a pilot and feasibility study. <i>Occup Environ Med</i> 1994; 51: 597–602.	Study
Loisel P, Gosselin L, Durand P, Lemaire J, Poitras S, Abenhaim L. Implementation of a participatory ergonomics program in the rehabilitation of workers suffering from subacute back pain. <i>Appl Ergo</i> 2001; 32: 53–60.	Outcome

Macedo AM, Oakley SP, Panayi GS, et al. Functional and work outcomes improve in patients with rheumatoid arthritis who receive targeted, comprehensive occupational therapy. <i>Arthritis Rheum</i> 2009;61:1522–30.	Outcome
Marnetoft SU, Selander J. Multidisciplinary vocational rehabilitation focusing on work training and case management for unemployed sick-listed people. <i>Int J Rehabil Res.</i> 2000;23(4):271–279	Population
Martin DJ, Chernoff RA, Buitron M, et al. Helping people with HIV/AIDS return to work: a randomized clinical trial. <i>Rehabil Psychol.</i> 2012;57(4):280–289.	Population
Matheson LN, Brophy RG. Aggressive early intervention after occupational back injury: Some preliminary observations. <i>Journal of Occupational Rehabilitation.</i> 1997; 7(2):107-17	Study
McGrail Jr. MP, Tsai SP, Bernacki EJA. Comprehensive initiative to manage the incidence and cost of occupational injury and illness. Report of an outcomes analysis. <i>Journal of Occupational and Environmental Medicine.</i> 1995; 37(11):1263-1268.	No FT
Milligan-Saville, J.S., Tan, L., Gayed, A., et al., 2017. Workplace mental health training for managers and its effect on sick leave in employees: a cluster randomised controlled trial. <i>Lancet Psych.</i> 4, 850–858.	Population
Mitchell RI, Carmen GM. The functional restoration approach to the treatment of chronic pain in patients with soft tissue and back injuries. <i>Spine</i> 1994;19:633–42.	IWP
Nicholas MK, Wilson PH, Goyen J. Operant-behavioural and cognitive-behavioural treatment for chronic low back pain. <i>Behav Res Ther</i> 1991;29:225–38.	Population
Noordik E, van Dijk FJ, Nieuwenhuijsen K, van der Klink JLL. Effectiveness and cost-effectiveness of an exposure-based return-to-work programme for patients on sick leave due to common mental disorders: design of a cluster-randomized controlled trial. <i>BMC Public Health</i> 2009;9(140):1-11.	Study
Nurminen E, Malmivaara A, Ilmarinen J et al. Effectiveness of a worksite exercise program with respect to perceived work ability and sick leaves among women with physical work. <i>Scand J Work Environ Health</i> 2002;28:85–93.	Population
Oulette V, Badii M, Lockhart K, Yassi A. Worker satisfaction with a workplace injury prevention and return-to-work program in a large Canadian hospital: The importance of an integrated approach. <i>Work</i> 2007; 8: (2) 175-181	Outcome
Ponzer S, Molin U, Johansson SE, et al. Psychosocial support in rehabilitation after orthopedic injuries. <i>J Trauma.</i> 2000;48:273–279.	No FT
Proper KI, van der Beek AJ, Hildebrandt VH, Twisk JW, van Mechelen W. Worksite health promotion using individual counselling and the	Population

effectiveness on sick leave; results of a randomised controlled trial. <i>Occup Environ Med</i> 2004;61:275–279.	
Rantonen J, Luoto S, Vehtari A, et al. The effectiveness of two active interventions compared to self-care advice in employees with non-acute low back symptoms: A randomised controlled trial with a 4-year follow-up in the occupational health setting. <i>Occup Environ Med</i> 2012; 69: 12–20.	IWP
Rebergen D, Bruinvels D, Bezemer P, van der Beek A, van Mechelen W. (2009) Guideline-based care of common mental disorders by occupational physicians (CO-OP study): a randomised controlled trial. <i>J Occup Environ Med</i> 51: 305-312	IMD
Reme SE, Grasdal AL, Løvvik C, et al. Work-focused cognitive-behavioural therapy and individual job support to increase work participation in common mental disorders: a randomised controlled multicentre trial. <i>Occup Environ Med</i> 2015;72:oemed-2014.	Population
Roelofs PDDM, Bierma-Zeinstra SMA, van Poppel MNM et al. Lumbar supports to prevent recurrent low back pain among home care workers. <i>Ann Intern Med</i> 2007;147: 685 92.	IMD
Rossignol M, Abenhaim L, Seguin P, Neveu A, Collet JP, Ducruet T, et al. Coordination of primary health care for back pain. A randomized controlled trial. <i>Spine</i> 2000;25 (2):251-8; discussion 258-9.	IWP
Ryan WE, Krishna MK, Swanson CE. A prospective study evaluating early rehabilitation in preventing back pain chronicity in mine workers. <i>Spine</i> . 1995; 20:489–491.	No FT
Salazar AM, Warden DL, Schwab K, et al. Cognitive rehabilitation for traumatic brain injury: a randomized trial. <i>Defense and Veterans Head Injury Program (DVHIP) Study Group. J Am Med Assoc.</i> 2000;283(23):3075–3081.	Outcome
Sampere M, Gimeno D, Serra C et al: Effect of working conditions on non-work-related sickness absence. <i>Occup Med (Lond)</i> 62: 60-63, 2012	Study
Scholz SM, Andermatt P, Tobler BL, et al. Work incapacity and treatment costs after severe accidents: standard versus intensive case management in a 6-year randomized controlled trial. <i>J Occup Rehabil.</i> 2016;26:319–331.	IWP
Shaw WS, Feuerstein M, Lincoln AE, Miller VI, Wood PM. Case management services for work related upper extremity disorders. <i>American Association of Occupational Health Nurses Journal</i> 2001;49(8):378-89.	No FT
Staal JB, Hlobil H, Twisk JWR, Smid T, Köke AJA, van Mechelen W. Graded activity for low back pain in occupational health care. <i>Annals of Internal Medicine</i> 2004;140:142-3.	Study

Storheim K, Brox JI, Holm I, Koller AK, Bø K. Intensive group training versus cognitive intervention in sub-acute low back pain: short-term results of a single-blind randomized controlled trial. <i>Journal of Rehabilitation Medicine</i> 2003;35:132-40.	IMD
Sullivan MJ, Adams H, Rhodenizer T, et al. A psychosocial risk factor-targeted intervention for the prevention of chronic pain and disability following whiplash injury. <i>Phys Ther.</i> 2006;86(1):8–18.	Population
Tate D, Munrowd D, Habeck RV, Kasim R, Adams L, and Shepard D. Disability Management and rehabilitation outcomes: The Buick-Oldsmobile-Cadillac Lansing Product Team Report. 1987. East Lansing: Michigan, Michigan State University, School of health Education, Counseling, Psyc, Human Performance, Disability Management Project	No FT
Tate RB, Yassi A, & Cooper J. Predictors of time loss after back injury in nurses. <i>Spine</i> 1999; 24(18): 1930-1936	Study
Tracz S. Reducing the physical and fiscal pain of back injury. <i>Leadership in Health Services.</i> 1992; 1(2):36-8.	No FT
Trexler LE, Parrott DR, Malec JF. Replication of a prospective randomized controlled trial of resource facilitation to improve return to work and school after brain injury. <i>Arch Phys Med Rehabil.</i> 2016;97(2):204–210.	Population
Turner JA, Clancy S, McQuade KJ, et al. Effectiveness of behavioural therapy for chronic low back pain: a component analysis. <i>J Consult Clin Psychol</i> 1990;58:573–9.	No FT
Turner JA, Clancy S. Comparison of operant behavioural and cognitivebehavioural group treatment for chronic low back pain. <i>J Consult Clin Psychol</i> 1988;56:261–6.	No FT
Tveito TH, Eriksen HR. Integrated health programme: a workplace randomized controlled trial. <i>J Adv Nurs</i> 2009;65:110–119.	Population
Valtonen M, Raiskila T, Veijola J, Laksy K, Kauhanen ML, Kiuttu J, Joukamaa M, Hintsala T, Tuulio-Henriksson A (2015) Enhancing sense of coherence via early intervention among depressed occupational health care clients. <i>Nord J Psychiatry</i> 69(7):515–522	Outcome
van der Feltz-Cornelis CM, Hoedeman R, de Jong FJ et al: Faster return to work after psychiatric consultation for sicklisted employees with common mental disorders compared to care as usual. A randomized clinical trial. <i>Neuropsychiatr Dis Treat</i> 6: 375-385, 2010	IMD
van der Klink JJ, Blonk RW, Schene AH et al: Reducing long term sickness absence by an activating intervention in adjustment disorders: a cluster randomised controlled design. <i>Occup Environ Med</i> 60 (6): 429-437, 2003	IMD
van Duijn M, Burdorf A: Influence of modified work on recurrence of sick leave due to musculoskeletal complaints. <i>J Rehabil Med</i> 40: 576-581, 2008	Study

van Oostrom SH, van Mechelen W, Terluin B, de Vet HC, Anema JR (2009) A participatory workplace intervention for employees with distress and lost time: a feasibility evaluation within a randomized controlled trial. <i>J Occup Rehabil</i> 19(2):212–222	Outcome
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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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
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

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				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		
		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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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			
Axen 2020;(2)  SR: RCT, Quasi-experimental, 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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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			
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	Y	Y	N	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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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
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	Y	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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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
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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
Chou 2017 (The newest version of 2016);(6) SR: SR, RCT	To review the current evidence on the benefits and harms of nonpharmacologic 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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
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	Descriptive	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, Low	All SRs
Cochrane 2017;(8) SR: RCTs, Cluster Randomized trials and Quasi-RCT	To determine the effectiveness of early multidisciplinary 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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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			
		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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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			
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.	Descriptive	Y	Y	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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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
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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
Dewa 2021;(11)  SR: Original research, Comparison group, RCT, Retrospective 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)	Descriptive, 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, Low	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	Descriptive, Narrative	N	Y	N	Y	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, 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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
	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	Descriptive, Narrative	N	Y	N	Y	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	MA	N	Y	N	Y	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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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
	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			
DoI 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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
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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, MMBCT, 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	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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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
Fong 2015;(17) Campbell  SR: RCT, Quasi-experimental equivalent and Non-equivalent comparison design that employed regression discontinuity	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 co-morbidities 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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
Franche 2005 (Sister version of 2004);(18)  SR: RCT, Controlled Trials, Cross-sectional, Pre-post, Time series, Case-control, Retrospective, 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 • Clinical interventions provided outside the	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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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		
										workplace. Exclusion criteria: Non-comparative studies: case series, case study	

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				Type of synthesis	Population	Intervention	Outcome	Other				Total uncertainties
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. In-patient 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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
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 work-focused 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 between stakeholders (employees,	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 working-age 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 intervention or benefits only. Measuring	Moderate, High	5 of 11

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				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties			
		supervisors and counsellors) in order to favour sustainable RTW								production or worktime losses (or gains) as an outcome of the intervention was not considered		



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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 understanding 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 company-wide 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 pre-existing permanent or total impairment. Interventions provided by healthcare or	High,  High	11 of 11

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				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties			
		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		

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				Type of synthesis	Population	Intervention	Outcome	Other				Total uncertainties
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, Low	2 of 10

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Heathcote 2019;(23) SR: RCT	To synthesize evidence of the effectiveness of socio-ecological resilience rehabilitation programs on RTW, self-efficacy, and stress mitigation following traumatic physical injuries	Self-efficacy is shown to be strongly related to resilience and could be a positive factor promoting functional recovery, work participation and QoL. Resilience also includes the ability to cope with stress, which is also influenced by social support networks that moderate the effects of stress on health and promote adjustment to adversity. Other resilient skills include the ability to successfully integrate with the workplace, and social and community resources. Evidence suggests that individual behaviour changes are unlikely to be sustained unless health programs target one or more factors in an individual's ecological environment, (social, economic, physical, and cultural systems). This framework applies to resilience promotion where supportive families and caregivers, peers and social networks, the workplace, community health services, and cultural and spiritual influences are thought to enhance resilient behaviours. Programs aimed at fostering resilient adaptation in injured patients by targeting these social and ecological systems could	Proportion of people who were working at the designated study follow-up time point, following the injury event, and second as the average time in days taken to RTW following the injury event	MA	N	Y	N	N	1	Eligible studies - RCT, with defined intervention comparison group, and prospective follow-up. Population - adult patients aged 18–70 years, who sustained a physical injury, presented to a clinic for acute management, and were recruited during the rehabilitation phase for that injury. Studies of elite athletes or active military personnel exposed to psychological & physical trauma were excluded. Interventions were aimed at preventing the development of new disorders, or worsening disabilities following injuries. Interventions had to target a component of the socio-ecological framework. Primary outcome- objective measures of occupational re-integration. Secondary outcomes - self-reported changes in resilient behaviours. Follow-up time-restricted to 2 years after the acute injury event. Where the intervention was delivered to the target patients and other groups, the outcome measures need to include at least one outcome measure of the patient. Excluded – pilot studies, quasi-experimental, case reports, case series, case-control and cohort studies, or studies analysing non-numerical data. Studies where patient selection was based on an	Moderate, High	4 of 21

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				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties			
		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		

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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,  Low	2 of  39

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		management and relaxation training; social support; and gender-specific interventions	during the follow-up period)							period of $\geq$ one year 3. Adverse effects. We added working after five years to the list of the secondary outcomes	

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					Population	Intervention	Outcome	Other	Total uncertainties			
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	Y	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 $\geq 4$ weeks, but $\leq 3$ months. Work status should be one of the main outcome measures (functional status and pain could have been used as additional outcome measures	Moderate, Low	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



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			Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		
	(i.e., in multiple target populations & across interventions)	<p>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 and/or employer</p>							<p>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</p>	

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Hogg 2021;(27)  SR: RCT, B&A, Retrospective, 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	Y	Y	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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
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

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

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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population Intervention Outcome Other Total uncertainties			
		<p>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</p>	<p>RTW; • the proportion of workers on sick leave at follow-up.</p>			<p>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</p>		

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	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
Hunter 2017;(30)  SR: SR, MA, RCT, Two-group nonrandomized (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	Y	N	Y	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,  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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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
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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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
Johansson 2021;(32)  SR: Cohort and Cross-Sectional	To assess what type of work-related injuries young adults are exposed to, and What, if any, type of interventions have been used to facilitate RTW for young adults	Interventions that promote well-being, rehabilitation and a successful RTW for young adults may lead to improvements in workers' health, equity, productivity and efficacy of organizations and society in general. It is important to focus on young adults since they are beginners in the working life and may thereof be more vulnerable to the consequences of work injuries. In other words, by supporting and facilitating a successful RTW for young adults, an opportunity for a healthy work-life and maintained health beyond retirement age could be provided. All types of intervention programs that were performed with the purpose of facilitating young adults' RTW following work-related injuries were included, regardless of study design	RTW	Narrative	N	Y	N	N	1	All types of work-related injuries were considered except when the injury caused enough harm to make an RTW implausible. Inclusion criteria: 1) interventions of RTW status, regardless of sustained RTW, full RTW, and partial RTW, 2) young adults aged 19–29 years including all working arrangements, 3) studies specified that the mechanisms leading to injury were work-related, 4) studies published in peer-reviewed journals between the years of 2010 to 2020 and 5) studies were published in English or Swedish. Lastly, all types of intervention programs that were performed to facilitate young adults' RTW following work-related injuries were included, regardless of the study design. The following exclusion criteria were considered: 1) the study population was defined based on non-work-related morbidity, 2) work-related diseases and 3) age of the study population was not defined	Moderate, Low	1 of 2

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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
Karjalainen 2001;(33)  SR: RCT, Controlled Trials	To evaluate the effectiveness of multidisciplinary biopsychosocial 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, lobar 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	Outcomes of relevance to umbrella review	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
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. Calculation 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 / multi-agency 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,  Low	1 of 2

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

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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
Kojimahara 2020;(35) SR: RCT, Cohort	To assess the impact of the RTW Program at the workplace, OH activities combined with clinical medicine, Social support, and Work accommodation for workers on sick leave on RTW	RTW for MH disorder is positively carried out and evidence is gathering in the 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	Sick-leave duration, Rate of RTW	Quantitative synthesis, GRADE, Development of recommendation	N	Y	N	N	1	Studies evaluated included systematic reviews or meta-analyses and RCTs corresponding to 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	Low, High	9 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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
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	Descriptive statistics, RR Calculation	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,  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	Y	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	Outcomes of relevance to umbrella review	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population Intervention Outcome Other Total uncertainties			
SR: Qualitative, Action research studies, Quasi-Experimental, Experimental, 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	<p>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</p>				<p>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)</p>		

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	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
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	Y	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



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				Type of synthesis	Population	Intervention	Outcome	Other				Total uncertainties
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-psycho-social 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	Descriptive, 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, 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	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			
		group of patients with multi-morbidity and an increasing social gradient in health										

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	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
Madsen 2021;(40)  SR: RCT	To present an overview of the evidence of the effect of job loss prevention interventions, aiming to improve work ability and decrease absenteeism and/or job loss in persons with Inflammatory Arthritis (IA)	It is relevant to offer non-pharmacological interventions that help keep people in the labour market. Such interventions are referred to as job loss prevention, occupational rehabilitation or VR. These interventions may be delivered by physiotherapists, OTs, social workers and psychologists. These interventions are all referred to as job loss prevention interventions (JLPs). JLPs are characterised by focusing on the person and the work setting and may include alternative ways to accomplish work tasks and adaptations of work settings. Observational and qualitative studies indicate that such strategies may increase work ability and improve participation in work life for people living with IA	Work participation (e.g., work functioning and work ability), SA and job loss	Narrative	N	Y	N	N	1	Population - Adults diagnosed with IA and of working age (18–65 years). Comparison - Participants receiving usual care, which may include medical treatment as well as outpatient consultations with a doctor and/or a nurse. The participants could also receive general oral or written information about living with rheumatological disease. Study Design and Languages - Only RCTs published in English and western countries were included. Studies from non-western countries were excluded. JLPs had to contain at least two of the following criteria: (a) Interventions targeting work challenges including trying out different strategies and adaptations to improve specific work situations; (b) Interventions directed at the person, including job coaching and 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	Moderate, 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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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		
										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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
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, Low	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	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
				Type of synthesis			
		interventions that target these factors in the early stages of LBP may be particularly effective and important to examine					
				Population			
				Intervention			
				Outcome			
				Other			
				Total uncertainties			

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	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			
McLennan 2021;(43)  SR: RCT, Retrospective, 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 pre-discharge, 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

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				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		
		the earlier provision of VR indicate its potential effectiveness in enhancing employment outcomes for people who have sustained serious injury									



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					Population	Intervention	Outcome	Other	Total uncertainties			
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	Y	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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
Meijer 2005;(45)  SR: RCT, Clinical Controlled Trials	To gain insight into the effectiveness of RTW treatment programs among sick-listed patients with non-specific 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 sick-listed 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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
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Minjoo 2014;(47) SR: RCTs, Pre-test post-test, Quasi-experimental, 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	Grey literature, single case studies and qualitative studies were excluded  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,  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	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		
		of approaches: (1) general CBT (2) vocationally oriented CBT and (3) vocationally oriented CBT combined with employment services								

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				Type of synthesis	Population	Intervention	Outcome	Other				Total uncertainties
Munoz-Murillo 2018;(48)  SR: RCT, Controlled Trials, Non controlled pre-post intervention , Observational 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, Descriptive	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

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			Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		
		<p>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 interventions, absenteeism prevention, and making accommodations, if necessary</p>							<p>without empirical primary or secondary data, reviews &amp; 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</p>	


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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, Low	4 of 15

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				Type of synthesis	Population	Intervention	Outcome	Other				Total uncertainties
Nevedal 2015;(50) SR: RCT	To identify studies describing workplace interventions targeting RTW in patients with LBP and neck pain and their effectiveness. To describe the interventions according to which domains of the ICF model they intervene upon	Nowadays, interventions for back and neck pain are multidisciplinary, and physicians are no longer the only professionals involved in removing the barriers prohibiting RTW. A workplace intervention includes intervention focusing on changes in the workplace environment. Examples of how the domains are understood in relation to the interventions: •Body functions and structures: Education on the management of stress, optimal body posture, changing posture/working position. •Participation & Activities: Graded activity, workload modifications, taking breaks, working methods/techniques, lifting/pushing/pulling technique sick leave, active sick leave and change of work hours. •Environmental Factors: Physical changes of the workstation, implementation of new equipment, changes addressing communication between workers and/or management, workplace attitudes or workplace culture. Personal factors:	Sick leave, time to RTW, receipt of sickness benefits	Descriptive synthesis	N	Y	N	N	1	The exclusion criteria were: No intervention described, Not assessing a workplace intervention. Not assessing RTW or SA as an outcome. Not including subjects with unspecific LBP/neck pain. Study designs other than RCT. Language not English. A workplace intervention was defined as any intervention focusing on changes in the workplace, working equipment, work design, work organization, working relationships, work conditions or work environment. Occupational case management with active stakeholder involvement of worker/employer was also included. Calls made to the workplace if the study otherwise fit with the definition were accepted. Emphasis was put on the assessment of the workplace intervention itself, as well as the direct impact it had on the outcome. Studies that included workplace interventions as a non-measurable component of a larger-scale intervention were excluded	Moderate, High	7 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	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			
		Adaption of a life cycle, changing habits, making age-related adjustments, lifestyle changes										

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

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Nieuwenhuisen 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% Confidence Interval to pool study results in studies judged to be sufficiently 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,  High	6 of  45

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Nigatu 2016;(53) SR: RCT	To assess the effectiveness of the existing workplace and clinical interventions aimed at enhancing RTW	Any clinical or work-focused interventions aimed at enhancing RTW. Interventions 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	Proportion of RTW and sick-leave duration until RTW	MA	N	Y	N	N	1	Population - Employees aged 18 years or over who were absent from work due to a CMD 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	Moderate, Low	5 of 16

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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

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				Type of synthesis			
				Population			
				Intervention			
				Outcome			
				Other			
				Total uncertainties			
					modifying the physical work environment, work routine, work hours and/or individual coping mechanisms provided they were workplace-based or involved the workplace		

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					Population	Intervention	Outcome	Other	Total uncertainties			
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	Y	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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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			
Odeen 2013;(56) SR: RCT	To give an overview of the general effectiveness of active workplace interventions aimed at reducing SA	Active treatments refer to interventions 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	Quantified SA and/or RTW	Narrative	N	Y	N	N	1	Inclusion criteria were (i) participants over 18 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	Moderate, High	5 of 17

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				Type of synthesis	Population	Intervention	Outcome	Other				Total uncertainties
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	Descriptive, 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 sub-classified 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

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				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties			
		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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
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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, operationalized 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

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				Type of synthesis	Population	Intervention	Outcome	Other				Total uncertainties
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	Y	Y	Y	4	Reviews were included in the full-text search if the reported workplace interventions addressed health and/or work-related outcomes in the prevention of musculoskeletal disorders, mental illnesses or the strengthening of older employees. Interventions were to focus on either individual, organizational, or combined-level health promotion or prevention at work. The study population included male and female employees in different age groups	Moderate, Low	NA

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					Population	Intervention	Outcome	Other	Total uncertainties			
Pijpker 2019;(60)  SR: RCT, Quasi-experimental, Pre-test/post-test study	To assess the effectiveness of combined interventions for employees with burnout complaints (currently 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	Descriptive, Narrative. Identified theories of mediators of change and combined with effectiveness data	N	Y	Y	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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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			
Ravenek 2010;(61)  SR: RCT, Controlled Trials	To assess: (1) the multidisciplinary treatment of chronic LBP in working adults to improve employment outcomes and (2) OT as contributing to a multidisciplinary 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 co-workers 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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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
Roels 2016;(62)  SR: RCT, Non-randomized studies (e.g., cohort, case series, case reports)	To investigate the effect of interventions enhancing (re)employment 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	Descriptive, Narrative	Y	Y	Y	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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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			
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 re-integration 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, 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	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		
										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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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
Salathe 2018;(64)  SR: Longitudinal , RCT, Prospective, Cost analyses, Retrospective	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	Y	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, Low	NA

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				Type of synthesis	Population	Intervention	Outcome	Other				Total uncertainties
Salomonsson 2018;(65)  SR: RCT	To calculate the effect size of psychological interventions for CMDs on sick leave and psychiatric symptoms based on all published RCTs	Clinical guidelines indicate that psychological treatments, primarily CBT, 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 also reduce the patient's symptoms	Sick leave/absenteeism	MA	Y	Y	N	N	2	The following criteria had to be fulfilled: (1) the population consists of adult individuals 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	Moderate, Low	CD 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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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			
Sampson 2015;(66)  SR: Observational 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 in-patient or hospital-based	Return to paid work (time away from work/employment, 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,  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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
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 program. • intense physical conditioning programs: These programs included the three key elements and	High, High	10 of 41

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			Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties			
		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		

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					Population	Intervention	Outcome	Other	Total uncertainties			
Schandelmaier 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, High	3 of 9



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				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties			
		tailored RTW plan implemented by an RTW coordinator or team who coordinates services and communication among involved stakeholders										

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				Type of synthesis	Population	Intervention	Outcome	Other				Total uncertainties
Schonstein 2003 {Sister version of Schonstein 2003 in SPINE};{Schonstein, 2003 #53} Cochrane SR: RCT	To compare the effectiveness of physical conditioning programs with management strategies that do not include physical conditioning programs, for workers with back and neck pain, in reducing time lost from work and increasing functional status	Work-oriented back pain management programs aim to help people RTW and improve work abilities. They are called work or physical conditioning, work hardening or functional restoration/exercise programs. These programs aim for RTW, improvement in work status (for workers performing modified duties) and/or the achievement of a higher level of function by increasing strength, endurance, flexibility, and cardiovascular fitness. Such programs either simulate or duplicate work and/or functional tasks in a safe, supervised environment. These programs differ in their goals from other programs as they include several features which are better than usual care in reducing sick days for some workers with chronic back pain. Those features are: a cognitive-behavioural approach (addressing attitudes and behaviours such as fear of movement), are done at work or in cooperation with	Work-status outcomes: 1. time lost from work 2. time between injury and return to pre-injury work status 3. RTW status in terms of "at work" or "off work" 4. time on selected, appropriate, light, modified duties 5. other reported changes in work status	MA	N	Y	N	N	1	Studies published in a language other than English were considered. Adults (> 16 years) with work disabilities related to back or neck pain who were included in physical conditioning programs. All subjects who were accepted into physical conditioning programs, whether they had acute, sub-acute or chronic back or neck pain, met our inclusion criteria. Studies with subjects with specific diagnoses such as infection, neoplasm, metastasis, osteoporosis, RA, fracture, and inflammatory processes or other conditions for which valid diagnoses had been demonstrated were excluded. Types of interventions - Physical conditioning programs consisting of work conditioning or hardening or functional restoration/exercise program with an intended improvement of work or functional status. We included interventions that were work/function-related physical rehabilitation programs specifically designed to restore an individual's systemic, neurological, musculoskeletal (strength, endurance,	High, Low	2 of 19

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		employers, and are supervised by a physiotherapist or multidisciplinary team								movement, flexibility and motor control) and/or cardiopulmonary function	

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				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties			
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, Low	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	Descriptive, Narrative	N	Y	N	Y	2	NR	Moderate, Medium	All SRs

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	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 occupationally 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/working %, time to RTW, sick leave days, presenteeism, employment status, absenteeism,	Descriptive	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

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				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties			
			work disability, work productivity									
Steenstra 2017;(72) SR: RCT, Observational 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 & job lock of a	Narrative	N	Y	N	Y	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 peer-reviewed literature was included, including non-English citations	Moderate, Low	3 of 14

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					Population	Intervention	Outcome	Other	Total uncertainties			
	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 analysis	Y	Y	N	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 work-environment-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	Description of intervention and how it may work	Outcomes of relevance to umbrella review	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
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<p>Tompa 2008 (sister versions 2009, 2007);(74)</p> <p>SR: RCT, B&amp;A, Interrupted Time Series</p>	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 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



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				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties			
Torchalla 2018;(75)  SR: Cohort study, RCT, Clinically Controlled Trials	To summarize interventions targeting individuals with work-related post-traumatic stress disorder to make recommendations 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

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			Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		
									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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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			
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 multidisciplinary 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 bio-psycho-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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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			
		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		

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					Population	Intervention	Outcome	Other	Total uncertainties			
Van Middelkoop 2011;(78) SR: RCT	To determine the effectiveness of physical and rehabilitation interventions (i.e. exercise therapy, back school, transcutaneous electrical nerve stimulation (TENS), low level laser therapy (LLLT), education, massage, behavioural treatment, traction, multi disciplinary	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 device. Behavioural treatments: operant,	RTW (e.g., RTW status, sick leave days)	Descriptive, 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 included. For all types of interventions,	Moderate, Low	CD of 83

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	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		
	treatment, lumbar supports, and heat/cold therapy) for chronic LBP	cognitive, and respondent treatments or a 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 occupational)								additional treatments were allowed, provided that the intervention of interest was the main contrast between the intervention groups included in the study	

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					Population	Intervention	Outcome	Other	Total uncertainties			
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 sick-listed 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 operationalisation, we only analysed the data collected in the following manners. <ul style="list-style-type: none"> <li>• Time until first RTW</li> <li>• Time until lasting RTW &lt; four weeks without dropping out.</li> <li>• Cumulative duration/</li> </ul>	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: <ul style="list-style-type: none"> <li>• focused on primary prevention of SA, that is, targeted to healthy workers as opposed to those on sick leave;</li> <li>• not focused on RTW as the main goal;</li> <li>• group-based rather than individual-based;</li> <li>• focused on education about ergonomics only, and did not result in</li> </ul>	High,  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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)	Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population Intervention Outcome Other Total uncertainties			
	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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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
Vandenbroeck 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 re-integration 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	Descriptive, 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

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				Type of synthesis	Population	Intervention	Outcome	Other				Total uncertainties
Varatharajan 2014;(81)  SR: Studies that compared WDP interventions in workers with neck pain, whiplash-associated disorders (WAD), or upper extremity disorders  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 case-control 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

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				Type of synthesis	Population	Intervention	Outcome	Other	Total uncertainties		
		<p>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 modifying biomechanical physical exposure(s) and organizational factors within a workplace; 5. Combined WDP approaches: a combination of two or more interventions from two or more WDP intervention categories</p>							<p>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, studies not reporting on methodology; or (3) cadaveric or animal studies</p>		

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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

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

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				Type of synthesis	Population	Intervention	Outcome	Other				Total uncertainties
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 interventions is lacking	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 SRs

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



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		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	

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				Type of synthesis	Population	Intervention	Outcome	Other				Total uncertainties
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 useful to review RTW interventions for workers with chronic pain	RTW, operationalized using 'administrative' criteria, such as work status, no of hrs worked, time until an employee RTW for contracted hrs/pay	Narrative	N	Y	N	Y	2	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 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	High,  Low	4 of  13

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	Type of synthesis	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/N)					Review inclusion/exclusion criteria	Overall quality rating, Relevance to review aim (High/ Medium/ Low)	No. relevant studies /total included studies
					Population	Intervention	Outcome	Other	Total uncertainties			
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 musculoskeletal	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	Descriptive	N	Y	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	Uncertainties regarding how PICO for primary studies relates to inclusion criteria for umbrella review (Y/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
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-experimental, 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	Descriptive	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
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No Category

Bernaards (2011)(1)  Netherlands  Musculo- skeletal: Neck and upper limb symptoms	1) Work style intervention 2) Lifestyle physical activity intervention  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	All workers who gave informed consent and completed baseline questionnaire	NR  Group meetings  Computer workers	Full details NR 1) Work style intervention: Change behaviour with regard to body posture, WP adjustment, breaks and coping with risk 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	Six interactive group meetings (max 10 participants) in 6- month period. Meeting duration: 90 min in WSPA group and 60 min in WS group	In Gr SE	WP, Other	Dutch companies  NR  Low	Yes - related to reason for sick leave (Overall recovery and pain)	UC: did not attend group meetings but received breaks and exercise reminder software
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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
Linton (1992)(2)  NR  Musculo- skeletal: low back pain	Secondary prevention program for BP  To help maintain working status by reducing pain	NR Patients who took part in program were contacted and agreed to participate in follow-up	NR  NR  Employees	Full details NR Reconditioning, ergonomic education, cognitive-behavioural intervention, development of strategies to reduce risk of future injury, instructions for self-care after treatment	5 week program with at least 4 hours of physical reconditioning each day. 18 month follow up interviews at ppts WP or medical centre.	In Gr	Hospital -OP Loka Brunn Back Clinic	NR Specific licenced practical nurses  NR  Low (Unclear)	Yes - related to reason for sick leave (pain intensity , fatigue, anxiety, depressi on, sleep, helpless ness)	Waiting list control - but not used at follow-up

No Case Management

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

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Jensen (2001)(4)  Sweden  Musculo- skeletal: chronic spinal pain	Behavioural medicine rehabilitation program  To reduce absence from work and improve health- related QoL	On monthly basis, all new cases sent symptom question- naire. Individuals meeting inclusion criteria interviewed by phone & offered a medical and functional examination . Final decision re: admission to study made by licensed physician supervised by orthopaedic specialist	Psych, PT, physician  Face-to- face, Individual and group  Employee, rehabilitati on officials, work manger	Three treatment conditions. All treatments included a physician who examined the patients and was available throughout the intervention for consultations regarding the patients' medical concerns. All treatments included two sessions on psychological aspects of chronic pain, two didactic sessions on ergonomics, and two sessions on medical aspects of chronic spinal pain. All treatments included scheduled times for visits to the WP, and work managers and rehabilitation officials were invited to participate in the discharge session at which a rehabilitation plan was agreed upon. 3 conditions were: 1) Behaviour-oriented physical therapy 2) CBT 3) Full-time behavioural medicine rehabilitation: included both the PT and CBT programs	Lasted for 4wks, conducted in groups of 4±8 participants. 2x sessions on psychological aspects of chronic pain, 2xsessions on ergonomics, 2xsessions on medical aspects of chronic spinal pain, 6x90min booster sessions over 1 year after treatment. PT intervention carried out on a part-time basis (approximately 20hrs/wk). CBT: 13±14hrs/wk	In Gr SE	WP, Other; Rehabili tation clinic	NR  NR  Medium	Yes - includes wellbein g measure s directly and not directly linked to reason for sick leave	TAU: normal routines in health care

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



Kaapa (2006)(6) Finland Musculo-skeletal: LBP	Semi-intensive MD rehabilitation  To restore physical/occupational condition, improve pain coping skills and encourage patients to take responsibility for management of back pain	Recruited from two OH centers by GPs occupational nurses, or PTs trained to identify patients eligible for the study	Rehabilitation team: PT, 2xOP (one from the Finnish Back Institute, one from an OH care center), Psych, physician specialized in the rehabilitation medicine  Groups of 7 participants, individual appointments  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 2-3xwk during home-exercise 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 wellbeing measure s not directly linked to reason for sick leave (General wellbeing)	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 deep trunk muscle activation
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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
Loisel (1997)(7)  Canada  Musculo- skeletal: subacute work- related back pain	Sherbrook model  To treat subacute work- related BP	Surveillance in worksites to detect incoming 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	MD medical, Ergonomic and 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/ managemen t  Worker, worker's supervisor, representa tives of managemen t	OM , ergonomic intervention, clinical and rehabilitation intervention; 1) Occupational intervention: began 6 weeks after 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	See details reported in intervention features	In Gr SE	WP Hospital -OP	All employers within Sherbrook area  Medium (50-249 employees)  Medium	Yes - includes wellbein g measure s linked and not directly linked to reason for sick leave	UC: received treatment from attending physician who could prescribe 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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unions

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

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

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

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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 rehabilitation physicians	Lecturers: OT, patient's WP supervisor, behaviour therapists, PT, OT, Psych, using a protocolized manual, served as lecturers  Small groups, individual meetings, WP visit  Employees recently absent due to LBP	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 rehabilitation setting	NR NR Medium	No - outcomes focus on RTW or costs	(GAGE): graded activity plus group education

Case Management only

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

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



Finnes (2017)(13)	ACT+WP intervention	via the Swedish Social Insurance Agency	ACT+WDI: 2 different therapists	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 time was 10 weeks	In SE	WP NR	NR NR High	Yes - related to reason for sick leave  Yes - includes wellbeing measure s not directly linked to reason for sick leave.	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 certification
Sweden	To promote RTW and cost-effectiveness		NR fully: sessions, meetings							
Anxiety, depression, reaction to severe stress, adjustment disorder			Employees , supervisor							

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Glasscock (2018)(14)  Denmark  Stress	Stress management intervention  To reduce perceived stress and stress symptoms and time to RTW	Patients with suspected work stress symptoms referred by GPs	Psych  Face-to- face, individual meetings with employee, group meetings between Psych, employee and supervisor  Employees , supervisor	1) CBT: early sessions involved psycho-education, Intermediary sessions included analysis and restructuring of inappropriate thoughts 2) offer of participation 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	Six x 1hr sessions of individual CBT lasting a maximum of 4 months 2) offer of meeting between Psych, patient and employer	In SE	NR	NR  NR  Medium	Yes - related to reason for sick leave	Control group: only followed questionnaires

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Lemstra (2003)(15)  Canada  Musculo- skeletal: back and upper extremity injuries	1) Early intervention 2) Occupational management  To facilitate RTW	36 health care centers in the Helsinki metropolita n area	MD assessment t, PT, Family physician  Physical assessment ts, Face-to- face  Workers	Interventions (Occupational management and early intervention) across 2 companies : Early Intervention Program: Injured workers required to immediately participate in expanded physical therapy and work-hardening programs; If not at work at 6 weeks, broader secondary or tertiary treatment protocols initiated, including psychosocial intervention; Strategies included worker rotation schedules, reduced lifting loads, and ergonomic redesign of tasks; Secondary prevention strategies: independent on-site 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	If not at work after 6 weeks early intervention, broader secondary or tertiary treatment protocols are initiated: 4 hours a day and include psychosocial intervention. Secondary treatment protocols average 31.85 treatment days. Tertiary treatment protocols averaged 48.93 days	In SE	NR - WP	NR  Medium (50-249 employees); Large (250+ employees)  Medium	No - outcome s focus on RTW or costs	Standard care

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Lindstrom (1992)  Sweden  Musculo- skeletal: low back pain	Graded activity program  To restore occupational function and facilitate RTW	Sick-listed workers referred to the study during a 2.5 year period	Regular physicians, PT, Supervisor  In-person laboratory testing, Face-to- face discussions  Blue-collar workers employed at all divisions of the Volvo Company in Goteborg, sick-listed for 6 weeks	1) Measurements of functional capacity; 2) A work-place visit; 3) Back school education; and 4) An individual, submaximal, gradually increased exercise program, with an operant-conditioning behavioural approach, based on the results of the tests and the demands from the patient's work	1 hour to complete. Measurements of functional capacity, 1hr WP visit, at 1 visit lasting about 1 hour, taught the patients individually the main content of the Swedish Back School Activity group: individually graded outpatient exercise program in the recreation department of the company, 3 days a week until RTW	In	WP, Private compan y, Own home/p rivate residenc e - Not explicitl y stated for exercise program me	Volvo Company of Goteborg  Large (250+ employees assumed)  Medium	No - outcome s focus on RTW or costs	Traditional care: recommended by physicians. Could include sick-listing with rest, analgesics, available physical therapy. Not given any placebo care 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 (2013)(16)  Denmark  Mental Health: mood disorders, neurotic, stress- related or somatoform disorders or related conditions, e.g. burnout, and no co-morbid psychotic conditions	Coordinated and Tailored Work Rehabilitation  To facilitate RTW	Recruited by the SIOs in the job centre at the initial mandatory assessment interview, within the 8 weeks of sickness absence	MDT assessment t, Psych  Face-to- face, Not clearly reported  Employees	1) Work disability screening 2) Action plan for RTW, including activities to overcome barrier and strengthen resources (e.g.; stress management training, physical exercise, contact with the WP) 3) Implementation of action plan and regular updates according to the individual's situation	Max. 12 weeks	In	WP Job centre	NR  NR  Low	No - outcome s focus on RTW or costs	CCM: Municipal SIOs obliged to assess and monitor all SA beneficiaries regularly. Interviewing beneficiaries in first 8 weeks of absence and evaluating RTW prognosis. Frequent follow-up assessments for people at high risk of prolonged absence. SIOs in charge of initiating efforts to improve or retain 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 (2006)(17)  Netherlands  Musculo- skeletal: low back pain	RTW multistage LBP management programme  To improve RTW	OPs referred 243 workers to the study from October 2000 to October 2002	47 PTs from 16 in- company and out- company physiother- apy centres. A team of specialised PTs from the Staal et al trial trained all PTs in the graded activity protocol  Face-to- face, Individual sessions  Worker	Individual, submaximal, gradually increasing exercise programme, with an operant-conditioning behavioural approach based on the findings from patient history, physical examination, functional capacity evaluation, the demands from the patient's work and patient's expectations on time to RTW	26x1hr sessions maximally, with a frequency of two sessions/wk First session took 30min longer because it included a physical examination	In SE	NR	NR  NR  Low (can't tell)	Yes - related to reason for sick leave (Pain - in favour of UC)	UC: guided throughout their sick leave according to the Dutch OP guidelines for LBP. By informing the patient's GP on interventions performed we tried to minimise co- interventions. Information on the study and the LBP management by the OP was transferred to the GP by the worker by means of a information sheet on the study and a communication form on the OPs BP management

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

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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 employe 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



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
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	Organisati ons responsibl e for carrying out interventio n. Quality control of interventio ns conducted by OHS, whose quality is certified by the Ministry of Social Affairs and Employe ment, 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 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 (Function al 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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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
Arnetz (2003)(23)  Sweden  Musculo-skeletal disorders	Early WP Intervention  To reduce disability days and improve RTW	List of sick-leave cases	FK case manager, OT or ergonomist, OH professionals  Face-to-face  Employee, employer	Visit the local branch of FK for an interview together with the FK case manager for rehabilitation and an OT/ergonomist; Approximately 1 week later, employee, FK case manager, the OT/ergonomist, and employer met at the employees WP; Ergonomic, physical stressor and psychosocial stressor assessment; Ergonomic improvements introduced; 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, and schedule for the 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	Participants deemed to benefit from vocational training were given a personal training schedule to follow. Ergonomist instructed the participant once or, when necessary, more times directly at work	In Gr SE	WP	Swedish National Insurance Agency  NR  High	No - outcomes focus on RTW or costs	Reference Group: same information about study and questionnaires as intervention group. Did not receive semi structured interview or worksite visits and improvement

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
Gice (1989)(24)  NR  Chronic pain	RTW programme  To facilitate RTW	NR	Treating physicians, Limited number of OH staff involved (Profession als involved not clearly stated and presumabl y vary depending on need)  Checklist  Employee	1) A Job analysis completed 2) Functional Capacities Evaluation: 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 the employee "on the job through nonproduction oriented tasks	Frequency, mode, time-period NR. 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.	In SE	WP	Hospital  Large (250+ employees)  High	Yes - related to reason for sick leave e.g. frequenc y of injuries	Hospital that did not use the program

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
Goorden (2014)(25)  Netherlands  Mental health: Major depressive disorder	Collaborative Care  To reduce productivity loss	Employees sick-listed between 4 and 12 weeks due to mental disorders screened for depressive symptoms	OP-care manager, guided by a web- based stepped care protocol and consultant psychiatrist  Face-to- face individually with employee, group with employee, OP and supervisor  Employee, employer	Actively monitoring employees and increasing collaboration between healthcare 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	Six-twelve sessions of PST, a WP intervention.  Elements ran parallel to each other. Every 2 weeks, treatment progress monitored, and if necessary, intensified by adding extra sessions of PST	In Gr SE	WP Other OH service - presume WP linked	NR  NR  Medium	Yes - includes wellbeing measure s not directly linked to reason for sick leave	CAU: visit company's OP in the first 6 weeks of their 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)  NS: Long-term sickness absence	Collaborative care  To facilitate RTW	Identificatio n of people on long- term sickness absence through GPs	Specially trained CMs from host organisatio ns  Sessions were delivered by telephone and supported use of a self-help handbook  Employee	Participants received handbook, the use of which would be supported by the CMs. Intervention involved core aspects of collaborative care models, including: 60min client- centred assessment by telephone, collaborative goal- setting, 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	12 week intervention, 5x45min sessions	In	Two partner organisa tions. One of our partners (OH provider ) had links with several large commercial organisa tions. To access SMEs with 250/few er employ ees), our other partner organisa tion was Leiceste r FFW	OH Assist, FFW  Large (250+ employees) 7500  High	Yes - includes wellbein g measure s directly and not directly linked to reason for sick leave (Well- being, RTW, Client health- and social- care utilisatio n)	CAU: In organisations where recruited. Variation , dependent on a number of factors 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 (2004)(27)  Canada  Musculo- skeletal: occupational back pain and work-related upper extremity disorders	Occupationally based management program  To facilitate RTW	NR As in earlier paper: Injured workers are required to immediately participate in expanded physical therapy and work- hardening programs. If not at work at 6 weeks, broader secondary or tertiary treatment protocols are initiated that last up to 4 hours a day and include psychosocial intervention	NR  Face-to- face, Self- care (Not clearly reported)  Workers	Minimal clinical intervention: Reassurance of a good prognosis and education on injury; Encouragement to resume normal activity and education on self-care; Simple exercise; Early RTW on time limited and monitored light or modified duties; Employer accommodates both work and non-work related pain; Onsite assistance provided by independent and neutral health care provider; Program initiated, monitored and reviewed by management and workers (union); Consideration for individual beliefs, attitudes and expectations; Patient responsible for own self-care; RTW based on discussion between all interested parties	NR	In Gr SE	WP Others (Not clearly reporte d)	NR Specific companies in the meat industry  Medium  NR	Yes - related to reason for sick leave	Standard care/Early intervention programme: No focus on injury prevention at worksite; physical therapy and work hardening; MD assessment at 6 weeks; After 6 weeks, expanded work hardening up to 4hrs/day; Psychology, education on hurt versus harm and case management; Employer responsible for work-related pain; no onsite healthcare; Program initiated, monitored and reviewed by WCB; Standard assessment, recommendations and treatment; RTW based on functional information; Focus on injury prevention (i.e. job rotations, ergonomic protocols)

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



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
Netterstrom (2010)(29)  Denmark  Work related stress	MD treatment programme  To increase RTW rate	Referred to Stress Clinic	Specialist in OM.  Psychiatric assessment if needed  Individually, face-to- face, group WP meeting with additional activities completed by patient outside of clinic setting  Patient	Before initial interview, participants filled out questionnaires: Basic information regarding social conditions, exercise and health, the Stress Clinic General-wellbeing questionnaire, WHO depression 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	6x1hr sessions over four months. Stress handling sessions: During four month period, min four 1- 2hr sessions. Daily relaxation exercises. Exercise 2xweek. 1+ meetings WP with study author, supervisor and employee	In Gr SE	Hospital -OP  Stress Clinic at Clinic of OM, Hiller Hospital	NR  NR  Low	Yes - related to reason for sick leave (Depression)	Control group: Referrals to Clinic of OM by GP during period from 1st January 2004 to 30th September 2004 for stress-related illness. Given same questionnaires as patients at Stress Clinic, two sessions with specialist in OM, the second four months after first

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

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

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

<p>Staal (2004)(33)</p> <p>Netherlands</p> <p>Musculo-skeletal: low back pain</p>	<p>Behaviour oriented graded activity programme</p> <p>To reduce absence from work</p>	<p>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</p>	<p>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 behavioural principles. A research PT experienced in treating patients with chronic pain in rehabilitation centers</p>	<p>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;</p> <p>OPs guide disabled workers who are absent from work through their disability period; Employed by OHS and paid for by the companies; Adhere to BP management strategies that consist of advising workers on ergonomics, prevention, and RTW schedules and advising and communicating with other</p>	<p>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</p>	<p>In SE</p>	<p>WP: OHS department of airline company in the Netherlands</p>	<p>KLM Dutch airlines Large (250+ employees) High</p>	<p>No - outcome focus on RTW or costs</p>	<p>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 guidelines of the Dutch College of GPs</p>
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instructed the PTs in three 2-hour sessions and practiced patient-therapist interactions with them

PT and participant decided on a set of general exercises and individually tailored exercises

Workers absent from work due to LBP

stakeholders (such as health care providers and representatives of the WP)

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
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 expectations on time to RTW	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

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



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
Volker (2015)(36)  Netherlands  Common Mental Health disorders	Health module embedded in Collaborative OH care (ECO) as a blended Web- based intervention  To advance RTW	Internet	OP, trained by researcher /psychiatrist  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 residence	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, involvement very low)	Yes - related to reason for sick leave	CAU: OPs provided usual sickness guidance to their employees

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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**Case Management and two other 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 to negotiate job modifications	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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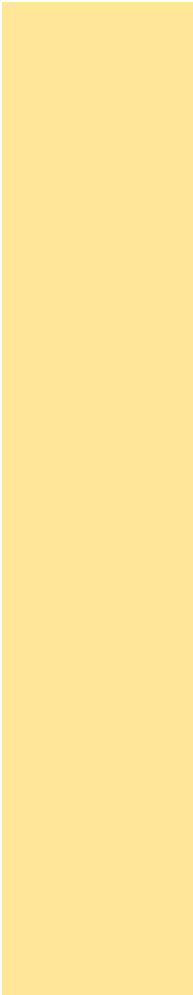
Author (Date) Country Condition of interest	Name, Aim	How accessed	Who delivers, Method of delivery, Recipient	Key features	Intensity	LOI	Setting	Name and size of employer,  Extent of WPI (High/Med/ Low)	Other outcome measure	Control Group
Haldorsen (2002); Skouen 2002; 2006;2006(38, 39)  Norway  Musculo- skeletal pain	Extensive or light MD treatment	Sickness insurance records of the municipality of Bergen and surrounding municipalities	Neurologist, 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  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

<p>Hees (2013)(40) Netherlands Mental Health: Depression</p>	<p>Adjuvant occupational therapy  To improve RTW and depressive symptoms</p>	<p>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 administered to check participant meets DSM-IV criteria for Major</p>	<p>OT, OP, Resident treating psychiatric  Mixed: group and individual sessions face-to-face, video and telephone contact  Employee, supervisor</p>	<p>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 plan; Group sessions used to prepare for meeting with employer and develop prevention plan; During</p>	<p>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"</p>	<p>In Gr SE</p>	<p>WP visit, Not clearly reported where other sessions take place</p>	<p>NR specific employer  NR  Medium</p>	<p>Yes - related to reason for sick leave (work functioning, symptomatology, health-related quality of life, and neurocognitive functioning)</p>	<p>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 psycho-education, 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 CAU protocol, he/she is required to contact the research group</p>
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Depressive  
Disorder

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

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



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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 assessment: t: OP. Discussion with: nurse, social scientist, ergonomis t, work environme nt engineer	Prior to rehabilitation co- ordination: 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 (2012)(45)  Netherlands  Mental Health: common mental disorders	Work-focused treatment  To facilitate RTW	Recruited by clinical therapists from an OP mental health center	Psychother- apists, OP, Employers  Face-to- face, individual sessions (assumed)  Employee	Work-focused CBT: regular treatment CBT plus a module focusing on work and RTW; The 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	11.4 sessions over the course of 5.7 months	In	Hospital -OP	Participants worked in a variety of 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)  Low	Yes - related to reason for sick leave	CBT: Each version of this CBT protocol consists of a basic 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 participating 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 wellbeing 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 cost-effectiveness	Workers absent > 4 weeks from their regular work for occupational BP were recruited from all WPs with more than 175 employees and <30km away from	OM physician, Ergonomist, Supervisor, Management and union representatives, 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	NR  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 chiropractors in the primary sector from seven municipalities received written information about the study to display in their waiting rooms. GPs encouraged	Team conferences: rheumatologist, 3x CMs (SW's, specialist clinical 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, supervision by supervisors  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 Including treatment satisfaction	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 (2013)(51)  Netherlands  Cancer	Hospital-Based Work Support Intervention  To enhance RTW	Treating physician or nurse informed the cancer patients of the study	Oncology nurse or medical SW  Face-to- face  Patient and employer	1) Delivering patient education and support at the hospital, as part of usual psycho-oncology care; 2) Improving communication between the treating physician and the OP; 3) Drawing up a concrete and gradual RTW plan in collaboration with the cancer patient, the OP, and the employer	Integrated patient education and support regarding RTW into the usual psycho-oncological care: 4x15min meetings. Intervention began a few weeks after the onset of the study and spread across a maximum of 14 months	In Gr SE	Hospital -OP	NR  NR  Medium	Yes - includes wellbein g measure s not directly linked to reason for sick leave	Control group



<p>Tan (2016)(52) Singapore Injury due to work related accidents</p>	<p>RTWC model of care  To facilitate early RTW</p>	<p>Shortlisted for recruitment into the study via a public general hospital Emergency Department (TTSH ED) database</p>	<p>4 RTWCs: all OTs with at least three years of clinical experience and specialized training in occupational assessment  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 MD treatment  Subjects (Singapore)</p>	<p>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 RTW. When medical condition was no longer acute, RTWC performed a brief functional capacity evaluation to determine if the subject's work ability</p>	<p>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.</p>	<p>In SE</p>	<p>General hospital -OP</p>	<p>NR (Multiple employers)  NR  Medium</p>	<p>Yes - includes wellbeing measures not directly linked to reason for sick leave (QoL)</p>	<p>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</p>
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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 pre-injury 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; 2013)(53, 54)  Netherlands  Mental health: Major depressive disorder	Collaborative care  To reduce sick leave and depressive symptoms	Workers sick list for 4 -12 weeks  screened with depression subscale of PHQ-9. Workers who reached cut- off score of 10 contacted for diagnostic interview. Those who met DSM-IV criteria for major depressive disorder and gave informed consent were included	OP, psychiatrist  NR fully - Mix of Face-to- face, manual- based and medication  Workers on the sick list for between 4 and 12 weeks	In both groups, participants received sickness guidance as usual by their company's OP.  Participants allocated to intervention group also received collaborative care: problem- solving treatment, manual- guided self-help, WP intervention and anti-depressant medication. Web-based tracking system supported the OP care manager in monitoring and adhering to the protocol. Psychiatrist available for consultation	12 sessions of PSTs	In SE	WP	NR  NR  High	Yes - related to reason for sick leave (Depress ive sympto ms)	UC: participants received sickness guidance as usual by their company's OP

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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 coordinator, PT, OT/ergonomist, Rehabilitation 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

**Case Management and two or more other professional groups**

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

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

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

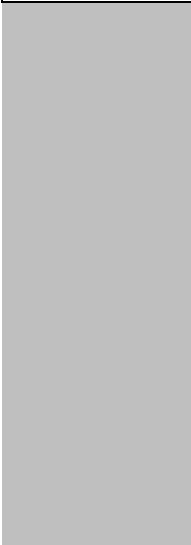
Author (Date) Country Condition of interest	Name, Aim	How accessed	Who delivers, Method of delivery, Recipient	Key features	Intensity	LOI	Setting	Name and size of employer,  Extent of WPI (High/Med/ Low)	Other outcome measure	Control Group
Jensen (2011)(59)  Denmark  Musculo- skeletal: LBP	Hospital-based MD intervention  To promote RTW, physical and mental health and reduce pain, and disability	GPs encouraged to refer patients to Research Unit	CM, rehabilitati on physician, a specialist in clinical social medicine, PT, SW, OT, GP  Face-to- face  Employee	Hospital-based MD intervention: In addition to brief clinical intervention, participants allocated to MD intervention group were scheduled for an interview with a CM within two to three workdays. Participant seen once or more times by the CM depending on need and progress. CM and the participant together made a tailored rehabilitation plan aiming at full or partial RTW. If this was deemed unrealistic, a plan toward staying on the labour market in other ways was made, for instance by jobs supported by the social system. Each case discussed several times by entire MDT including: rehabilitation physician, a specialist in clinical social medicine, PT, SW, and OT. Appointments with other members of team and meetings at the work place or at the social service center were regularly arranged	Seen 1 or more times by CM, discussed several times by MDT. Appointments with other members of team and meetings at the WP or at social service center were regularly arranged	In	NR	NR  NR  Low	Yes - includes wellbein g measure s not directly linked to reason for sick leave	Brief intervention: clinical examination and advice given by a rehabilitation physician and a physiotherapist. Relevant imaging and examinations ordered and treatment options were discussed, participants advised to resume work when possible. PT examination included standardized, mechanical evaluation, and advice on exercise was chosen accordingly. General advice given to increase physical activity and exercise, a follow-up PT visit was scheduled 2wks 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 (2012)(41)  Denmark  Musculo- skeletal: low back pain	Counselling and removing experienced WP barriers as well as at enhancing physical activity  To improve pain, function and sick leave	Patients were referred from GPs or other hospital wards	OP  Face-to- face  Patients	(1) Initial counselling session by an OP (2) WP visit if required (3) A 6-week status interview with focus on compliance and adherence to the plan made together with the OP and (4) A 3- month follow-up concluding counselling session with the OP	OP counselling: 45 min-1hr, WP visit: 1hr. Follow-up counselling session with OP lasted 45- 60 min. 6 weeks after initial counselling session with the OP, a 45 min midway interview with the patient was performed by an independent research associate	In	Hospital - inpatient Hospital -OP	NR  NR  Low/Medium	Yes - related to reason for sick leave	Brief Intervention

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

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

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

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Ntsiea (2015)(62)  South Africa  Stroke survivors	WP intervention programme  To facilitate RTW	Recruited from 2009- 2012 from  three hospitals which offer stroke rehabilitatio n services within the Gauteng province of South Africa	SW, Psych, ST, PT, OT  Face-to- face, Individual sessions  Patients aged between 18 and 60 year, < 8wks post- stroke	Week 1: Assessment for work skill using the Therapist Portable 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	1x1hr/wk per session except for work skill assessment sessions which took at least 4hr	In SE	WP	NR  NR  High	Yes - related 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	UC: All stroke survivors continued 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

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

issues resolution and goal-directedness. CM available to 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

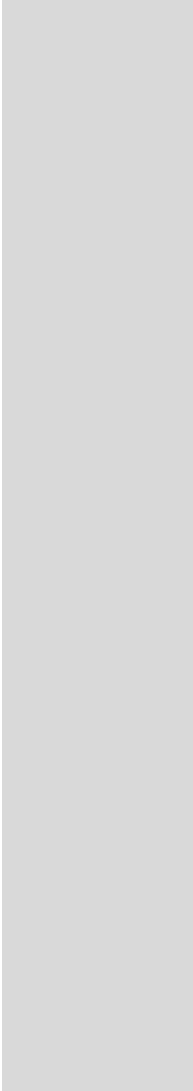


Author (Date) Country Condition of interest	Name, Aim	How accessed	Who delivers, Method of delivery, Recipient	Key features	Intensity	LOI	Setting	Name and size of employer,  Extent of WPI (High/Med/ Low)	Other outcome measure	Control Group
Schultz (2013)(64)  Canada  Musculo- skeletal: LBP	Early intervention  To enhance recovery from LBP and RTW status	Workers' compensati on (WorkSafeB C) Service Delivery Locations in urban centers in British Columbia, Canada	Case managemen t teams: composed 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	Integrated occupational, clinical, and case management approach within a biopsychosocial rehabilitation context. 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)	NR fully; Early referrals: One-to- one sessions, WP visits, Interaction with family physician	In Gr	WP CPC	NR  NR  Medium	Yes - includes wellbein g measure s directly and not directly linked to reason for sick leave	Flexible group: applied flexibly in respect to timing, intervention protocol, and number and types of interventions, in a way that was deemed suitable to individual clinical and RTW needs of workers

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			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  Face-to-	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 Patient	service centre to discuss and coordinate relevant initiatives. 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					for sick leave	

Vikane (2017)(66)	MD OP follow-up programme	Allocated to a MD OP treatment programme or a follow-up by a GP after a MD examination . Adult patients admitted consecutively to Department of Neurosurgery for TB with sustained symptoms at six to eight weeks post mild TBI	MD examination two months post-MTBI: specialist in rehabilitation medicine, neuro-Psych, OT, SW, nurse. Referral to specialists or therapists as needed. GP received report from the MD examination at baseline, and responsible for managing the patients sick-leave certificates . Concerns about RTW, employers and benefits: SW, OT or	Individual contacts and a psycho-educational 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 medical problems. For a few patients, meetings with Norwegian Labour and Welfare Service (NAV) or employer to facilitate RTW. Group sessions started 9-16wks post-injury. Focused on education and problem solving: shared experiences and problems after injury, and discussed different strategies for lessening impact and facilitating RTW. Schedule for RTW and other activities developed during first consultation within 2wks after MDT examination. 3 team members conducted additional assessment if needed; including neuropsychological assessment if needed for clarifying the diagnosis, defining the relationship to the employer or school, and identifying working	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 (cognitive, emotional and physical symptoms)	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 needed
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a nurse. Team led by specialist in rehabilitation medicine

Individual and group components. Face-to-face visits. Telephone calls

At-risk or sick-listed adult patients (16-55 years) with persistent post-concussion symptoms 2 months after mild TBI admitted consecutively to the Department of Neurosurgery for TBI

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

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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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