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Vogel N, Schandelmaier S, Zumbrunn T, Ebrahim S, de Boer WEL, Busse JW, Kunz R

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Return-to-work coordination programmes for improving return to work in workers on sick leave.
Cochrane Database of Systematic Reviews 2017, Issue 3. Art. No.: CD011618.
DOI: [10.1002/14651858.CD011618.pub2](https://doi.org/10.1002/14651858.CD011618.pub2).

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TABLE OF CONTENTS

HEADER	1
ABSTRACT	1
PLAIN LANGUAGE SUMMARY	2
SUMMARY OF FINDINGS	4
BACKGROUND	6
OBJECTIVES	6
METHODS	6
Figure 1.	9
Figure 2.	10
Figure 3.	11
RESULTS	13
Figure 4.	15
Figure 5.	16
Figure 6.	17
Figure 7.	18
DISCUSSION	19
AUTHORS' CONCLUSIONS	21
ACKNOWLEDGEMENTS	21
REFERENCES	22
CHARACTERISTICS OF STUDIES	33
DATA AND ANALYSES	67
Analysis 1.1. Comparison 1 Return-to-work outcomes, Outcome 1 Time to return to work.	69
Analysis 1.2. Comparison 1 Return-to-work outcomes, Outcome 2 Time to return to work, sensitivity analysis (low risk of bias studies only).	69
Analysis 1.3. Comparison 1 Return-to-work outcomes, Outcome 3 Cumulative sickness absence in work days.	70
Analysis 1.4. Comparison 1 Return-to-work outcomes, Outcome 4 Proportion at work at end of the follow-up.	70
Analysis 1.5. Comparison 1 Return-to-work outcomes, Outcome 5 Proportion at work at end of the follow-up, sensitivity analysis (low risk of bias studies only).	71
Analysis 1.6. Comparison 1 Return-to-work outcomes, Outcome 6 Proportion who had ever returned to work.	72
Analysis 1.7. Comparison 1 Return-to-work outcomes, Outcome 7 Proportion who had ever returned to work, sensitivity analysis (low risk of bias studies only).	73
Analysis 2.1. Comparison 2 Patient-reported outcomes, Outcome 1 Pain - scale 0 to 100 (higher score indicates improvement) - MID 10.0.	76
Analysis 2.2. Comparison 2 Patient-reported outcomes, Outcome 2 Pain - pooled RDs of workers with an improvement greater than the MID of 10.0.	77
Analysis 2.3. Comparison 2 Patient-reported outcomes, Outcome 3 Overall function - scale 0 to 100 (higher score indicates improvement) - MID 10.0.	77
Analysis 2.4. Comparison 2 Patient-reported outcomes, Outcome 4 Overall function - pooled RDs of workers with an improvement greater than the MID of 10.0.	78
Analysis 2.5. Comparison 2 Patient-reported outcomes, Outcome 5 Physical function - scale 0 to 100 (higher score indicates improvement) - MID 8.4.	78
Analysis 2.6. Comparison 2 Patient-reported outcomes, Outcome 6 Physical function - pooled RDs of workers with an improvement greater than the MID of 8.4.	79
Analysis 2.7. Comparison 2 Patient-reported outcomes, Outcome 7 Social function - scale to 0 to 100 (higher score indicates improvement) - MID 11.7.	80
Analysis 2.8. Comparison 2 Patient-reported outcomes, Outcome 8 Social function - pooled RDs of workers with an improvement greater than the MID of 11.7.	80
Analysis 2.9. Comparison 2 Patient-reported outcomes, Outcome 9 Mental function - scale to 0 to 100 (higher score indicates improvement) - MID 7.3.	80
Analysis 2.10. Comparison 2 Patient-reported outcomes, Outcome 10 Mental function - pooled RDs of workers with an improvement greater than the MID of 7.3.	81
Analysis 2.11. Comparison 2 Patient-reported outcomes, Outcome 11 Depression - scale 0 to 27 (higher score indicates deterioration) - MID 5.0.	81

Analysis 2.12. Comparison 2 Patient-reported outcomes, Outcome 12 Depression - pooled RDs of workers with an improvement greater than the MID of 5.0.	82
Analysis 2.13. Comparison 2 Patient-reported outcomes, Outcome 13 Anxiety - scale 0 to 21 (higher score indicates deterioration) - MID 4.0.	82
Analysis 2.14. Comparison 2 Patient-reported outcomes, Outcome 14 Anxiety - pooled RDs of workers with an improvement greater than the MID of 4.0.	83
ADDITIONAL TABLES	84
APPENDICES	86
CONTRIBUTIONS OF AUTHORS	88
DECLARATIONS OF INTEREST	88
SOURCES OF SUPPORT	89
DIFFERENCES BETWEEN PROTOCOL AND REVIEW	89
INDEX TERMS	89

[Intervention Review]

Return-to-work coordination programmes for improving return to work in workers on sick leave

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Editorial group: Cochrane Work Group.

Publication status and date: New, published in Issue 3, 2017.

Citation: Vogel N, Schandelmaier S, Zurnbrunn T, Ebrahim S, de Boer WEL, Busse JW, Kunz R. Return-to-work coordination programmes for improving return to work in workers on sick leave. *Cochrane Database of Systematic Reviews* 2017, Issue 3. Art. No.: CD011618. DOI: [10.1002/14651858.CD011618.pub2](https://doi.org/10.1002/14651858.CD011618.pub2).

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ABSTRACT

Background

To limit long-term sick leave and associated consequences, insurers, healthcare providers and employers provide programmes to facilitate disabled people's return to work. These programmes include a variety of coordinated and individualised interventions. Despite the increasing popularity of such programmes, their benefits remain uncertain. We conducted a systematic review to determine the long-term effectiveness of return-to-work coordination programmes compared to usual practice in workers at risk for long-term disability.

Objectives

To assess the effects of return-to-work coordination programmes versus usual practice for workers on sick leave or disability.

Search methods

We searched the Cochrane Central Register of Controlled Trials (CENTRAL; 2016, Issue 11), MEDLINE, Embase, CINAHL and PsycINFO up to 1 November 2016.

Selection criteria

We included randomised controlled trials (RCTs) that enrolled workers absent from work for at least four weeks and randomly assigned them to return-to-work coordination programmes or usual practice.

Data collection and analysis

Two review authors independently screened titles, abstracts and full-text articles for study eligibility; extracted data; and assessed risk of bias from eligible trials. We contacted authors for additional data where required. We conducted random-effects meta-analyses and used the GRADE approach to rate the quality of the evidence.

Main results

We identified 14 studies from nine countries that enrolled 12,568 workers. Eleven studies focused on musculoskeletal problems, two on mental health and one on both. Most studies (11 of 14) followed workers 12 months or longer. Risk of bias was low in 10 and high in 4 studies, but findings were not sensitive to their exclusion.

Return-to-work coordination programmes for improving return to work in workers on sick leave (Review)

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We found no benefits for return-to-work coordination programmes on return-to-work outcomes.

For short-term follow-up of six months, we found no effect on time to return to work (hazard ratio (HR) 1.32, 95% confidence interval (CI) 0.93 to 1.88, low-quality evidence), cumulative sickness absence (mean difference (MD) -16.18 work days per year, 95% CI -32.42 to 0.06, moderate-quality evidence), the proportion of participants at work at end of the follow-up (risk ratio (RR) 1.06, 95% CI 0.86 to 1.30, low-quality evidence) or on the proportion of participants who had ever returned to work, that is, regardless of whether they had remained at work until last follow-up (RR 0.87, 95% CI 0.63 to 1.19, very low-quality evidence).

For long-term follow-up of 12 months, we found no effect on time to return to work (HR 1.25, 95% CI 0.95 to 1.66, low-quality evidence), cumulative sickness absence (MD -14.84 work days per year, 95% CI -38.56 to 8.88, low-quality evidence), the proportion of participants at work at end of the follow-up (RR 1.06, 95% CI 0.99 to 1.15, low-quality evidence) or on the proportion of participants who had ever returned to work (RR 1.03, 95% CI 0.97 to 1.09, moderate-quality evidence).

For very long-term follow-up of longer than 12 months, we found no effect on time to return to work (HR 0.93, 95% CI 0.74 to 1.17, low-quality evidence), cumulative sickness absence (MD 7.00 work days per year, 95% CI -15.17 to 29.17, moderate-quality evidence), the proportion of participants at work at end of the follow-up (RR 0.94, 95% CI 0.82 to 1.07, low-quality evidence) or on the proportion of participants who had ever returned to work (RR 0.95, 95% CI 0.88 to 1.02, low-quality evidence).

We found only small benefits for return-to-work coordination programmes on patient-reported outcomes. All differences were below the minimal clinically important difference (MID).

Authors' conclusions

Offering return-to-work coordination programmes for workers on sick leave for at least four weeks results in no benefits when compared to usual practice. We found no significant differences for the outcomes time to return to work, cumulative sickness absence, the proportion of participants at work at end of the follow-up or the proportion of participants who had ever returned to work at short-term, long-term or very long-term follow-up. For patient-reported outcomes, we found only marginal effects below the MID. The quality of the evidence ranged from very low to moderate across all outcomes.

PLAIN LANGUAGE SUMMARY

Effect of return-to-work coordination programmes for workers on sick leave

What is the aim of this review?

The aim of this review was to compare the effect of return-to-work coordination programmes to usual practice in workers on sick leave or disability.

Key messages

We found that return-to-work coordination programmes had no effects compared to usual practice on return-to-work outcomes. These outcomes were time to return to work, cumulative sickness absence, the proportion of workers at work at the end of the follow-up and the proportion who had ever returned to work. We found no benefits in the short term, long term or very long term.

We found only small benefits in patient-reported outcomes. All these effects were smaller than the so-called minimal clinically important difference.

What was studied in the review?

Returning long-term sick-leave workers back to work is important for society, employers and certainly for workers themselves. Possible interventions for this purpose are return-to-work coordination programmes, also described as case management or collaborative care. These programmes involve a number of health professionals collaborating with the workers to help them overcome their incapacity to work. Return-to-work coordination programmes vary in duration and design. In general, they include an assessment of the obstacles impeding a return to work and an individualised plan to eliminate barriers and return workers to employment. Treatment components may include counselling, physical or occupational therapy, and specialist care.

Return-to-work coordination programmes require substantial resources. However, it is uncertain how effective they are.

What are the main results of the review?

We included 14 randomised controlled trials involving 12,568 workers with musculoskeletal or mental health problems. Workers had to be on sick leave for a minimum of four weeks.

At short-term follow-up of six months, return-to-work coordination programmes may make little or no difference to time to return to work (low-quality evidence), probably make little or no difference to cumulative sickness absence (moderate-quality evidence), may make little or no difference to the proportion of participants at work at end of the follow-up (low-quality evidence). Finally, we are uncertain whether

the programmes improve the proportion of participants who had ever returned to work as the quality of the evidence has been assessed as very low.

At long-term follow-up of 12 months, return-to-work coordination programmes may make little or no difference to time to return to work, cumulative sickness absence or the proportion of participants at work at end of the follow-up (all low-quality evidence) and they probably make little or no difference to the proportion of participants who had ever returned to work (moderate-quality evidence).

At very long-term follow-up of longer than 12 months, return-to-work coordination programmes may make little or no difference to time to return to work (low-quality evidence), probably make little or no difference to cumulative sickness absence (moderate-quality evidence), and may make little or no difference to the proportion of participants at work at end of the follow-up and to the proportion of participants who had ever returned to work (both low-quality evidence).

We found only small benefits in patient-reported outcomes including pain, ability to function, depression and anxiety. All these effects were smaller than the so-called minimal clinically important difference.

As we found so much low- and very low-quality evidence it means that new research is likely to change the results.

How up-to-date is this review?

We searched scientific literature until 1 November 2016.

SUMMARY OF FINDINGS

Summary of findings for the main comparison. Return to work coordination programmes compared to usual practice for improving return to work in workers on sick leave

Return to work coordination programmes compared to usual practice for improving return to work in workers on sick leave

Patient or population: workers on sick leave

Intervention: return-to-work coordination programmes

Comparison: usual practice

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Nº of participants (studies)	Quality of the evidence (GRADE)
	Risk with usual practice	Risk with return-to-work co-ordination programmes			
Time to return to work - short-term follow-up: 6 months	—	—	HR 1.32 (0.93 to 1.88)	161 (2 RCTs)	⊕⊕○○ Low ^{a,b}
Time to return to work - long-term follow-up: 12 months	—	—	HR 1.25 (0.95 to 1.66)	1935 (6 RCTs)	⊕⊕○○ Low ^{b,c}
Time to return to work - very long-term follow-up: more than 12 months	—	—	HR 0.93 (0.74 to 1.17)	474 (2 RCTs)	⊕⊕○○ Low ^{a,b}
Cumulative sickness absence in work days - short-term follow-up: 6 months	The mean cumulative sickness absence was 79.14 work days	The mean cumulative sickness absence in the intervention group was 16.18 work days lower (32.42 lower to 0.06 higher)	—	113 (1 RCT)	⊕⊕⊕⊕ Moderate ^b
Cumulative sickness absence in work days - long-term follow-up: 12 months	The mean cumulative sickness absence was 144 work days	The mean cumulative sickness absence in the intervention group was 14.84 work days lower (38.56 lower to 8.88 higher)	—	1339 (6 RCTs)	⊕⊕○○ Low ^{b,c}
Cumulative sickness absence in work days - very long-term follow-up: more than 12 months	The mean cumulative sickness absence was 466 work days	The mean cumulative sickness absence in the intervention group was 7 work days higher	—	8052 (1 RCT)	⊕⊕⊕⊕ Moderate ^b

	(15.17 lower to 29.17 higher)				
Proportion at work at end of the follow-up - short-term follow-up: 6 months	53 per 100	56 per 100 (46 to 69)	RR 1.06 (0.86 to 1.30)	1388 (5 RCTs)	⊕⊕○○ Low ^{a,b}
Proportion at work at end of the follow-up - long-term follow-up: 12 months	60 per 100	64 per 100 (59 to 69)	RR 1.06 (0.99 to 1.15)	3061 (5 RCTs)	⊕⊕○○ Low ^{a,b}
Proportion at work at end of the follow-up - very long-term follow-up: more than 12 months	53 per 100	49 per 100 (43 to 56)	RR 0.94 (0.82 to 1.07)	815 (2 RCTs)	⊕⊕○○ Low ^{a,b}
Proportion who had ever returned to work - short-term follow-up: 6 months	57 per 100	49 per 100 (36 to 68)	RR 0.87 (0.63 to 1.19)	675 (4 RCTs)	⊕○○○ Very low ^{a,b,c}
Proportion who had ever returned to work - long-term follow-up: 12 months	69 per 100	71 per 100 (67 to 75)	RR 1.03 (0.97 to 1.09)	3822 (8 RCTs)	⊕⊕⊕○ Moderate ^b
Proportion who had ever returned to work - very long-term follow-up: more than 12 months	75 per 100	71 per 100 (66 to 77)	RR 0.95 (0.88 to 1.02)	938 (3 RCTs)	⊕⊕○○ Low ^{a,b}

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **RR:** risk ratio; **OR:** odds ratio.

GRADE Working Group grades of evidence

High quality: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate quality: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low quality: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.

Very low quality: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

^a Downgraded 1 level for risk of bias (attrition bias, reporting bias).

^b Downgraded 1 level for imprecision (confidence interval encloses negative and positive effect or population size less than 400).

^c Downgraded 1 level for inconsistency (substantial heterogeneity).

BACKGROUND

Description of the condition

Most industrialised countries recognise long-term sick leave as an increasing public health problem ([Canadian Human Rights Commission 2007](#); [Henderson 2005](#); [OECD 2010](#)), which affects society through loss of productivity and work disability claims ([Arends 2012](#)). [NICE 2009](#) defines long-term sick leave as an absence from work for at least four weeks.

Statistics from the Organisation for Economic Co-operation and Development (OECD) countries show that 5.7% of the working age population (20 to 64 years of age) received disability benefits in 2010 ([OECD 2014 a](#)), ranging from 0.6% to 10.4% across countries. Mental health problems were the leading causes for sick leave, followed by musculoskeletal disorders ([Arends 2012](#); [Henderson 2005](#)). For workers, long-term sick leave implies health risks as well as occupational, social and economic deprivation ([Henderson 2005](#); [OECD 2003](#)).

The duration of sick leave and the likelihood to return to work have an inverse relationship: being sick-listed for six months or longer resulted in an 80% chance of remaining off work for five years ([Waddell 2006](#)). Once on disability benefits, people tend not to go back to work; they rather move onto another benefit or retire ([OECD 2010](#)).

Description of the intervention

To limit long-term sick leave and associated consequences, insurers, healthcare providers and employers may provide special programmes that facilitate workers' return. These programmes run under a variety of names, such as case management, integrated or collaborative care, or return-to-work coordination programmes. They differ widely in content, set-up and duration, and their components include a variety of interventions, such as occupational therapy, physiotherapy, psychological therapy, medical interventions, workplace ergonomics, education and social therapy. All components are individually adjusted to the worker's needs.

Despite increasing popularity, there is limited evidence regarding the short- and long-term effectiveness and cost-effectiveness of return-to-work programmes ([Berchtold 2006](#); [Hofmarcher 2007](#); [NICE 2009](#); [Palmer 2012](#)).

How the intervention might work

Return-to-work 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 ([Craig 2013](#)).

Possible barriers are:

- physical (e.g. a painful joint due to osteoarthritis, chronic obstructive lung disease);
- mental (e.g. low resilience due to depression or a personality disorder);
- functional (e.g. low endurance, minor flexibility to adapt to new situations, restricted range of motion);

- workplace-related (elements of the workplace may be unsuitable, e.g. lack of job autonomy); and
- psychosocial (e.g. interpersonal problems with the supervisor, challenging family situation, burdening financial situation).

Early multidisciplinary interventions seem appropriate and promising ways to return people to work ([Department for Work and Pensions 2013](#); [Hoefsmits 2012](#)).

Effective return-to-work 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 return-to-work coordinator plays a pivotal role by ensuring communication and a joint understanding regarding expectations for all stakeholders ([IWH 2007](#)). Face-to-face contact between the worker and the return-to-work coordinator favours an optimal selection and implementation of the return-to-work interventions and intensifies the worker's accountability to the programme.

Why it is important to do this review

Long-term sick leave results in serious consequences for individuals and other stakeholders as well as for the society at large. Return-to-work coordination programmes may respond to this challenge, but they represent complex and costly interventions requiring substantial human and financial resources. The sparse and heterogeneous evidence on their effectiveness calls for an investigation into their impact.

We published a former version of this review ([Schandelmaier 2012](#)). The importance and timeliness of the subject required an update with a new search for relevant studies.

OBJECTIVES

To assess the effects of return-to-work coordination programmes versus usual practice for workers on sick leave or disability.

METHODS

Criteria for considering studies for this review

Types of studies

We included randomised controlled trials (RCTs) irrespective of their language of publication. We included studies reported as full text, those published as abstract only and unpublished data.

Types of participants

We included studies in adults of working age (16 to 65 years) who:

- were on full- or part-time sick leave continuously for at least four weeks or were receiving long-term disability benefits; and
- were employed at the time of sick-listing.

At least 80% of the participants in a study had to fulfil both criteria. We included studies irrespective of the cause of sick leave or disability, the setting or the benefit scheme (e.g. private or government provider).

Types of interventions

Experimental intervention

We included trials comparing return-to-work coordination programmes to usual practice. No uniform definition of return-to-work coordination programmes exists. We defined such programmes as follows.

- The objective is to promote return to work.
- The return-to-work coordinator(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 return-to-work plan.
- The implementation of the return-to-work plan is managed by the return-to-work coordinator(s).

In our definition, 'individually tailored' implies a personalised set of actions directed at the worker, the employer, the workplace, or other factors in the return-to-work 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 return-to-work plan had to allow for more than one possible action.

We included studies where public or private insurers offered return-to-work coordination programmes to people on sick leave due to impaired health ('in-house programmes'). In addition, we considered return-to-work coordination programmes that could be contracted by insurers ('commissioned programmes'). We assumed that both have comparable effects as long as they share the goal of returning to work.

We excluded employer-initiated return-to-work coordination programmes. Such programmes encounter fewer barriers in implementing workplace-directed interventions than insurers or third-party return-to-work coordinators and are typically not available for smaller companies.

Control intervention

We classified the level of support for the control groups as low, moderate or high. To get a better understanding of what usual practice in the different countries entailed, we contacted all authors and asked them to provide additional information.

We classified usual practice by a healthcare provider (e.g. a general practitioner or a physical therapist or other generally accessible rehabilitation professionals) as a low level of support. We classified conventional case management (e.g. as provided by the municipality or the insurer), usual sickness guidance by an occupational practitioner or a brief clinical intervention as a moderate level of support. We classified a clinical intervention in addition to a conventional case management as a high level of support.

Types of outcome measures

Primary outcomes

Our primary outcome of interest was return to work, which was measured in studies using several descriptive outcomes. We included studies that reported at least one of the following.

- Time to return to work.

- Cumulative sickness absence.
- Proportion at work at end of the follow-up.
- Proportion ever returned to work.

Since almost all of the included studies reported on the outcome 'proportion of participants who had ever returned to work', we added it post hoc. This outcome captures workers who returned to work (for a defined time span) during the follow-up time, regardless of whether they stayed at work or took sick leave again.

We further considered whether the individual returned to:

- full-time or part-time work; and
- the former or a modified occupation.

Secondary outcomes

If included studies provided data on patient-reported outcomes, we collected the following.

- Physical, mental, social or overall functioning.
- Pain, depression and anxiety.
- Quality of life.
- Satisfaction of patients, employers, and social insurance organisations.

Search methods for identification of studies

Electronic searches

We conducted a systematic literature search to identify published and unpublished trials that could be eligible for inclusion in this review. We developed a search strategy for PubMed and then adapted it for use in the other electronic databases ([Appendix 1](#); [Appendix 2](#); [Appendix 3](#); [Appendix 4](#); [Appendix 5](#)). In order to avoid language bias, we used our international network to assess all non-English language papers for potential inclusion in our review.

We searched the following electronic databases from their inception to 1 November 2016.

- MEDLINE via PubMed (including the 'related citations' feature).
- Embase.
- CINAHL.
- PsycINFO.
- Cochrane Central Register of Controlled Trials (CENTRAL; 2016, Issue 11).

Searching other resources

We scanned the bibliographies of all eligible trials and other relevant publications, including reviews and meta-analyses. For relevant publications that were listed in the Web of Science, we scanned citing articles with the 'times cited' feature.

Data collection and analysis

Selection of studies

Three authors (SS, NV, RK) independently screened the titles and abstracts of all identified citations and acquired full-text articles that at least one author deemed potentially eligible. Subsequently, two authors (SS, NV) independently assessed the full-text articles for eligibility; we resolved disagreements through discussion or by arbitration with a third author (RK). We identified and excluded

duplicates and collated multiple reports of the same study so that each study rather than each report was the unit of interest. For details of excluded studies see [Characteristics of excluded studies](#).

We recorded the selection process to complete a PRISMA flow diagram ([Moher 2009](#)). For details see [Figure 1](#).

Figure 1. PRISMA Study flow diagram

Data extraction and management

Using a standardised form, we extracted the following data.

- Characteristics of study design.
- Setting.
- Participants.
- Study eligibility criteria.
- Intervention details.
- Outcomes.
- Funding sources and stated conflicts of interest.

Two pairs of authors (SS, JB, SE, NV) independently extracted data and resolved disagreement by discussion or by arbitration with a third author (RK). If information was insufficient or uncertain for data extraction, we contacted the study authors for clarification.

One author (NV) transferred data into the Cochrane statistical software, Review Manager 5 (RevMan 2014); another author (TZ) cross-checked the transferred data.

Assessment of risk of bias in included studies

Two authors (SS, NV) independently assessed all included studies for risk of bias using the Cochrane tool for assessing risk of bias (Higgins 2011). We referred to a third author (RK) to resolve disagreements. We evaluated the following risk of bias domains (Higgins 2011).

- Sequence generation.
- Allocation concealment.
- Blinding.
- Incomplete outcome data.

- Selective outcome reporting.
- Other sources of bias.

We further assessed cluster-RCTs for recruitment bias and appropriate statistical analysis (Higgins 2011).

We modified the Cochrane tool for assessing risk of bias (Higgins 2011): the response options of 'definitely yes' and 'probably yes' conferred low risk of bias, while the response options of 'definitely no' and 'probably no' conferred high risk of bias (Akl 2012). We graded each potential source of bias as high, low or unclear and provided a quote from the study report together with a justification for our judgment in the 'Risk of bias' table. We considered random sequence generation, allocation concealment, selective outcome reporting and incomplete outcome data to be key domains. We judged a study to be at high risk of bias when we judged one or more key domains to be at high risk of bias. Conversely, we judged a study to have a low risk of bias when we judged low risk of bias for all key domains. We summarised the risk of bias judgments across different studies for each of the domains listed.

We assessed blinding of outcome assessment and completeness of data for return-to-work outcomes and patient-reported outcomes separately. We judged studies to be at high risk of attrition bias if they had more than 15% losses to follow-up for return-to-work outcomes.

We summarised and presented the results of our risk of bias assessment in Figure 2 and Figure 3 as described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). Where information on risk of bias related to unpublished data or correspondence with the author, we noted this in the 'Risk of bias' tables.

Figure 2. Risk of bias graph: review author's judgements about each risk of bias item presented as percentages across all included studies.

Figure 3. Risk of bias summary: review authors' judgements about each risk of bias item for each included study.

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Bültmann 2009	+	+	-	+	+	?	+
Davey 1994	+	+	-	+	+	?	+
Donceel 1999	+	?	-	-	+	?	+
Feuerstein 2003	+	-	-	-	-	-	+
Jensen 2012	+	+	-	+	+	+	+
Lambeek 2010	+	+	-	+	+	+	+
Lindh 1997	?	?	-	+	-	+	?
Myhre 2014	+	+	-	+	+	?	+
Purdon 2006	+	+	-	-	-	?	-
Rosignol 2000	+	+	-	+	+	?	-
Scholz 2015	+	+	-	+	+	?	+
Stapelfeldt 2011	+	+	-	+	+	+	+
Van der Feltz-Cornelis 2010	+	+	-	+	-	-	+
Volker 2015	+	+	-	+	+	+	-

Assessment of bias in conducting the systematic review

We conducted the review according to our published protocol (Vogel 2015), reporting any deviations in the section [Differences between protocol and review](#).

Measures of treatment effect

We entered outcome data for each study into the data tables in [RevMan 2014](#) to calculate the treatment effects. We expressed dichotomous outcomes as risk ratios (RRs) and time-to-event outcomes as hazard ratios (HRs). We calculated absolute effects through risk differences (RDs). We recalculated sickness absence days in work days where necessary. For patient-reported outcomes presented in different units, we transformed them into units on the scale of the most familiar instrument before pooling mean differences (MDs) (Thorlund 2011).

We used the minimal clinically important difference (MID) to improve the interpretation of patient-reported outcomes (Johnston 2010). If studies reported only effect estimates and their 95% confidence intervals (CIs) or standard errors, we entered these data into [RevMan 2014](#) using the generic inverse variance method. If studies with time-to-event outcomes failed to report HRs, we extracted individual patient data from survival curves, verified the extracted data by comparing the original plot with the plot derived from the extracted data, and then calculated the HRs and associated 95% CIs.

We considered longer-lasting return to work to be the most important outcome. If we detected varying measures of return to work, we concentrated on the one that expressed long-term outcome best. If available, we focused on outcomes with at least four weeks of lasting return to work, even if a longer interval might be more meaningful.

Unit of analysis issues

In the case of cluster-RCTs, we followed the methods in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). For studies that employed a cluster-randomised design and that reported sufficient data to be included in the meta-analysis but did not make an allowance for the design effect, we calculated the design effect based on a fairly large assumed intracluster correlation (ICC) of 0.10. We based this assumption of 0.10 being a realistic estimate by analogy on studies about implementation research (Campbell 2001).

Dealing with missing data

We contacted study authors to obtain data missing from their reports when necessary. If we could not obtain essential information within a reasonable time, we judged the respective risk of bias domain to be unclear. If we could not obtain numerical outcome data such as standard deviations (SD) or correlation coefficients, we calculated them from other available statistics such as P values according to the methods described in Higgins 2011. In case of missing values, we analysed the available data without imputations as a complete case analysis (Higgins 2011).

Assessment of heterogeneity

We assessed clinical homogeneity of the results of the included studies based on similarity of intervention, participants, outcome and follow-up. We followed the algorithm provided by (Verbeek

2012). We considered participants as similar when they were of working age and on sick leave for at least four weeks. In the presence of statistical heterogeneity, we investigated differences between workers with musculoskeletal diseases and workers with mental health problems.

We considered interventions as similar when they were multidisciplinary return-to-work interventions tailored to the needs of the sick-listed worker (as stated in [Criteria for considering studies for this review](#)). We considered outcome measures as similar when they reported on time to return to work, cumulative sickness absence, proportion of participants at work at a specific time point or proportion who had ever returned to work. We regarded short-term (up to 6 months), long-term (6 to 12 months) and very long-term (longer than 12 months) follow-up times as different.

We assessed heterogeneity by visual inspection of forest plots and by using the I^2 statistic. We then quantified the degree of heterogeneity as follows (Higgins 2011).

- 0% to 40% might not be important.
- 30% to 60% may represent moderate heterogeneity.
- 50% to 90% may represent substantial heterogeneity.
- 75% to 100% considerable heterogeneity.

In the presence of substantial heterogeneity and sufficient number of studies, we conducted subgroup analyses as described below ([Subgroup analysis and investigation of heterogeneity](#)).

Assessment of reporting biases

We tried to prevent reporting bias by searching across multiple databases and by including articles irrespective of their language. If we detected multiple articles on the same study, we extracted data only once. We assessed publication bias by funnel plots (Higgins 2011).

Data synthesis

We pooled data using the generic inverse variance method in [RevMan 2014](#) according to Higgins 2011. If sufficient data were available, we performed a meta-analysis. Since it is implausible that the true effect is the same in all considered studies, we considered a random-effects model more appropriate for meta-analyses. All our estimates include 95% CIs. For analyses not available within [RevMan 2014](#), we used the R software (R 2015).

We expressed pooled effects of dichotomous outcomes as RRs and time-to-event outcomes as HRs. We calculated illustrative RDs by using the median baseline risk. We pooled effects of continuous outcomes as differences between group means (MDs). For patient-reported outcomes, we calculated the proportion of patients who experienced an improvement greater than the MID ('substantial improvement') and pooled the RD (Thorlund 2011). If available, we used baseline-adjusted effect estimates.

Subgroup analysis and investigation of heterogeneity

We planned to conduct subgroup analyses to detect different effects if we found at least 10 studies in a meta-analysis. We specified the following a priori hypotheses for possible subgroup differences.

1. Methodology: trials with high risk of bias show larger effects.
2. Intervention: effects increase with return-to-work coordination programmes starting earlier (within three months) in the course of sick leave.
3. Intervention: effects increase with the involvement of the employers.
4. Controls: effects decrease with the intensity of support for the control group (ranging from no support to other form of return-to-work coordination programmes).

We were unable to carry out subgroup analyses; no meta-analyses included 10 or more studies.

Sensitivity analysis

We performed a sensitivity analysis to test the robustness of our results by omitting studies with a high risk of bias.

Reaching conclusions

We based our conclusions only on findings from the quantitative synthesis of included studies for this review. We considered the different return-to-work outcomes as measurements of the same concept and based our conclusion on all of them. We avoided making recommendations for practice based on more than just the evidence, such as values and available resources. Our implications for research suggest priorities for future research and outline the remaining uncertainties in the area.

Summary of findings table

We used the GRADE approach as described in [Higgins 2011](#) and present the quality of the evidence in the [Summary of findings for the main comparison](#).

RESULTS

Description of studies

Results of the search

We identified 14 relevant RCTs and included them in our meta-analyses. [Figure 1](#) illustrates the details of the search.

Included studies

Study design

All of the 14 included studies were RCTs with a parallel design. Three studies were cluster-RCTs ([Donceel 1999](#); [Van der Feltz-Cornelis 2010](#); [Volker 2015](#)). See [Characteristics of included studies](#) for further details.

Participants

We included 12,568 participants, 30% of whom were women. The range of participants per study was 50 to 8050 with a median of 220 participants. The mean age was 41.8 years. Eleven studies enrolled workers with musculoskeletal health problems, two enrolled workers with mental health problems ([Van der Feltz-Cornelis 2010](#); [Volker 2015](#)), and one study investigated both ([Purdon 2006](#)). Twelve studies included only employed participants, [Davey 1994](#) included 96% employed participants, and [Scholz 2015](#) included 93% employed participants. Workers in all studies were on sick leave: in seven studies they were on partial or full sick leave ([Feuerstein 2003](#); [Jensen 2012](#); [Lambeek 2010](#); [Myhre 2014](#); [Scholz](#)

[2015](#); [Stapelfeldt 2011](#); [Volker 2015](#)), while the rest of the studies included only workers on full sick leave. In five studies the length of work absence was shorter than three months ([Bültmann 2009](#); [Donceel 1999](#); [Jensen 2012](#); [Rossignol 2000](#); [Stapelfeldt 2011](#)); in four studies, longer than three months ([Davey 1994](#); [Lambeek 2010](#); [Lindh 1997](#); [Myhre 2014](#)); in three studies, from 1 to 6 months ([Feuerstein 2003](#); [Purdon 2006](#); [Volker 2015](#)); and in one study, from 1 to 11 months ([Van der Feltz-Cornelis 2010](#)). [Scholz 2015](#) did not provide data, but the inclusion of participants with severe accidents made a sick leave duration of at least four weeks plausible. For further details see [Characteristics of included studies](#).

Setting

Recruitment procedures took place from June 1995 to August 2011; this information was missing in four studies. Most of the studies took place in Europe, in: Belgium ([Donceel 1999](#)), Denmark ([Bültmann 2009](#); [Jensen 2012](#); [Stapelfeldt 2011](#)), the Netherlands ([Lambeek 2010](#); [Van der Feltz-Cornelis 2010](#); [Volker 2015](#)), Norway ([Myhre 2014](#)), Sweden ([Lindh 1997](#)), Switzerland ([Scholz 2015](#)), and the UK ([Davey 1994](#); [Purdon 2006](#)). [Rossignol 2000](#) was in Canada, and [Feuerstein 2003](#) was in the USA. For details of the recruitment procedures see [Characteristics of included studies](#).

Experimental intervention

Although the return-to-work coordination programmes differed in structure, components, team members and duration, all included a tailored, multidisciplinary, coordinated intervention with an individual assessment and a return-to-work plan.

A variety of specialists were involved in the interventions, most often an occupational physician, a general practitioner or physician, a mental health specialist, a physical or occupational therapist, and a social worker. For further information see [Table 1](#) and [Characteristics of included studies](#). The duration of the return-to-work coordination programmes varied substantially. Some studies delivered the programme tailored to the worker's needs, others until successful return to work or for a defined period. Heterogeneous reporting precluded a descriptive summary (e.g. total number of weeks, median number of weeks, range of weeks). For details see [Characteristics of included studies](#).

The study coordinator contacted and enlisted the involvement of the employer in eight studies ([Bültmann 2009](#); [Feuerstein 2003](#); [Jensen 2012](#); [Lambeek 2010](#); [Myhre 2014](#); [Purdon 2006](#); [Scholz 2015](#); [Stapelfeldt 2011](#)). One study reported no direct contact but described workplace accommodations as needed ([Rossignol 2000](#)). In five studies the employer was not involved in the intervention.

In five studies the intervention started less than three months after inclusion ([Bültmann 2009](#); [Donceel 1999](#); [Jensen 2012](#); [Rossignol 2000](#); [Stapelfeldt 2011](#)), while in four studies it started later than three months ([Davey 1994](#); [Lambeek 2010](#); [Lindh 1997](#); [Myhre 2014](#)). In four studies the start of the intervention ranged from one to six months after inclusion, while the final study did not provide information.

Control intervention

We classified five studies as using a control intervention with a low level of support ([Davey 1994](#); [Donceel 1999](#); [Lindh 1997](#); [Purdon 2006](#); [Rossignol 2000](#)), while seven provided a moderate level of support ([Bültmann 2009](#); [Feuerstein 2003](#); [Lambeek 2010](#); [Myhre](#)

2014; Scholz 2015; Van der Feltz-Cornelis 2010; Volker 2015), and two studies offered a high level of support (Jensen 2012; Stapelfeldt 2011).

One study performed at two sites used the pre-existing intervention at each site: either a brief or a comprehensive multidisciplinary intervention (Myhre 2014). However, authors showed similar effects for these treatment programmes.

Outcomes

Primary outcomes

Nine studies retrieved the primary outcomes on return to work from administrative data (Bültmann 2009; Feuerstein 2003; Jensen 2012; Lindh 1997; Myhre 2014; Rossignol 2000; Scholz 2015; Stapelfeldt 2011; Volker 2015). Two studies used a combination of administrative data and self-report (Lambeek 2010; Van der Feltz-Cornelis 2010). Other studies used a semi-structured interview in combination with information from claims files (Davey 1994), a standardised questionnaire (Donceel 1999), or a face-to-face survey (Purdon 2006).

Nine studies reported on time to return to work (Donceel 1999; Feuerstein 2003; Jensen 2012; Lambeek 2010; Myhre 2014; Rossignol 2000; Stapelfeldt 2011; Van der Feltz-Cornelis 2010; Volker 2015), 7 studies reported on cumulative sickness absence (Bültmann 2009; Jensen 2012; Lambeek 2010; Myhre 2014; Scholz 2015; Stapelfeldt 2011; Volker 2015), 7 studies reported on the proportion of participants at work at end of the follow-up (Bültmann 2009; Davey 1994; Donceel 1999; Jensen 2012; Lindh 1997; Purdon 2006; Van der Feltz-Cornelis 2010), and 12 studies reported on the proportion of participants who had ever returned to work (Davey 1994; Donceel 1999; Feuerstein 2003; Jensen 2012; Lambeek 2010; Lindh 1997; Myhre 2014; Purdon 2006; Rossignol 2000; Stapelfeldt 2011; Van der Feltz-Cornelis 2010; Volker 2015).

Definitions of return to work varied: eight studies used full-time return to work (i.e. suspension of sickness benefits) (Donceel 1999; Feuerstein 2003; Jensen 2012; Lambeek 2010; Myhre 2014; Purdon 2006; Stapelfeldt 2011; Van der Feltz-Cornelis 2010), and four studies applied full and partial return to work (Davey 1994; Lindh 1997; Rossignol 2000; Scholz 2015). Two studies reported data on full and partial return to work separately (Bültmann 2009; Volker 2015).

Six studies reported successful return to work without additional specification (Bültmann 2009; Davey 1994; Donceel 1999; Feuerstein 2003; Lindh 1997; Scholz 2015). Eight studies defined lasting return to work for at least two days (Rossignol 2000), two weeks (Purdon 2006), four weeks (Jensen 2012; Lambeek 2010; Stapelfeldt 2011; Van der Feltz-Cornelis 2010; Volker 2015), or five weeks (Myhre 2014).

Secondary outcomes

Included studies also collected data on patient-reported outcomes. We analysed secondary outcomes on pain (Bültmann 2009; Feuerstein 2003; Jensen 2012; Lambeek 2010; Myhre 2014; Purdon 2006; Rossignol 2000), overall function (Bültmann 2009; Jensen 2012; Lambeek 2010; Myhre 2014; Purdon 2006; Rossignol 2000), physical function (Feuerstein 2003; Jensen 2012; Lambeek 2010; Purdon 2006; Rossignol 2000), mental function (Feuerstein 2003; Jensen 2012; Purdon 2006), social function (Jensen 2012; Purdon 2006), depression (Davey 1994; Myhre 2014; Van der Feltz-Cornelis

2010; Volker 2015), and anxiety (Davey 1994; Myhre 2014; Volker 2015).

We found insufficient data for meta-analyses on quality of life and on the satisfaction of workers, employers or social insurance organisations.

Follow-up

We regarded a follow-up of up to 6 months as short-term (Davey 1994; Rossignol 2000; Van der Feltz-Cornelis 2010); between 6 and 12 months, as long-term (Bültmann 2009; Donceel 1999; Lambeek 2010; Myhre 2014; Purdon 2006; Stapelfeldt 2011; Volker 2015); and more than 12 months, as very long-term (Feuerstein 2003 (16 months); Jensen 2012 (24 months); Lindh 1997 (60 months); Scholz 2015 (72 months)). Duration of follow-up times ranged from 3 to 72 months.

Excluded studies

We assessed 183 full text articles and excluded 155 for not meeting our inclusion criteria. See [Characteristics of excluded studies](#) for details.

Risk of bias in included studies

Risk of bias varied across studies (Figure 2). We judged 10 studies to be at low risk of bias (Bültmann 2009; Davey 1994; Donceel 1999; Jensen 2012; Lambeek 2010; Myhre 2014; Rossignol 2000; Scholz 2015; Stapelfeldt 2011; Volker 2015). We judged four studies to be at high risk of bias based on lack of allocation concealment (Feuerstein 2003), incomplete outcome data (Feuerstein 2003; Lindh 1997; Purdon 2006; Van der Feltz-Cornelis 2010), and selective outcome reporting (Feuerstein 2003; Van der Feltz-Cornelis 2010). See Figure 3 for details.

Allocation

Eleven studies reported concealed allocation and suitable methods of randomisation; we judged them to be at low risk of selection bias. Feuerstein 2003 omitted allocation concealment, so we judged the study to be at high risk of selection bias. Donceel 1999 and Lindh 1997 reported no concealment; we judged them to be at unclear risk of selection bias.

Blinding

We judged all studies to be at high risk of bias, acknowledging that successful blinding towards the intervention may be very challenging or not feasible at all. All but three studies succeeded in blinded outcome assessment by using administrative data on return to work (Donceel 1999; Feuerstein 2003; Purdon 2006) (see [Types of outcome measures](#)).

Incomplete outcome data

We found high risk of attrition bias for four studies (Feuerstein 2003; Lindh 1997; Purdon 2006; Van der Feltz-Cornelis 2010).

Selective reporting

Two studies were at high risk of reporting bias. Feuerstein 2003 did not publish return-to-work outcomes but provided (incomplete) data on request. Van der Feltz-Cornelis 2010 did not pre-specify return to work as a primary outcome: it changed from 'level of functioning' in the protocol to 'time until return to work for at least four weeks'. They did not report the level of functioning.

Other potential sources of bias

We judged two studies to have a potential source of bias because of low adherence among participants (Purdon 2006; Volker 2015), while one study had baseline imbalances between the groups (Rossignol 2000).

Effects of interventions

See: [Summary of findings for the main comparison](#) Return to work coordination programmes compared to usual practice for improving return to work in workers on sick leave

Return-to-work coordination programmes versus usual practice

We compared return-to-work coordination programmes to usual practice. See [Summary of findings for the main comparison](#) for the effects of the intervention for all outcomes and the GRADE assessment of quality of the evidence per outcome.

Primary outcomes

Time to return to work

Based on nine studies, we found no significant differences in the Hazard Ratios (HR) of time to return to work ([Analysis 1.1, Figure 4](#)).

Figure 4. Forest plot of comparison: time to return to work. RTWCP = return-to-work coordination programmes

The HR at short-term follow-up was 1.32 (95% CI 0.93 to 1.88, two studies, low quality evidence, low heterogeneity). The HR at long-term follow-up was 1.25 (95% CI 0.95 to 1.66, six studies, low quality evidence, substantial heterogeneity). The HR at very long-term follow-up was 0.93 (95% CI 0.74 to 1.17, two studies, low quality evidence, low heterogeneity).

Cumulative sickness absence

Based on seven studies, we found no significant differences in cumulative sickness absence ([Analysis 1.3, Figure 5](#)).

Figure 5. Forest plot of comparison: cumulative sickness absence in work days. RTWCP = return-to-work coordination programmes

The Mean Difference (MD) at short-term follow-up was 16.18 work days per year lower (95% CI -32.42 to 0.06, one study, moderate quality evidence). The MD at long-term follow-up was 14.84 work days per year lower (95% CI -38.56 to 8.88, six studies, low quality evidence, substantial heterogeneity). The MD at very long-term follow-up was 7.00 work days per year higher (95% CI -15.17 to 29.17, one study, moderate quality evidence).

Proportion of participants at work at end of the follow-up

Based on seven studies, we found no significant differences in the proportion of participants at work at end of the follow-up (Analysis 1.4, Figure 6).

Figure 6. Forest plot of comparison: proportion at work at end of the follow-up. RTWCP = return-to-work coordination programmes

The Risk Ratio (RR) at short-term follow-up was 1.06 (95% CI 0.86 to 1.30, five studies, low quality evidence, substantial heterogeneity). The RR at long-term follow-up was 1.06 (95% CI 0.99 to 1.15, five studies, low quality evidence, moderate heterogeneity). The RR at very long-term follow-up was 0.94 (95% CI 0.82 to 1.07, two studies, low quality evidence, low heterogeneity).

The absolute effect for the intervention versus control was 4 in 100 more individuals returning to work at short-term follow-up (95% CI

8 fewer to 16 more), 4 in 100 more at long-term follow-up (95% CI 2 fewer to 9 more), and 3 in 100 fewer at very long-term follow-up (95% CI 10 fewer to 3 more).

Proportion of participants who had ever returned to work

Based on 12 studies, we found no significant differences in the proportion of participants who had ever returned to work ([Analysis 1.6, Figure 7](#)).

Figure 7. Forest plot of comparison: proportion who had ever returned to work. RTWCP = return-to-work coordination programmes

The RR at short-term follow-up was 0.87 (95% CI 0.63 to 1.19, four studies, very low quality evidence, substantial heterogeneity). The RR at long-term follow-up was 1.03 (95% CI 0.97 to 1.09, eight studies, moderate quality evidence, moderate heterogeneity). The RR at very long-term follow-up was 0.95 (95% CI 0.88 to 1.02, three studies, low quality evidence, low heterogeneity).

The absolute effect for the intervention versus control was 6 in 100 fewer individuals having ever returned to work for any time period at short-term follow-up (95% CI 19 fewer to 8 more), 2 in 100 more at long-term follow-up (95% CI 2 fewer to 6 more), and 4 in 100 fewer at very long-term follow-up (95% CI 10 fewer to 1 more).

Sensitivity analyses

For the primary outcomes, we conducted sensitivity analyses for studies at high risk of bias and cluster-RCTs.

Omitting studies at high risk of bias revealed a significant difference in the proportion of participants working at end of the short-term follow-up (RR 1.20, 95% CI 1.10 to 1.30; Analysis 1.5). We found no significant changes for the time to return to work (Analysis 1.2), cumulative sickness absence (no high risk of bias studies), or the proportion of participants who had ever returned to work (Analysis 1.7).

For cluster-RCTs (Donceel 1999; Van der Feltz-Cornelis 2010; Volker 2015), we calculated the design effect based on an ICC of 0.10. We found no relevant changes in the effect estimates or CIs.

Subgroup analysis and investigation of heterogeneity

In the presence of substantial heterogeneity, we wanted to conduct subgroup analyses according to our a priori hypotheses; however, we found too few studies in each subgroup to compare them in meaningful subgroup analyses.

Heterogeneity was substantial for time to return to work at long-term follow-up ($I^2 = 78\%$; Analysis 1.1), cumulative sickness absence at a long-term follow-up ($I^2 = 82\%$; Analysis 1.3), the proportion of participants at work at the end of short-term follow-up ($I^2 = 65\%$; Analysis 1.4), and for the proportion who had ever returned to work at short-term follow-up ($I^2 = 78\%$; Analysis 1.6).

Eliminating high risk of bias studies resolved heterogeneity for the proportion at work and the proportion who had ever returned to work. Eliminating two outliers, both clearly in favour for return-to-work coordination programmes (Donceel 1999; Lambeek 2010), reduced heterogeneity for time to return to work to a moderate level, even though these programmes showed no obvious differences to other studies. Heterogeneity for cumulative sickness absence at a long-term follow-up remained substantial and unexplained: even if we just analysed Jensen 2012 and

Stapelfeldt 2011, two studies within the identical setting, identical recruitment procedure and identical interventions, heterogeneity remained moderate ($I^2 = 59\%$).

Secondary outcomes

Pain

Seven studies reported on pain, and we found a significant MD and Risk Difference (RD) for long-term follow-up. However, the difference was not clinically important (Minimally Important Difference (MID) = -10.0 points on a 0 to 100 scale).

The MD at short-term follow-up was -4.76 points (95% CI -14.89 to 5.36, four studies, low quality evidence); at long-term follow-up, -2.98 points (95% CI -5.33 to -0.63, six studies, moderate quality evidence); and at very long-term follow-up, -7.20 points (95% CI -15.76 to 1.36, one study, very low quality evidence; [Analysis 2.1](#)).

The proportion of participants in the intervention group whose pain improved substantially was 3% (95% CI 0% to 6%) at long-term follow-up and not significantly different from control at short-term (RD -3%, 95% CI -11% to 5%) or very long-term follow-up (RD -2%, 95% CI -11% to 7%; [Analysis 2.2](#)).

Overall function

Six studies reported on overall function, and we found a significant MD at short-term follow-up and no significant RDs. The effect did not reach the MID of 10 points on a 0 to 100 scale.

The MD at short-term follow-up was 8.13 points (95% CI 3.95 to 12.32, three studies, moderate quality evidence) and at long-term follow-up, 2.74 points (95% CI -0.15 to 5.64, five studies, moderate quality evidence; [Analysis 2.3](#)).

The proportion of participants in the intervention group whose overall function improved substantially was not significantly different from control (RD 16%, 95% CI -4% to 37% and RD 0%, 95% CI -9% to 9%, respectively; [Analysis 2.4](#)).

Physical function

Five studies reported on physical function, but we found no significant MDs or RDs (MID = 8.4 points on a 0 to 100 scale).

The MD at short-term follow-up was 3.47 points (95% CI -3.26 to 10.20, three studies, low quality evidence); at long-term follow-up, 2.19 points (95% CI -2.29 to 6.67, four studies, very low quality evidence); and at very long-term follow-up, 1.85 points (95% CI -2.25 to 5.95, one study, very low quality evidence; [Analysis 2.5](#)).

The proportion of participants in the intervention group whose physical function improved substantially was not significantly different from control (short-term: RD 3%, 95% CI -7% to 13%; long-term: RD 1%, 95% CI -2 to 3%; very long-term: RD 0%, 95% CI -2% to 2%; [Analysis 2.6](#)).

Social function

Two studies reported on social function, and we found no significant MDs or RDs (MID = 11.7 points on a 0 to 100 scale).

The MD at long-term follow-up was 2.84 points (95% CI -0.09 to 5.77, two studies, low quality evidence; [Analysis 2.7](#)).

The proportion of participants in the intervention group whose social function improved substantially was not significantly different from control (RD 1%, 95% CI -2% to 4%; [Analysis 2.8](#)).

Mental function

Three studies reported on mental function. We found a significant MD at long-term and very long-term follow-up and no significant RDs (MID = 7.3 points on a 0 to 100 scale).

The MD at short-term follow-up was 1.85 points (95% CI -2.67 to 6.37, one study, very low quality evidence); at long-term follow-up, 3.14 points (95% CI 1.16 to 5.11, three studies, moderate quality evidence); and at very long-term follow-up, 6.09 points (95% CI 0.56 to 11.63, one study, very low quality evidence; [Analysis 2.9](#)).

The proportion of participants in the intervention group whose mental function improved substantially was not significantly different from control (short-term: RD 0%, 95% CI -1% to 1%; long-term: RD 0%, 95% CI -1% to 1%; and very long-term: RD 0%, 95% CI -1% to 1%; [Analysis 2.10](#)).

Depression

Four studies reported on depression, but we found no significant MDs or RDs (MID = 5.0 on a 0 to 27 scale).

The MD at short-term follow-up was 0.37 points (95% CI -2.81 to 3.55, three studies, low quality evidence) and for long-term follow-up, 0.00 points (95% CI -1.07 to 1.07, two studies, moderate quality evidence; [Analysis 2.11](#)).

The proportion of participants in the intervention group that experienced substantial change in depression was not significantly different from control (short term: RD 3%, 95% CI -7% to 12%; and long term: RD 1%, 95% CI -4% to 6%; [Analysis 2.12](#)).

Anxiety

Three studies reported on anxiety, but we found no significant MDs or RDs (MID = 4.0 on a 0 to 21 scale).

The MD at short-term follow-up was -0.02 points (95% CI -3.24 to 3.21, two studies, low quality, $P = 0.99$) and for long-term follow-up, 0.97 points (95% CI -0.17 to 2.12, two studies, moderate quality, $P = 0.1$; [Analysis 2.13](#)).

The proportion of participants in the intervention group that experienced substantial change in anxiety was not significantly different from control (short term: RD -1%, 95% CI -8% to 7 and long-term: RD 2%, 95% CI -3% to 8%; [Analysis 2.14](#)).

DISCUSSION

Summary of main results

We included 14 RCTs comparing return-to-work coordination programmes to usual practice. Very low- to moderate-quality evidence suggests no benefits on return-to-work outcomes.

For the outcomes time to return to work, cumulative sickness absence, proportion of participants working at end of the follow-up and proportion who had ever returned to work, we found no significant differences at short-term (6 months), long-term (12 months) or very long-term (longer than 12 months) follow-up.

Omitting high risk of bias studies showed a significantly higher proportion of participants returning to work at short-term follow-up but there were no relevant changes for any other outcome.

Regarding the patient-reported outcomes, we found no differences greater than the MID. The quality of the evidence ranged from very low to moderate.

Overall completeness and applicability of evidence

We performed an extensive literature search without language restriction and screened almost 4000 records. Furthermore, the review authors contributed with their professional expertise in the field of work disability and insurance medicine to find ongoing or unpublished studies. Risk of selection bias is therefore low. However, we found only two studies in workers with common mental health problems.

We identified studies from nine different countries, reflecting a broad variety of healthcare systems. Differences in the healthcare systems and benefit schemes of each country might have an additional effect on the return-to-work outcome.

Quality of the evidence

We included 14 RCTs with more than 12,500 workers. We considered this a large number of participants.

The risk of bias was low in 10 studies and high in 4 studies because of reporting bias, attrition bias or detection bias. None of the studies blinded participants or personnel, but most studies retrieved return-to-work data through administrative databases (11 of 14).

According to the GRADE system, the quality of the evidence was very low to moderate through the different outcomes. Besides high risk of attrition or reporting bias, we downgraded the quality of evidence for inconsistency (substantial heterogeneity) and imprecision (a confidence interval spanning a negative and positive effect or a small population size).

Potential biases in the review process

At least two authors independently performed all subjective steps in the review process. We reported on individual studies, not articles, to prevent reporting bias, but we extracted data from all related articles. Funnel plots (not shown) did not suggest the presence of publication bias. If required, we recalculated sickness absence into work days to pool the MD or recalculated SDs from studies when only P values or standard errors were given. If studies reported no time-to-event outcomes, we extracted data from survival curves and verified it by comparing the original plot with the plot derived from the extracted data, and then calculated the HRs and associated 95% CIs.

Due to methodological considerations we included only RCTs and excluded non-RCTs. We already knew we had an adequate number of RCTs because of our previous non-Cochrane version of this review ([Schandelmaier 2012](#)). Furthermore, we decided to exclude studies without at least one face-to-face contact and employer-initiated programmes, which were not our focus. However, we did not have to exclude studies solely for these reasons.

It is challenging to compare multidisciplinary programmes that allow for different interventions, in different intensities, with

different support for the control group. However, we tried to choose appropriate inclusion and exclusion criteria. Unfortunately, we did not find enough data to explore further heterogeneity by means of subgroup analyses.

Agreements and disagreements with other studies or reviews

In the previous version of this review ([Schandelmaier 2012](#)), we found significant effects for all four of the return-to-work outcomes in favour for return-to-work coordination programmes. Our new search identified five additional publications: all of them with low risk of bias, a follow-up ranging from 12 months to 72 months, and moderate to high support for the control group. Thus, we conclude that the quality of research as well as the quality of usual practice has improved.

Other reviews on interventions facilitating return to work have different foci but partly overlap regarding the included studies. In summary, they give no clear recommendations regarding return-to-work coordination programmes.

Recently, [Van Vilsteren 2015](#) investigated workplace interventions to prevent disability in workers on sick leave. Especially for workers with musculoskeletal disorders, they found evidence that workplace interventions reduce time to first return to work and cumulative duration of sickness absence. For time to lasting return to work, they found only low-quality evidence for workplace interventions.

[Nieuwenhuijsen 2014](#) analysed interventions to improve return to work in people with depression. Moderate-quality evidence suggested that adding a work-directed intervention to a clinical intervention reduced the number of days on sick leave compared to a clinical intervention alone. For adults with adjustment disorders, [Arends 2012](#) found that cognitive behavioural therapy did not significantly reduce time to partial or full return to work compared with no treatment. For problem-solving therapy, they found a significant effect on partial return to work after one year compared to non-guideline based care, but there was no significant effect on time to full return to work.

[Palmer 2012](#) completed a systematic review regarding the effectiveness of community- and workplace-based interventions to reduce sickness absence and job loss. They concluded that most interventions, especially in large and high-quality studies, show small beneficial effects. No intervention was clearly superior to another, but effort-intensive interventions were less effective than simple programmes. [Clayton 2011](#) reviewed studies with an individual focus to return people with disabilities and long-term illnesses back to work. Personal advisors and individual case management helped some participants back to work, but authors concluded that existing programmes must be modified and extended for the more complex needs of those workers further from the labour market. [Kuoppala 2008](#) found that return-to-work programmes decreased long sick leaves but not the proportion who returned to work. They emphasised the benefit of involving the workplace in rehabilitation efforts.

AUTHORS' CONCLUSIONS

Implications for practice

This review found very low- to moderate-quality evidence that return-to-work coordination programmes compared to usual practice do not facilitate return to work. We found no significant differences in our return-to-work outcomes at any follow-up time point. Very low- to moderate-quality evidence suggests no substantial impact on patient-reported outcomes.

One fairly large, well-designed study contributed data on more than 8000 participants over 72 months and provides moderate-quality evidence suggesting no beneficial effect on cumulative sickness absence. On the other hand, we found two nearly identical studies (same setting and interventions, different participants): [Stapelfeldt 2011](#) favoured return-to-work coordination programmes, and [Jensen 2012](#) favoured usual practice, even if the results were not significant. These findings challenge the formulation of definitive implications for practice.

Implications for research

Future studies should investigate lasting return to work for at least four weeks. A longer interval might be even more meaningful. It is not sufficient to report only whether return to work occurred or not; outcomes should capture relapse into sick leave as well.

More studies with a long-term and very long-term follow-up will help to evaluate lasting benefits. A more detailed description of the intervention in both the control and the intervention group are necessary to distinguish the extent to which groups are different from one another. To improve the replicability of interventions, the Template for Intervention Description and Replication (TIDieR) checklist and guide ought to be used

([Hoffmann 2014](#)). Furthermore, monitoring additional healthcare utilisation would allow for better comparability.

There is a need for more studies on workers with mental health problems, as we already know that this will be a rising concern in the future ([OECD 2014 b](#)).

Furthermore, even if coordinated return-to-work programmes are not necessarily employer-initiated, we believe it is essential to integrate the workplace as much as possible in the return-to-work process. Future studies should investigate and report more details on the extent and relevance of employers' involvement.

ACKNOWLEDGEMENTS

We would like to thank all the authors providing us additional material and information and who patiently answered our questions. We are grateful to Gordon Guyatt for his indispensable support. Furthermore, we thank Mohsen Mousavi, who contributed to the protocol and helped to draft the review.

We thank Jani Ruotsalainen, Managing Editor, Cochrane Work Group for providing administrative and logistical support for the planning of the current review, and Kaisa Neuvonen, Trials Search Co-ordinator, Cochrane Work Group, for developing and testing the search strategies.

We would also like to thank the Cochrane Work Group's Coordinating Editor Jos Verbeek, Managing Editor Jani Ruotsalainen, the Central Editorial Unit's Senior Editor Toby Lasserson, Editors Deirdre FitzGerald, Anneli Ojajarvi, and Kaisa Neuvonen; and external peer referees Juha Liira, David Bruinvels, Ute Bültmann and Doug Gross for their comments. Last but not least, we thank Joey Kwong for copy-editing the protocol and Meggan Harris for copy editing the review.

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CHARACTERISTICS OF STUDIES

Characteristics of included studies [ordered by study ID]

Bültmann 2009

Methods	Design: RCT, parallel, 2 arms Country: Denmark Sample size: 119 Unit of allocation: individuals Unit of analysis: individuals Date of recruitment: April 2004 to April 2005 Method of recruitment: 4 participating municipalities, invitation to an information meeting Follow-up: 3, 6, 12 months
Participants	Health problem: low back pain, neck pain, musculoskeletal disorders Age in years: mean 43.7 (SD 11.3) Female in %: 55 Intervention group: 68 participants Control group: 51 participants Inclusion criteria: absent from work 4-12 weeks, aged 18-65 years, understanding and speaking Danish, reimbursement request indicating low back pain or musculoskeletal disorders as the main cause of sick leave Exclusion criteria: mental health disorders, alcohol or drug addiction, pregnancy, quit their job or had been fired before randomisation Duration and type of sick leave: 1-3 months, mean 39.3 days (SD 20.9); full sick leave

Bültmann 2009 (Continued)

Type of sick leave compensation: employer paid according to public sickness benefit scheme

Interventions	<p>Intervention: coordinated and tailored work rehabilitation</p> <p>Components of intervention:</p> <ul style="list-style-type: none">• Work disability screening: systematic, multidisciplinary assessment of disability and functioning as well as the identification of barriers for return to work• Formulation and implementation of a coordinated, tailored and action-oriented work rehabilitation plan collaboratively developed by an interdisciplinary team using a feedback guided approach; <p>Team: occupational physician, occupational physiotherapist, chiropractor, psychologist, social worker</p> <p>Involvement of the employer: yes</p> <p>Providers of intervention: rehabilitation team, experience and training not reported</p> <p>Theoretical basis: Canadian multidisciplinary work rehabilitation programme (i.e. the Sherbrooke model, Loisel 2002)</p> <p>Duration: maximum 3 months</p> <p>Control: conventional case management as provided by the municipality; same information about the study and the same (follow-up) questionnaires, no additional assessment or action</p>	
Outcomes	<p>Return-to-work outcomes (measurement/data collection):</p> <ul style="list-style-type: none">• Work status (full- or part-time return to work or sick leave; administrative database),• Sickness absence hours (mean number of work hours off including all episodes of sick leave; administrative database) <p>Patient-reported outcomes (measurement):</p> <ul style="list-style-type: none">• Pain last month (Örebro Musculoskeletal Pain Screening Questionnaire),• General function (Oswestry Low Back Pain Disability Questionnaire) <p>Outcomes not analysed (measurement):</p> <ul style="list-style-type: none">• Pain during last week (Örebro Musculoskeletal Pain Screening Questionnaire); not reported	
Notes	—	
Risk of bias		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated randomisation without stratification
Allocation concealment (selection bias)	Low risk	Concealed (author information)
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and personnel not blind
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blind for return-to-work outcomes Not blind for patient-reported outcomes

Bültmann 2009 (Continued)

Incomplete outcome data (attrition bias) All outcomes	Low risk	6 participants withdrew their consent after randomisation; for the rest complete data on return-to-work outcomes, 33% loss to follow-up on patient-related outcomes, non-response analysis: "A non-response analysis revealed that nonrespondents in both groups and at both time points were more likely to be men. Moreover, in the CTWR [coordinated and tailored work rehabilitation] group, non-respondents at 3 month follow-up tended to have less vocationally education and more sickness absence hours. Otherwise, non-respondents in both groups did not differ significantly from respondents with respect to other sociodemographic, health status, and work absence variables tested at 3 and 12 months follow-up." (p. 86)
Selective reporting (reporting bias)	Unclear risk	No study protocol published, "pain intensity last week" was considered to be less relevant and was not reported (author information)
Other bias	Low risk	No indications of other sources of bias

Davey 1994

Methods	<p>Design: RCT, parallel, 2 arms</p> <p>Country: Scotland, North-East England</p> <p>Sample size: 50</p> <p>Unit of allocation: individuals</p> <p>Unit of analysis: individuals</p> <p>Date of recruitment: not reported</p> <p>Method of recruitment: the 4 participating insurance companies identified potential clients from the personal injury claims files, invitation by letter</p> <p>Follow-up: 6, 12 months (after 6 months: intervention for both groups, therefore only 6 months follow-up data analysed)</p>
Participants	<p>Health problem: injuries likely to result in absence from work of 6 months or more</p> <p>Age in years: mean 39.4, range 18-61</p> <p>Female in %: 18</p> <p>Intervention group: 33 participants</p> <p>Control group: 17 participants</p> <p>Inclusion criteria: residents in Scotland or North-East England, aged 16-65 years, in the labour market at the time of injury, injuries likely to result in absences from work $\geq$ 6 months and/or permanent disability</p> <p>Exclusion criteria: people with catastrophic injuries</p> <p>Duration and type sick leave: median 20 months, mean 21 months, range 3-50 months; full sick leave</p> <p>Type of sick leave compensation: personal injury insurance (private insurance)</p>
Interventions	<p>Intervention: rehabilitation coordinator service</p> <p>Components of intervention:</p> <ul style="list-style-type: none"> Initial assessment

Davey 1994 (Continued)

- Identification and agreement of goals
- Formulation of a plan
- Putting the plan into action
- Monitoring its progress
- Making changes as appropriate
- Closure; emphasis on a participative approach involving each claimant to the fullest possible extent in all aspects of decision making

Team: physiotherapist, psychologist, consultant in rehabilitation medicine, occupational therapist

Involvement of the employer: no

Providers of intervention: a physiotherapist as coordinator with experience in care coordination, 3-month induction programme

Theoretical basis: [Chamberlain 1991](#), [Thornicroft 1991](#)

Duration: 6 months

Control: no restrictions; the intervention group received help for 12 months, beginning immediately after the initial assessment, while the control group had no contact with the coordinator for 6 months, then received help for 6 months between their 6 and 12 month reassessments

Outcomes	Return-to-work outcomes (measurement/data collection): <ul style="list-style-type: none">• Proportion at work, full- or part-time (semi-structured interview, information from claim files),• Proportion who had ever returned to work, full- or part-time (semi-structured interview, information from claim files) Patient-reported outcomes (measurement): <ul style="list-style-type: none">• Depression (Hospital Anxiety and Depression Scale: Depression),• Anxiety (Hospital Anxiety and Depression Scale: Anxiety) Outcomes not analysed (measurement): <ul style="list-style-type: none">• Self-rated anxiety (Self-rating Anxiety Scale),• Physical and social function (Nottingham Health Profile), no SDs reported	
Notes	—	
Risk of bias		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated
Allocation concealment (selection bias)	Low risk	Concealed in sequentially numbered, sealed, opaque envelopes
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and personnel not blind
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blind for return-to-work outcomes Not blind for patient-reported outcomes

Davey 1994 (Continued)

Incomplete outcome data (attrition bias) All outcomes	Low risk	No losses to follow-up, complete data at 6 months
Selective reporting (reporting bias)	Unclear risk	Unclear, insufficient information
Other bias	Low risk	No indications of other sources of bias

Donceel 1999

Methods	<p>Design: RCT, parallel, 2 arms</p> <p>Country: Belgium</p> <p>Sample size: 710 in 60 clusters</p> <p>Unit of allocation: cluster</p> <p>Unit of analysis: individuals</p> <p>Date of recruitment: October 1996 to June 1997</p> <p>Method of recruitment: patients of all medical advisors of Christian Sickness Fund who introduced a claim for benefits after surgery for disc herniation</p> <p>Follow-up: 6, 12 months</p>
Participants	<p>Health problem: surgery for disc herniation</p> <p>Age in years: mean 39.2</p> <p>Female in %: 35</p> <p>Intervention group: 345 participants (30 medical advisors)</p> <p>Control group: 365 participants (30 medical advisors)</p> <p>Inclusion criteria: absent from work before surgery < 1 year, aged 15-64 years, worker</p> <p>Exclusion criteria: self-employment</p> <p>Duration and type of sick leave: 2-2.5 months; full sick leave</p> <p>Type of sick leave compensation: a claim for benefits after surgery for disc herniation</p>
Interventions	<p>Intervention: new guideline for medical advisers</p> <p>Components of intervention: intervention guidelines for the medical adviser:</p> <ul style="list-style-type: none"> • In contacts with participants (i.e. functional evaluation, strict timing, encourage personal activities, advice, recognise stressors) • In contacts with treating physicians (multidisciplinary approach) • In daily contacts with colleagues (case discussion) <p>Team: general practitioner, social insurance agent, social insurance physician, other healthcare personnel (not reported)</p> <p>Involvement of the employer: no</p>

Donceel 1999 (Continued)

Providers of intervention: 30 medical advisers (social insurance physicians), experience and training not reported

Theoretical basis: a number of rehabilitation guidelines

Duration: as long as participant is on disability benefit

Control: medical practice as in the past; focus on corporal damage, few rehabilitation efforts

Outcomes	<p>Return-to-work outcomes (measurement/data collection):</p> <ul style="list-style-type: none"> Proportion working full-time at end of the follow-up/proportion who had ever returned to work, full-time (standardised questionnaire), Time to return to work, full-time (standardised questionnaire) <p>Patient-reported outcomes (measurement): none</p> <p>Outcomes not analysed (measurement): none</p>
Notes	Each medical advisor was responsible for a specific region, baseline characteristics of medical advisors not reported (unit of randomisation)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated random numbers
Allocation concealment (selection bias)	Unclear risk	No concealment of allocation reported (usually not relevant in cluster randomised trials, as all clusters are randomised at once)
Blinding of participants and personnel (performance bias) All outcomes	High risk	No blinding, but participants were probably not aware of the intervention, case managers were not blind
Blinding of outcome assessment (detection bias) All outcomes	High risk	Not blind for return-to-work outcomes Unclear if blind for patient related outcomes
Incomplete outcome data (attrition bias) All outcomes	Low risk	No losses to follow-up
Selective reporting (reporting bias)	Unclear risk	No protocol published
Other bias	Low risk	No indications of other sources of bias, recruitment-bias implausible: participants were blind during recruitment process, no analysis of cluster effect reported

Feuerstein 2003

Methods	<p>Design: RCT, parallel, 2 arms</p> <p>Country: USA</p>
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Feuerstein 2003 (Continued)

Sample size: 205

Unit of allocation: individuals

Unit of analysis: individuals

Date of recruitment: July 1999 to December 2000

Method of recruitment: invitation by letter from the medical director of the Office of Worker's Compensation Programs

Follow-up: 4, 10, 16 months

Participants

Health problem: work-related upper extremity disorder

Age in years: mean 46 (SD 8.6)

Female in %: 78

Intervention group: initial number of participants not reported; 58 participants answered the patient satisfaction questionnaire

Control group: initial number of participants not reported; 73 participants answered the patient satisfaction questionnaire

Inclusion criteria: aged 18-65 years, accepted single worker's compensation claim according to work-related upper extremity disorder, no claims in the previous 2 years, claims adjudicated and accepted as work-related within 90 days of filing (only those still out of work or on modified duty at the time of claim adjudication were eligible)

Exclusion criteria: none

Duration and type of sick leave: 1-6 months; full- and part-time sick leave

Type of sick leave compensation: claims of the US Department of Labor's Office of Worker's Compensation Programs

Interventions

Intervention: integrated case management

Components of intervention:

- Standardised initial interview
- Ergonomic assessment and problem solving
- Developing a case management plan geared toward the individual

Team: "e.g. supervisor, injury compensation specialist, medical providers, claims examiner" (p. 383 [Shaw 2001](#))

Involvement of the employer: yes

Providers of intervention: 32 nurse case managers: 2 years experience providing case management service, 2-day training in ergonomic assessment and workplace accommodations, problem-solving approach, experience in coordination of medical care

Theoretical basis: [Shaw 2001](#)

Duration: 4 months, variable

Control: usual practice; 33 nurse case managers, focus on medical care, no training in a structured protocol

Outcomes

Return-to-work outcomes (measurement/data collection):

- Time to return to work, full-time (administrative data),

Feuerstein 2003 (Continued)

- Proportion who had ever returned to work, full-time (administrative data)

Patient-reported outcomes (measurement):

- Pain (Upper Extremity Functional Scale),
- Physical and mental function (SF-12)

Outcomes not analysed (measurement):

- Patient satisfaction (13 items scale),
- Pain (Levine symptom scale) (overlap with other functional scales)

Notes	Return-to-work data was not published, but provided by one of the authors
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Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"[P]articipants were randomly assigned" (p. 805)
Allocation concealment (selection bias)	High risk	No concealed allocation (author information)
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and personnel not blind
Blinding of outcome assessment (detection bias) All outcomes	High risk	Probably not blind for return-to-work outcomes Probably not blind for patient related outcomes
Incomplete outcome data (attrition bias) All outcomes	High risk	40% losses to follow-up for return-to-work outcomes, 36%-61% losses to follow-up for patient-reported outcomes (author information)
Selective reporting (reporting bias)	High risk	Return-to-work outcomes not published, one author provided outcomes as far as possible
Other bias	Low risk	No indications of other sources of bias

Jensen 2012

Methods	Design: RCT, parallel, 2 arms with 2 subgroups Subgroups: those with influence on the planning of their own work and no perceived risk of losing job and/or being a work injury claimant; those without influence on the planning of their own work or feeling at risk of losing job and not a work injury claimant Country: Denmark Sample size: 351 Unit of allocation: individuals Unit of analysis: individuals Date of recruitment: November 2004 to June 2007
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Return-to-work coordination programmes for improving return to work in workers on sick leave (Review)

Jensen 2012 (Continued)

	<p>Method of recruitment: referred by their general practitioner, recruited at the Spine Center</p> <p>Follow-up: 12, 24 months</p>
Participants	<p>Health problem: low back pain</p> <p>Age in years: mean 42.0 (SD 10.5)</p> <p>Female in %: 52</p> <p>Intervention group: 176 participants</p> <p>Control group: 175 participants</p> <p>Inclusion criteria: absent from work for 3-16 weeks, aged 16-60 years, ability to read and speak Danish</p> <p>Exclusion criteria: unemployed, continuing or progressive symptoms indicating plans for surgery, surgery in the spine within the past 12 months, diagnosis of specific back disease (e.g. tumour), diagnosis of primary psychiatric disease, pregnancy, known substance abuse</p> <p>Duration and type of sick leave: range 3-16 weeks; full- and part-time sick leave</p> <p>Type of sick leave compensation: municipalities, financed by tax payers</p>
Interventions	<p>Intervention: multidisciplinary intervention (same as Stapelfeldt 2011)</p> <p>Components of intervention:</p> <ul style="list-style-type: none"> • Brief intervention like control group • Case management containing: <ul style="list-style-type: none"> * a standardised interview and ≥ 1 meetings * tailored rehabilitation plan aiming at full or partial return to work or plan toward staying on the labour market in other ways * case discussion with the multidisciplinary team * regular appointments with other team members and meetings at the workplace * supervision of the entire team by a former general practitioner <p>Team: specialist of social medicine, a rheumatologist, a physiotherapist, a social worker, and an occupational therapist</p> <p>Involvement of the employer: yes</p> <p>Providers of intervention: 3 case managers; experience and training not reported</p> <p>Theoretical basis: Canadian multidisciplinary work rehabilitation programme (i.e. the Sheerbrooke model, Loisel 2002)</p> <p>Duration: median 18 weeks</p> <p>Control: municipality case management and brief intervention:</p> <ul style="list-style-type: none"> • Standard clinical low back pain examination by a physician, relevant imaging and examinations ordered and treatment options discussed • Information given in a reassuring way • Adjusted medical pain management, physiotherapy • Advice to resume work when possible • Coordination between stakeholders <p>Same control group interventions as Stapelfeldt 2011 and Myhre 2014 (without municipality case management)</p>
Outcomes	<p>Return-to-work outcomes (measurement/data collection):</p>

Jensen 2012 (Continued)

- Time to return to work, full-time, for at least 4 weeks (administrative data),
- Sick leave weeks (administrative data),
- Proportion at work at end of the follow-up; last job or modified job/training (administrative data),
- Proportion who had ever returned to work (administrative data)

Patient-reported outcomes (measurement):

- Pain (Low Back Pain Rating Scale),
- Disability (Roland Morris Disability Questionnaire),
- Physical function (SF-36),
- Social function (SF-36),
- Mental health (SF-36),
- General health (SF-36)

Outcomes not analysed (measurement):

- Bodily pain (SF-36) (overlap with other functional scales),
- Fear avoidance (Örebro Musculoskeletal Pain Questionnaire),
- Vitality (SF-36),
- Role - physical (SF-36) (overlap with other functional scales),
- Role - emotional (SF-36) (overlap with other functional scales)

Notes	The proportion at work at end of the follow-up was reported to 'last job' or 'modified job or training'; we analysed the proportion returned to last job followed by a sensitivity analysis
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Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated block-randomisation
Allocation concealment (selection bias)	Low risk	Allocation was carried out by a secretary
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding was not possible; only the first clinical examination was carried out double-blind
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Author information
Incomplete outcome data (attrition bias) All outcomes	Low risk	Complete data for return-to-work outcomes; for patient-reported outcomes 39% losses to follow-up after 12 months
Selective reporting (reporting bias)	Low risk	Study protocol published; all outcomes reported; after 24 months no reporting of patient-reported outcomes
Other bias	Low risk	No indications of other sources of bias

Lambeek 2010

Methods	Design: RCT, parallel, 2 arms
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Return-to-work coordination programmes for improving return to work in workers on sick leave (Review)

Lambeek 2010 (Continued)

Country: Netherlands

Sample size: 134

Unit of allocation: individuals

Unit of analysis: individuals

Date of recruitment: November 2005 to April 2007

Method of recruitment: in each hospital a competent hospital employee identified the source population weekly from the computerised patient record system, invitation by mail

Follow-up: 3, 6, 12 months

Participants

Health problem: non-specific chronic low back pain

Age in years: mean 46.2 (SD 9.1)

Female in %: 42

Intervention group: 66 participants

Control group: 68 participants

Inclusion criteria: aged 18-65 years, low back pain > 12 weeks, visited an outpatient clinic in one of the participating hospitals, absent or partially absent from work, paid employment or self-employed (> 8 hours/week)

Exclusion criteria: absent from work > 2 years, temporarily work for an employment agency without detachment, lumbar spine surgery in the past 6 weeks or surgery or invasive examinations within 3 months, serious psychiatric or cardiovascular illness, specific low back pain (due to infection, tumour, osteoporosis, rheumatoid arthritis, fracture or inflammatory process), pregnancy

Duration and type of sick leave: mean 22 weeks; full- and part-time sick leave

Type of sick leave compensation: employer is responsible for 2 years (is obliged to have a company insurance)

Interventions

Intervention: integrated care

Components of intervention:

- Workplace intervention based on participatory ergonomics and a graded activity programme, which is a time-contingent programme based on cognitive behavioural principles
- The clinical occupational physician, responsible for the planning and the coordination, set a proposed date for full return to work in mutual agreement with participants and their occupational physicians
- Communication between the team members: calls, letters, coded emails, and a conference call every 3 weeks to discuss the progress of the participant regarding return to work

Team: clinical occupational physician, patients occupational physician, general practitioner, medical specialist, occupational therapist, physiotherapist

Involvement of the employer: yes

Providers of intervention: 2 case managers (occupational physicians), 2 days training programme

Theoretical basis: not reported

Duration: 67 calendar days (SD 32)

Control: usual practice; guidance from health professionals, average 0.2 visits to case managers

Outcomes

Return-to-work outcomes (measurement/data collection):

Lambeek 2010 (Continued)

- Time to return to work, full-time, for at least 4 weeks (self-report and administrative data),
- Proportion who had ever returned to work (self-report and administrative data),
- Sickness absence (mean number of work days off including all episodes of sick leave; self-report and administrative data)

Patient-reported outcomes (measurement):

- Physical function (Roland Morris Disability Questionnaire),
- Pain (visual analogue scale),
- General function (EQ-5D)

Outcomes not analysed (measurement):

- Potential work-related psychosocial factors (Job Content Questionnaire) (not reported),
- Workload (Dutch Musculoskeletal Questionnaire) (not reported)

Notes	EQ-5D scores by author information	
<i>Risk of bias</i>		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated random-sequence table
Allocation concealment (selection bias)	Low risk	Opaque, sequentially numbered, and sealed coded envelopes
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and personnel not blind
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blind for return-to-work outcomes Not blind for patient-reported outcomes
Incomplete outcome data (attrition bias) All outcomes	Low risk	13% losses to follow-up for return-to-work outcomes, 7% losses to follow-up for patient-reported outcomes, missing outcome data balanced in numbers across groups, with similar reasons for missing outcome data and plausible effect size among missing data (assuming a smaller effect in same direction) not enough to introduce clinically relevant bias)
Selective reporting (reporting bias)	Low risk	Study protocol published, all outcomes reported
Other bias	Low risk	No indications of other sources of bias

Lindh 1997

Methods

Design: RCT, parallel, 2 arms with 2 subgroups

Subgroups: Swedes; immigrants

Country: Sweden

Sample size: 611

Lindh 1997 (Continued)

	<p>Unit of allocation: individuals</p> <p>Unit of analysis: individuals</p> <p>Date of recruitment: not reported</p> <p>Method of recruitment: 7 social insurance offices in Gotenburg reported cases reaching a continuous sick leave of 90 days; invitation by letter</p> <p>Follow-up: 3 months intervals up to 60 months</p>
Participants	<p>Health problem: non-specific chronic musculoskeletal pain</p> <p>Age in years: mean 39.5, range 20-55</p> <p>Female in %: 62</p> <p>Intervention group: 351 participants</p> <p>Control group: 296 participants</p> <p>Inclusion criteria: absent from work < 180 days sick listed in the preceding 2 years, age < 56 years</p> <p>Exclusion criteria: ongoing rehabilitation, partial sick leave, pregnancy</p> <p>Duration and type of sick leave: 3 months or more; full sick leave</p> <p>Type of sick leave compensation: sick benefit through the Swedish social insurance system</p>
Interventions	<p>Intervention: multidisciplinary rehabilitation programme</p> <p>Components of intervention: outpatient regime with:</p> <ul style="list-style-type: none"> • Patient evaluation • Goal setting • Programme planning • Rehabilitation completion <p>Team: rehabilitation physician, nurse, physical therapist, psychotherapist, psychologist, occupational therapist, social worker, vocational counsellor</p> <p>Involvement of the employer: no</p> <p>Providers of intervention: rehabilitation team, experience and training not reported</p> <p>Theoretical basis: not reported</p> <p>Duration: individually</p> <p>Control: usual practice; physical therapy and other rehabilitation measures</p>
Outcomes	<p>Return-to-work outcomes (measurement/data collection):</p> <ul style="list-style-type: none"> • Proportion at work at end of the follow-up, full- or part-time (administrative database), • Proportion who had ever returned to work, full- or part-time (administrative database) <p>Patient-reported outcomes (measurement): none</p> <p>Outcomes not analysed (measurement): none</p>
Notes	<p>No information about attrition after randomisation</p> <p>Contradicting information, whether time point 0 in the graph corresponds to time of randomisation or sick listing (we assumed randomisation)</p>

Lindh 1997 (Continued)

Contradicting information between figures and text

Since follow-up was much longer than in other studies, we analysed the data on the 24 months follow-up and conducted a sensitivity analysis using 60 months outcome.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No method reported
Allocation concealment (selection bias)	Unclear risk	No concealment reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and personnel not blind
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blind for return-to-work outcomes
Incomplete outcome data (attrition bias) All outcomes	High risk	High level of attrition directly after randomisation: 77 (24%) in the intervention group returned to work between randomisation and first visit; to correct for possible selection bias a similar proportion in the control group was randomly excluded. A further 80 patients never received the study intervention because of their doctor's refusal (n = 24), other rehabilitation (n = 38), withdraw (n = 11) or other (n = 7); these 80 patients were included in the analysis (intention-to-treat), it seems plausible that further patients were lost to follow-up after the intervention started
Selective reporting (reporting bias)	Low risk	Results presented in subgroups (Swedes and immigrants), we extracted return-to-work rates from graphs and recombined subgroups
Other bias	Unclear risk	Unclear

Myhre 2014

Methods	Design: RCT, parallel, 2 arms Country: Norway Sample size: 405 Unit of allocation: individuals Unit of analysis: individuals Date of recruitment: August 2009 to August 2011 Method of recruitment: patients referred for diagnostic consideration or multidisciplinary treatment of neck and/or back pain were screened for eligibility at their first consultation at the outpatient clinic Follow-up: 4, 12 months
Participants	Health problem: neck pain (10%) and low back pain (90%)

Myhre 2014 (Continued)

Age in years: mean 40.59 (SD 9.86)

Female in %: 46

Intervention group: 203 participants

Control group: 202 participants

Inclusion criteria: absent from work 4-52 weeks, employed or self-employed

Exclusion criteria: need for surgical treatment, cauda equina syndrome, symptomatic spinal deformities, osteoporosis with fractures, inflammatory rheumatic diseases, pregnancy, legal labour disputes, insufficient Norwegian language skills, cardiac/pulmonary/metabolic disease with functional restrictions, mental disorders.

Duration and type of sick leave: mean 112 days (IQR 71-182); full- and part-time sick leave

Type of sick leave compensation: sickness benefits, a work assessment allowance pension, or a disability pension from the Norwegian Labour and Welfare Administration

Interventions

Intervention: work-focused intervention

Components of intervention:

- Standard clinical examination, relevant imaging, information about the findings, emphasis on removing fear-avoidance beliefs, restoring activity level, and enhancing self-care and coping
- Comprehensive multidisciplinary intervention (St. Olavs Hospital) or brief model (Oslo University Hospital) like control group
- Individual appointments with the caseworker to discuss work histories, family lives, and obstacles
- Caseworkers contacted municipal social services and participants' employers by phone in most cases (unless the patient refused) to inform them of the programme and inquire about possible temporary modifications at work, offered assistance at the meeting with the employer
- Patient and caseworker created a return-to-work schedule together with the multidisciplinary team
- Medical records and return-to-work schedules were sent to participants and their general physician

Team: physician, physical therapist, case worker, medical specialist, group discussions, lecturer

Involvement of the employer: yes

Providers of intervention: caseworkers, experience and training not reported

Theoretical basis: not reported

Duration: 3 weeks

Control: usual practice:

- Standard clinical examination, relevant imaging, information about the findings, emphasis on removing fear-avoidance beliefs, restoring activity level, and enhancing self-care and coping
- Comprehensive multidisciplinary intervention (St. Olavs Hospital) or brief model (Oslo University Hospital, same control group intervention as [Jensen 2012](#), [Stapelfeldt 2011](#))

Outcomes

Return-to-work outcomes (measurement/data collection):

- Proportion who had ever returned to work, full-time, for at least 5 weeks (administrative database),
- Time to return to work full-time, for at least 5 weeks (administrative database),
- Sickness absence (administrative database)

Patient-reported outcomes (measurement):

- Pain (11-point numeric rating scale),
- Disability (Oswestry Disability Index),
- Depression (Hospital Anxiety and Depression Scale: depression),

Myhre 2014 (Continued)

- Anxiety (Hospital Anxiety and Depression Scale: anxiety)

Outcomes not analysed (measurement):

- Fear avoidance (Fear Avoidance Belief Questionnaire)

Notes	Secondary outcomes from Marchand 2015 ; authors provided additional outcome data	
<i>Risk of bias</i>		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	“An independent statistician generated a random block sequence stratified by hospital.” (p. 2001)
Allocation concealment (selection bias)	Low risk	Concealed (author information)
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and personnel not blind
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blind for return-to-work outcomes Not blind for patient-reported outcomes
Incomplete outcome data (attrition bias) All outcomes	Low risk	No losses to follow-up for return-to-work outcomes, 26% losses to follow-up for patient-reported outcomes “Patients lost to follow-up at 12 months had higher baseline disability scores (mean difference 3.60, $p = 0.018$), reported higher baseline pain (mean difference 0.52, $p = 0.039$) and higher baseline FABQ-P scores (mean difference 1.57, $p = 0.015$). There were also a significantly higher number of men, smokers, patients with a foreign mother tongue, and patients with low education in patients lost to follow-up. The response rate was 74% at the 12-month follow-up. There were a similar number of patients lost to follow-up in both groups” (Marchand 2015 ; p. 5)
Selective reporting (reporting bias)	Unclear risk	No protocol published
Other bias	Low risk	No indications of other sources of bias

Purdon 2006

Methods	Design: RCT, parallel, 4 arms Country: United Kingdom Sample size: 1423 Unit of allocation: individuals Unit of analysis: individuals Date of recruitment: April 2003 for 2 years
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Purdon 2006 (Continued)

	<p>Method of recruitment: potential clients spoke with the central telephone contact centre, brief explanation of the trial, check for eligibility</p> <p>Follow-up: 20-36 weeks</p>
Participants	<p>Health problem: any condition likely to result in a 50% chance to return to work (musculoskeletal, mental and behavioural problems, injuries)</p> <p>Age in years: mean 44.0</p> <p>Female in %: 57</p> <p>Intervention group: 571 (weighted: 713 participants)</p> <p>Control group: 458 (weighted: 710 participants)</p> <p>Inclusion criteria: absent from work 6-26 weeks, employed/self-employed and working for > 16 hours/week, living and working within one of the pilot areas</p> <p>Exclusion criteria: not be within 18 weeks of planned retirement</p> <p>Duration and type of sick leave: 1.5-6 months; full sick leave</p> <p>Type of sick leave compensation: 30.4% incapacity benefit, rest unclear</p>
Interventions	<p>Intervention: job retention and rehabilitation</p> <p>Components of intervention:</p> <ul style="list-style-type: none"> • Individual action plan • Health intervention: delivered away from the workplace, a treatment to the mind or body of the recipient, must not contact or seek to influence the employer or the workplace, could not be delivered by an occupational health nurse, advice only about the health condition and focus on mind or body • Workplace intervention: delivered in any location, must be delivered by an appropriately qualified professional or organisation, could involve contact with the recipient's employer, focus on change within the individual's workplace environment, advice only about the workplace or how people work <p>Team: psychologist, psychotherapist, physical therapist, podiatrists, chiropractors, osteopaths, dieticians</p> <p>Involvement of the employer: yes</p> <p>Providers of intervention: case managers, experience and training not reported</p> <p>Theoretical basis: not reported</p> <p>Duration: 20 to 36 weeks</p> <p>Control: usual practice; no systematic aid, low levels of work support</p>
Outcomes	<p>Return-to-work outcomes (measurement/data collection):</p> <ul style="list-style-type: none"> • Proportion at work of end of the study (face-to-face survey), • Proportion who had ever returned to work, full-time, for at least 2 weeks (face-to-face survey) <p>Patient-reported outcomes (measurement):</p> <ul style="list-style-type: none"> • Physical, mental and social function (SF-36), • Pain (SF-36), • General health (SF-36) <p>Outcomes not analysed (measurement):</p>

Purdon 2006 (Continued)

- Hospital Anxiety and Depression scale (Hospital Anxiety and Depression Scale); data presented in groups, variance not estimable
- Cumulative sickness absence; data presented in groups, variance not estimable
- Cumulative incidence of return to work for a spell of 13 weeks; for at least 2, 6 or 13 weeks reported, we disregarded the 13 weeks outcome which most participants could not achieve due to short follow-up; to ensure longest follow-up, we used 2 weeks and conducted sensitivity analysis using 6 and 13 weeks
- Physical role (SF-36); overlap with other functional scales
- Emotional role (SF-36); overlap with other functional scales
- Energy/fatigue (SF-36)
- General health (self-assessed); overlap with other functional scales
- Health improvement (self-assessed); overlap with other functional scales

Notes

Authors presented data only for the weighted numbers of patients: "These unequal numbers per group inevitably leads to some concerns that the randomisation groups may not be strictly balanced: to address this a thorough non-response analysis has been carried out and the data has been weighted to help minimise any non-response bias." (p. 2)

Return to work was reported for at least 2 weeks, 6 weeks or 13 weeks: due to the limited follow-up of 20-36 weeks, we disregarded the 13 weeks outcome which most participants probably could not achieve in this timeframe; to ensure the longest follow-up, we used the data for the 2 weeks outcome and conducted sensitivity analyses using 6 and 13 weeks outcome

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated
Allocation concealment (selection bias)	Low risk	Concealed
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and personnel not blind
Blinding of outcome assessment (detection bias) All outcomes	High risk	Outcome survey for return-to-work outcomes with risk of recall in both groups Not blind for patient-reported outcomes
Incomplete outcome data (attrition bias) All outcomes	High risk	High rates of non-response (20% intervention group, 35% control group)
Selective reporting (reporting bias)	Unclear risk	No protocol published
Other bias	High risk	Low compliance (88% received return-to-work-plan, 72% of those followed the plan), probably bias through weighting: "The weighting strategy could have introduced bias into the impact estimates. A comparison . . . showed that . . . the estimates have not been affected substantially. We conclude that the weighting has not distorted the measurement of the impact in a way that adversely affects the comparison of the randomisation groups or the interpretation of the estimates." (p. 142)

Rossignol 2000

Methods	<p>Design: RCT, parallel, 2 arms</p> <p>Country: Canada</p> <p>Sample size: 110</p> <p>Unit of allocation: individuals</p> <p>Unit of analysis: individuals</p> <p>Date of recruitment: June 1995 to December 1996</p> <p>Method of recruitment: invitation by letter and by telephone to all consecutive cases eligible for inclusion in the computer system of Quebec Worker's Compensation Board in Montreal office</p> <p>Follow-up: 3, 6 months</p>
Participants	<p>Health problem: any work-related injury to the middle or lower vertebral column, not surgery or multiple injuries</p> <p>Age in years: mean 37.6 (SD 10.1)</p> <p>Female in %: 28</p> <p>Intervention group: 54 participants</p> <p>Control group: 56 participants</p> <p>Inclusion criteria: absent from work 4-8 weeks from the date of filing a claim, compensation for any work-related injury to the thoracic, lumbar, and/or sacral portions of the vertebral column</p> <p>Exclusion criteria: history of compensation for the back in the previous year or history of spinal surgery at any time in the past, multiple injuries involving sites other than mid- or lower spine, workers with claims labelled as a recurrent by the Quebec Worker's Compensation Board or in litigation at the time of recruitment, pregnancy, no communication in French or in English</p> <p>Duration and type of sick leave: cumulative 40 days of absence from work; full sick leave</p> <p>Type of sick leave compensation: Quebec Worker's Compensation Board (public insurance)</p>
Interventions	<p>Intervention: programme for coordination of primary health care (CORE)</p> <p>Components of intervention:</p> <ul style="list-style-type: none"> • Clinical evaluation • Diagnosis which included 3 aspects: medical, psychosocial, and occupational • Establishment of a plan of action with the worker • Explanation of conclusions and recommendations to the worker • Assistance to treating physicians • Weekly contact with the worker by telephone until he/she returned to work • Weekly meeting to discuss each active case • Workplace recommendations on occasion, but without any direct contact with employers <p>Team: treating physician, chiropractor, physiotherapist</p> <p>Involvement of the employer: no direct contact, but workplace accommodations on occasion</p> <p>Providers of intervention: a team of 2 primary care physicians and a nurse, experience and training not reported</p> <p>Theoretical basis: clinical guideline for the management of back pain</p>

Rossignol 2000 (Continued)

Duration: until return to work

Control: usual practice; instruction to continue with their treating physician

Outcomes	Return-to-work outcomes (measurement/data collection): <ul style="list-style-type: none">Time to return to work, full- or part-time, for at least 2 days (administrative database) Patient-reported outcomes (measurement): <ul style="list-style-type: none">Pain (visual analogue scale),Physical function (Quebec Back Pain Disability Scale),Overall function (Oswestry Low Back Pain Disability Questionnaire) Outcomes not analysed (measurement): <ul style="list-style-type: none">Pain (Dallas Pain Questionnaire); overlap with other functional scalesHealthcare satisfaction (not specified questionnaire); not reported	
Notes	—	
Risk of bias		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated
Allocation concealment (selection bias)	Low risk	Consecutively numbered sealed envelopes, allocation was probably concealed
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and personnel not blind
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blind for return-to-work outcomes Not blind for patient-reported outcomes
Incomplete outcome data (attrition bias) All outcomes	Low risk	For return-to-work outcomes, no attrition according to author, for patient related outcomes 18% missing data, “The number of nonreturned questionnaires at 6 months was relatively large but equal in both groups, and the baseline functional scores were similar to those who returned their questionnaire” (p. 256), plausible effect size among missing data (assuming a smaller effect in same direction), not enough to introduce clinically relevant bias (as the observed effects for patient-reported outcomes were clearly beneficial)
Selective reporting (reporting bias)	Unclear risk	Healthcare satisfaction only incompletely reported
Other bias	High risk	Some baseline imbalances between the groups: fewer men in the CORE group (66.7% vs. 76.8%), more subjects with a history of compensation for back pain in the CORE group (42.6% vs. 28.6%) and more subjects with disabling back pain in the previous month in the CORE group (27% vs. 8.9%)

Scholz 2015

Methods	<p>Design: quasi-RCT, parallel, 2 arms</p> <p>Country: Switzerland</p> <p>Sample size: 8050</p> <p>Unit of allocation: individuals</p> <p>Unit of analysis: individuals</p> <p>Date of recruitment: 2002 to 2006</p> <p>Method of recruitment: cases covered by the Swiss National Accident Insurance Fund (which includes occupational and non-occupational accident insurance, and insurance for the unemployed) and registered within 12 months of the accident where eligible for randomisation</p> <p>Follow-up: 12, 24, 36, 48, 60, 72 months</p>
Participants	<p>Health problem: severe accidents, occupational and non-occupational</p> <p>Age in years: mean 40.21</p> <p>Female in %: 18</p> <p>Intervention group: 4039 participants (unweighted: 3863)</p> <p>Control group: 4013 participants (unweighted: 4187)</p> <p>Inclusion criteria: medical complexity, difficulties with return to work, risk of permanent disability</p> <p>Exclusion criteria: no coverage by the Swiss compulsory accident insurance, cases registered more than 12 months after accident, patients with occupational diseases</p> <p>Duration and type of sick leave: no information about duration of sick leave, at least 4 weeks seemed plausible; full- and part-time sick leave</p> <p>Type of sick leave compensation: Swiss National Accident Insurance Fund (public insurance)</p>
Interventions	<p>Intervention: intensive case management</p> <p>Components of intervention: highly structured approach with defined steps:</p> <ul style="list-style-type: none"> • Establishing contact • Situation analysis in cooperation with consulting insurance physicians and other specialists • Planning of measures and defining objectives • Case management with clearly defined objectives, including personal contact and field visits to patients, employers and care providers • Debriefing • All activities administered, coordinated and executed by the case manager (caseload of 35 cases) • Focus on satisfying patients' needs, optimising healthcare treatment and achieving the best occupational reintegration possible • Mean number of care providers: 10.5 (significantly more than control group) <p>Team: independent physician, insurance physician, outpatient care provider, inpatient care provider, physiotherapist, ergotherapist, other care provider</p> <p>Involvement of the employer: yes</p> <p>Providers of intervention: case manager, "specially trained"</p> <p>Theoretical basis: not reported</p> <p>Duration: as long as considered appropriate, average 21.9 months (median 18 months)</p>

Scholz 2015 (Continued)

Control: standard case management:

- Standard management procedure for severe accidents by very experienced claims specialists with a caseload of 100 cases
- Focus on handling acute emerging problems and helping with return to work
- No personal contact
- Aim: ensure that the patient receives the rehabilitation deemed necessary
- Mean number of care providers: 10 (significantly less than intervention group)

Outcomes

Return-to-work outcomes (measurement/data collection):

- Number of days lost from work, full- or part-time (administrative database)

Patient-reported outcomes (measurement): none

Outcomes not analysed (measurement):

- Average work incapacity (administrative database),
- Work incapacity (administrative database),
- Disability pension (administrative database),
- Integrity indemnities (administrative database),
- Number of care providers (administrative database),
- Length of stay in hospital (administrative database)

Notes

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Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random procedure based on custom software
Allocation concealment (selection bias)	Low risk	Concealed (author information)
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and personnel not blind (author information)
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blind for return-to-work outcomes
Incomplete outcome data (attrition bias) All outcomes	Low risk	No losses to follow-up
Selective reporting (reporting bias)	Unclear risk	No protocol published
Other bias	Low risk	No indications of other sources of bias

Stapelfeldt 2011

Methods	<p>Design: RCT, parallel, 2 arms with 2 subgroups</p> <p>Subgroups: 1) those with influence on the planning of their own work and no perceived risk of losing job and/or being a work injury claimant, 2) those without influence on the planning of their own work or feeling at risk of losing job and not a work injury claimant</p> <p>Country: Denmark</p> <p>Sample size: 120</p> <p>Unit of allocation: individuals</p> <p>Unit of analysis: individuals</p> <p>Date of recruitment: August 2007 to July 2008</p> <p>Method of recruitment: referred by their general practitioner, recruited at the Spine Center</p> <p>Follow-up: 12 months</p>
Participants	<p>Health problem: low back pain</p> <p>Age in years: mean 40.7 (SD 10.0)</p> <p>Female in %: 58</p> <p>Intervention group: 60 participants</p> <p>Control group: 60 participants</p> <p>Inclusion criteria: absent from work for 3-16 weeks, aged 16-60 years, ability to read and speak Danish</p> <p>Exclusion criteria: unemployed, continuing or progressive symptoms indicating plans for surgery, surgery in the spine within the past 12 months, diagnosis of specific back disease (e.g. tumour), diagnosis of primary psychiatric disease, pregnancy, known substance abuse</p> <p>Duration and type of sick leave: range 3-16 weeks; full- and part-time sick leave</p> <p>Type of sick leave compensation: municipalities, financed by taxpayers (public insurance)</p>
Interventions	<p>Intervention: multidisciplinary intervention (same as Jensen 2012)</p> <p>Components of intervention: brief intervention like control group; case management containing:</p> <ul style="list-style-type: none"> • A standardised interview and ≥ 1 meetings • Tailored rehabilitation plan aiming at full or partial return to work or plan toward staying on the labour market in other ways • Case discussion with the multidisciplinary team • Regular appointments with other team members and meetings at the workplace • Supervision of the entire team by a former general practitioner <p>Team: specialist of social medicine, a rheumatologist, a physiotherapist, a social worker and an occupational therapist</p> <p>Involvement of the employer: yes</p> <p>Providers of intervention: 3 case managers; experience and training not reported</p> <p>Theoretical basis: Canadian multidisciplinary work rehabilitation programme (i.e. the Sherbrooke model, Loisel 2002)</p> <p>Duration: median 18 weeks</p> <p>Control: municipality case management and brief intervention:</p>

Stapelfeldt 2011 (Continued)

- Standard clinical low back pain examination by a physician, relevant imaging and examinations ordered and treatment options discussed
- Information was given in a reassuring way
- Adjusted medical pain management, physiotherapy
- Advice to resume work when possible
- Coordination between stakeholders

Same control group interventions as [Jensen 2012](#) and [Myhre 2014](#) (without municipality case management)

Outcomes	<p>Return-to-work outcomes (measurement/data collection):</p> <ul style="list-style-type: none"> • Sick leave weeks (administrative data), • Time to return to work ,full-time, for at least 4 weeks (administrative data), • Proportion who had ever returned to work, full-time, for at least 4 weeks (administrative data) <p>Patient-reported outcomes (measurement): none</p> <p>Outcomes not analysed (measurement): none</p>
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Notes

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Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer generated block-randomisation
Allocation concealment (selection bias)	Low risk	Allocation was carried out by a secretary
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding was not possible, only the first clinical examination was carried out double blind
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Author information
Incomplete outcome data (attrition bias) All outcomes	Low risk	Complete data for return-to-work outcomes
Selective reporting (reporting bias)	Low risk	Study protocol published; all outcomes reported
Other bias	Low risk	No indications of other sources of bias

Van der Feltz-Cornelis 2010

Methods	<p>Design: RCT, parallel, 2 arms</p> <p>Country: Netherlands</p> <p>Sample size: 60 in 24 clusters</p>
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Return-to-work coordination programmes for improving return to work in workers on sick leave (Review)

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Van der Feltz-Cornelis 2010 (Continued)

Unit of allocation: cluster

Unit of analysis: individuals

Date of recruitment: not reported, duration 3 years

Method of recruitment: recruitment of occupational physicians and consultant psychiatrists in cooperation with ArboNed and Arbounie (2 companies providing company medical care; together they cover almost half of the working population in the Netherlands); recruitment of patients who visited an occupational physician within the past 6 months, selected from the medical files, invitation by letter

Follow-up: 3, 6 months

Participants

Health problem: anxiety, depression, somatoform disorder

Age in years: mean 42, range 24-59

Female in %: 58

Intervention group: 29 participants (12 occupational physicians)

Control group: 31 participants (12 occupational physicians)

Inclusion criteria: absent from work > 6 weeks, a positive screen on either the Patient Health Questionnaire or the Whitely Index, no plan to return to work within another 6 weeks

Exclusion criteria: suicidal, addicted to drugs or alcohol, psychotic, suffering from dementia, insufficient knowledge of the Dutch language, involved in a legislative procedure for unemployment compensation or on sick leave > 52 weeks

Duration and type of sick leave: mean 144 days, range 1-46 (conflicting information to inclusion criteria); full sick leave

Type of sick leave compensation: government

Interventions

Intervention: psychiatric consultation model

Components of intervention:

- All occupational physicians received training in the diagnosis and treatment of common mental disorder in 3 sessions
- Collaborative care approach with a patient-tailored care and a treatment plan
- Treatment recommended by the consultant psychiatrist; the occupational physician co-ordinates the care and evaluates the treatment steps

Team: occupational physician, consulting psychiatrist, and in some cases the general practitioner

Involvement of the employer: no

Providers of intervention: 12 occupational physicians, training in diagnosis and treatment of mental disorders, consulted by 2 psychiatrists trained in improvement of work functioning

Theoretical basis: [Van der Feltz-Cornelis 1996](#)

Duration: until return to work

Control: usual practice; care from occupational physicians and mental healthcare professionals

Outcomes

Return-to-work outcomes (measurement/data collection):

- Time to return to work full-time, for at least 4 weeks (self-report and administrative data),
- Proportion at work at end of the follow-up = proportion who had ever returned to work full-time, for at least 4 weeks, all who returned stayed at work (self-report and administrative data)

Van der Feltz-Cornelis 2010 (Continued)

Patient-reported outcomes (measurement):

- Depression (Patient Health Questionnaire 9)

Outcomes not analysed (measurement):

- Somatisation (Patient Health Questionnaire 15),
- Anxiety and depression (SCL-90) (no sub scales reported),
- Quality of life (EQ-5D) (reported in Quality Adjusted Life Years)

Notes	Baseline characteristics of the occupational physicians not reported (unit of randomisation)	
<i>Risk of bias</i>		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated
Allocation concealment (selection bias)	Low risk	Consecutive envelopes, the sequence was concealed until interventions were assigned by an independent blinded research assistant
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and personnel not blind
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Blind for return-to-work outcomes Not blind for patient-reported outcomes
Incomplete outcome data (attrition bias) All outcomes	High risk	18% losses to follow-up for return-to-work outcomes, 27% losses to follow-up for patient-reported outcomes
Selective reporting (reporting bias)	High risk	Primary outcome was not pre-specified: changed from “level of functioning” in the protocol to “time until RTW for at least 4 weeks”; reasons for change of primary outcomes were not discussed in final report; “level of functioning” not reported
Other bias	Low risk	No indications of other sources of bias; no indication of design effect: “As this is a cluster randomized trial, a correction for possible doctor variance (practices) was made. It was shown that it did not make any difference to the effect size which doctor gave the treatment. Apparently the effect of the intervention stands for itself.” (p. 383)

Volker 2015

Methods	Design: RCT, parallel, 2 arms Country: Netherlands Sample size: 220 in 12 clusters Unit of allocation: cluster Unit of analysis: individuals
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Volker 2015 (Continued)

	<p>Date of recruitment: not reported</p> <p>Method of recruitment: screening of sick-listed employees visiting their occupational physician, invitation by letter and telephone</p> <p>Follow-up: 3, 6, 9, 12 months</p>
Participants	<p>Health problem: common mental disorders</p> <p>Age in years: 44.46 (SD 10.04)</p> <p>Female in %: 59</p> <p>Intervention group: 131 participants (32 occupational physicians)</p> <p>Control group: 89 participants (30 occupational physicians)</p> <p>Inclusion criteria: absent from work 4-26 weeks, aged ≥ 18 years, screened positive (score ≥ 10) on either the scale of the Patient Health Questionnaire 9, Patient Health Questionnaire 15 or the Generalised Anxiety Disorder Questionnaire</p> <p>Exclusion criteria: insufficient knowledge of the Dutch language, pregnancy, involved in legal action against their employer, no Internet access</p> <p>Duration and type of sick leave: 4-26 weeks, median 73 days (intervention group) and 70 days (control group); full- and part-time sick leave</p> <p>Type of sick leave compensation: government</p>
Interventions	<p>Intervention: e-health module embedded in Collaborative Occupational health care (ECO)</p> <p>Components of intervention: the ECO intervention included</p> <ul style="list-style-type: none"> • Assessment questionnaire • The tailor-made Return@Work eHealth module with possible 16 sessions for the employee to work through alone • An email decision aid for the occupation physician • Regular monitoring and meetings between the occupational physician and the employee <p>Team: occupational physician, general practitioner, mental health professional</p> <p>Additional resource: Return@Work eHealth module, email decision aid for the occupational physician</p> <p>Involvement of the employer: no</p> <p>Providers of intervention: 29 occupational physicians at Arbo Vitale (a large occupational health service) and one occupational physician at GGz Breburg (a large mental health service employer); half a day training on sickness guidance, the e-health module and contact to other stakeholders</p> <p>Theoretical basis: none</p> <p>Duration: not reported (up to 16 sessions)</p> <p>Control: usual practice with contact to occupational physician, general practitioner and mental health professional, contact to other healthcare professionals not restricted (same utilisation as in intervention group)</p>
Outcomes	<p>Return-to-work outcomes (measurement/data collection):</p> <ul style="list-style-type: none"> • Time to return to work, full- or part-time, for at least 4 weeks (administrative data), • Proportion at work at end of the follow-up, full- or part-time, for at least 4 weeks (administrative data), • sickness absence (administrative data) <p>Patient-reported outcomes (measurement):</p>

Volker 2015 (Continued)

- Depression (Patient Health Questionnaire 9),
- Anxiety (Generalised Anxiety Disorder Questionnaire GAD-7)

Outcomes not analysed (measurement):

- Somatization (Patient Health Questionnaire 15)

Notes	Authors provided additional data for secondary outcomes	
Risk of bias		
Bias	Authors' judgement	Support for judgement
Random sequence genera- tion (selection bias)	Low risk	Computer-generated
Allocation concealment (selection bias)	Low risk	“The research assistants and the participants were blind to the allocation when assessing the eligibility of sick-listed employees for participating in this study.” (p. 3)
Blinding of participants and personnel (perfor- mance bias) All outcomes	High risk	Participants and personnel not blind
Blinding of outcome as- sessment (detection bias) All outcomes	Low risk	Blind for return-to-work outcomes Not blind for patient-reported outcomes
Incomplete outcome data (attrition bias) All outcomes	Low risk	2% losses to follow-up for return-to-work outcomes “For the self-reported secondary outcomes, follow-up questionnaires were returned by 158 of 220 participants (71.8%) at 3 months, 158 participants (71.8%) at 6 months, 137 participants (62.3%) at 9 months, and 131 partici- pants (59.5%) at 12 months. At 9 months, the loss to follow-up rate was sig- nificantly higher in the ECO condition (44.3%, 58/131) than in the CAU condi- tion (28%, 25/89, P=.02). However, the participants who did return the ques- tionnaire at 9 months did not differ significantly at baseline on sickness ab- sence duration, depression, somatization, or anxiety symptoms from the par- ticipants who did not return the questionnaire. This was the case in the ECO condition and in the control condition. From these results, we concluded that there was no evidence for selective dropout in this study.” (p. 7)
Selective reporting (re- porting bias)	Low risk	Study protocol published, all outcomes reported
Other bias	High risk	Low adherence to intervention: “in the intervention group, 31 participants (23.7%) never logged in at Return@Work. Of the 100 participants who did log in at Return@Work, 10.0% (10/100) did not finish the introduction (which in- cluded information about Return@Work and a questionnaire). The mean num- ber of total log-ins of the 90 participants who finished the introduction and ac- tually started Return@Work was 7.8 (SD 6.1). Furthermore, 40% (36/90) of the participants minimally completed half of the modules of Return@Work.” (p. 11) no indication of a cluster effect: “The results, however, showed that there was no evidence of a clustering effect at the level of occupational physician regions (P = 0.92).” (p. 9)

IQR: interquartile range; **SD:** standard deviation; **SF-12/36:** 12/36-item Short Form Health Survey.

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Abásolo 2005	Not a commissioned programme, not an individually tailored programme
Abásolo 2007	Not a commissioned programme, not an individually tailored programme
Alaranta 1986	Not a commissioned programme, not an individually tailored programme
Alaranta 1994	Not a commissioned programme, not an individually tailored programme
Andersen 2015	Sick leave was not inclusion criteria
Anema 2007	Sick leave less than 4 weeks
Arnetz 2003	Sick leave duration unclear
Bakker 2007	Not a commissioned programme, not an individually tailored programme
Berg 2011	Sick leave less than 4 weeks
Bergström 2012	Not an individually tailored programme
Bethge 2010	Sick leave was not an inclusion criterion
Bethge 2011	Not an individually tailored programme
Beutel 2005	Not a commissioned programme, not an individually tailored programme
Bishop 2014	Only vocational advice service
Bjornekleit 2013	Not an individually tailored programme, less than 80% on sick leave
Blonk 2006	Not an individually tailored programme, duration of sick leave unclear
Bohman 2011	Prevention programme
Bonde 2005	Sick leave less than 4 weeks
Bouwsmma 2014	Sick leave less than 4 weeks
Braathen 2007	Not an individually tailored programme
Brendbekken 2016	Not coordinated
Brouwers 2006	Not an individually tailored programme
Buijs 2009	Not an RCT
Busch 2011	Not an individually tailored programme
Byrne 1993	Aim was not return to work
Carlsson 2013	Sick leave less than 4 weeks

Study	Reason for exclusion
Cheadle 1999	Sick leave was not an inclusion criterion
Cheng 2007	Not an individually tailored programme
De Boer 2004	Prevention programme
De Boer 2007	Prevention programme
De Buck 2005	Prevention programme
Della-Posta 2006	Unemployed participants, not an individually tailored programme
Demir 2014	Not an individually tailored programme, no return-to-work plan
Demoulin 2010	Not an individually tailored programme
Dibbelt 2006	Not a commissioned programme, not an individually tailored programme
Drews 2007	Not an RCT
Du Bois 2012	Advice only
Ektor-Andersen 2008	Sick leave less than 4 weeks
Ellis 2010	Investigates self-management
Elvsåshagen 2009	Not an individually tailored programme
Eshoj 2001	Less than 80% on sick leave
Fimland 2014	Not an individually tailored programme
Frey 2008	Unemployed participants
Fritz 2003	Sick leave less than 4 weeks, no individually tailored programme
Gatchel 2003	Not a controlled design
Greitemann 2006	Not a commissioned programme, not an individually tailored programme
Haldorsen 1998	No face-to-face contact, not an individually tailored programme
Haldorsen 2002	No face-to-face contact, not an individually tailored programme
Hees 2013	Not an individually tailored programme
Henchoz 2010	Not an individually tailored programme
Hlobil 2007	Not an individually tailored programme
Hoverstad 1994	Prevention programme
Hubbard 2013	No face-to-face contact, aim was to assess the feasibility of the programme
Huppe 2006	Sick leave less than 4 weeks

Study	Reason for exclusion
Indahl 1998	Not an individually tailored programme
Jensen 1995	Sick leave duration unclear, no commissioned programme
Jensen 2013	Not an RCT
Johansson 1998	Sick leave less than 4 weeks
Jousset 2004	Not an individually tailored programme
Karlson 2010	Not an RCT
Karrholm 2006	No prospective design
Karrholm 2008	No prospective design
Kimbrough 2010	Not an RCT
Kirby 2004	Not an individually tailored programme
Kittel 2008	Not a commissioned programme, not an individually tailored programme
Klaber Moffett 2004	Not an individually tailored programme
Knapp 2015	Not coordinated, no return-to-work plan
Knight 1994	Prevention programme
Kornfeld 2000	More than 20% unemployed participants
Kyes 1999	Not an RCT
Lai 2007	Not an RCT
Lamb 2007	Aim was not return to work; participants not on sick leave
Lerner 2015	Participants not on sick leave
Li 2006	Aim was not return to work
Li-Tsang 2008	Control group received the intervention after 3 weeks
Linden 2014	Not an individually tailored programme; participants not on sick leave
Lindström 1992	Not a commissioned programme, not an individually tailored programme
Lindström 1995	Not a commissioned programme, not an individually tailored programme
Linton 1989	Sick leave less than 4 weeks
Loisel 2002	Sick leave was 4 weeks during 1 year
Magnussen 2007	Not an individually tailored programme
Mallon 2008	Not an individually tailored programme

Study	Reason for exclusion
Marhold 2001	Not an individually tailored programme
Marnetoft 1999	No prospective design, more than 20% unemployed participants
Marnetoft 2000	No prospective design, more than 20% unemployed participants
Martin 2013	Quasi-randomised trial, more than 20% unemployed participants
Matchar 2008	Less than 80% on sick leave
McCluskey 2006	Not an RCT
Meijer 2006	Not an individually tailored programme
Mitchell 1994	Not an individually tailored programme
Mortelmans 2006	Not an RCT
Netterstrom 2013	Not an individually tailored programme
Nilsson 1996	More than 20% unemployed participants
Noordik 2013	Sick leave less than 4 weeks
Norrefalk 2007	Not an individually tailored programme
Ntsiea 2015	Not an individually tailored programme
Nystuen 2006	Not an individually tailored programme
Odeen 2013	Prevention programme
Okpaku 1997	Unemployed participants
Pedersen 2015	Not an individually tailored programme, no return-to-work plan
Peters 1999	Health promotion programme
Petit 2014	Not all participants on sick leave
Ponzer 2000	Sick leave less than 4 weeks
Poulsen 2014	More than 20% unemployed participants
Raftery 2013	Study protocol, no multidisciplinary intervention, not individually tailored
Rebergen 2007	Sick leave less than 4 weeks
Rebergen 2009a	Sick leave less than 4 weeks
Rebergen 2009b	Sick leave less than 4 weeks
Roche 2007	Not an individually tailored programme
Rolving 2014	Study protocol, not an individually tailored programme

Study	Reason for exclusion
Ross 2006	Not a commissioned programme, not an individually tailored programme
Rost 2004	Not a commissioned programme; more than 20% unemployed participants
Rupp 1996	More than 20% unemployed participants
Sacks 2008	Unemployed participants
Salazar 2010	Evaluation study
Scheer 1995	Not an RCT
Schene 2007	Not an individually tailored programme
Schultz 2008	Not an RCT
Shete 2012	Participants not on sick leave
Shu-Kei 2007	Not an individually tailored programme
Sjöström 2012	Not an RCT
Skouen 2002	No face-to-face contact, not an individually tailored programme
Skouen 2006	No face-to-face contact, not an individually tailored programme
Stapelfeldt 2015	Not an RCT
Steenstra 2003	Sick leave less than 4 weeks
Steenstra 2006	Sick leave less than 4 weeks
Steenstra 2007	Sick leave less than 4 weeks
Steenstra 2009	Sick leave less than 4 weeks
Streibelt 2008	No controlled design
Streibelt 2014	Multidisciplinary rehabilitation for both groups
Sundberg 2009	Aim was not return to work
Svendsen 2014	Not an individually tailored programme
Tamminga 2013	Not a coordinated programme
Tamminga 2016	Not an individually tailored programme
Thunnissen 2008	Not a commissioned programme, more than 20% unemployed participants, sick leave duration unclear
Van Beurden 2012	Not an RCT
Van Beurden 2015	Sick leave less than 4 weeks

Study	Reason for exclusion
Van der Klink 2003	Not an individually tailored programme, sick leave less than 4 weeks
Van Oostrom 2008	Sick leave duration 2-8 weeks
Van Oostrom 2010	Sick leave duration 2-8 weeks
Varekamp 2011	Other outcomes
Vermeulen 2010	Unemployed participants
Vermeulen 2011	More than 20% unemployed participants
Vidor 2014	Not an individually tailored programme
Vissers 2008	Study was not conducted
Vlasveld 2013	Not an individually tailored programme
Vonk Noordegraaf 2014	Sick leave less than 4 weeks
Wang 2007	No face-to-face contact, participants not on sick leave
Westman 2010	Sick leave less than 4 weeks, less than 80% on sick leave
Whitehurst 2007	Not a commissioned programme, not an individually tailored programme
Willert 2011	Less than 80% on sick leave
Yassi 1995	No prospective design, not an individually tailored programme
Zaman 2016	Not an individually tailored programme, sick leave duration unclear
Zhang 1994	Unemployed participants
Østerås 2009	Not an individually tailored programme

RCT: randomised controlled trial.

Characteristics of studies awaiting assessment *[ordered by study ID]*

[Norén 2015](#)

Methods	Design: RCT, parallel, 2 arms Country: Sweden Sample size: unknown Method of recruitment: patients at high risk for long-term sick leave are identified within primary care Follow-up: unknown
Participants	Patients at high risk for long-term sick leave

Norén 2015 (Continued)

Interventions	Intervention: standard care and return-to-work coordination (individually adapted patient coaching and coordination of rehabilitation activities, workplace efforts and health care) Control: standard care
Outcomes	Cumulative sickness absence Average sick-claim rates
Notes	Some inclusion and exclusion criteria not verifiable, poster presentation, no full-text available

DATA AND ANALYSES

Comparison 1. Return-to-work outcomes

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Time to return to work	9		Hazard Ratio (Random, 95% CI)	Subtotals only
1.1 Short-term, follow-up 6 months	2	161	Hazard Ratio (Random, 95% CI)	1.32 [0.93, 1.88]
1.2 Long-term, follow-up 12 months	6	1935	Hazard Ratio (Random, 95% CI)	1.25 [0.95, 1.66]
1.3 Very long-term, follow-up longer than 12 months	2	474	Hazard Ratio (Random, 95% CI)	0.93 [0.74, 1.17]
2 Time to return to work, sensitivity analysis (low risk of bias studies only)	7		Hazard Ratio (Random, 95% CI)	Subtotals only
2.1 Short-term, follow-up 6 months	1	110	Hazard Ratio (Random, 95% CI)	1.17 [0.76, 1.79]
2.2 Long-term, follow-up 12 months	6	1935	Hazard Ratio (Random, 95% CI)	1.25 [0.95, 1.66]
2.3 Very long-term, follow-up longer than 12 months	1	351	Hazard Ratio (Random, 95% CI)	0.86 [0.68, 1.09]
3 Cumulative sickness absence in work days	7		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.1 Short-term, follow-up 6 months	1	113	Mean Difference (IV, Random, 95% CI)	-16.18 [-32.42, 0.06]
3.2 Long-term, follow-up 12 months	6	1339	Mean Difference (IV, Random, 95% CI)	-14.84 [-38.56, 8.88]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.3 Very long-term, follow-up longer than 12 months	1	8052	Mean Difference (IV, Random, 95% CI)	7.0 [-15.17, 29.17]
4 Proportion at work at end of the follow-up	7		Risk Ratio (IV, Random, 95% CI)	Subtotals only
4.1 Short-term, follow-up 6 months	5	1388	Risk Ratio (IV, Random, 95% CI)	1.06 [0.86, 1.30]
4.2 Long-term, follow-up 12 months	5	3061	Risk Ratio (IV, Random, 95% CI)	1.06 [0.99, 1.15]
4.3 Very long-term, follow-up longer than 12 months	2	815	Risk Ratio (IV, Random, 95% CI)	0.94 [0.82, 1.07]
5 Proportion at work at end of the follow-up, sensitivity analysis (low risk of bias studies only)	4		Risk Ratio (IV, Random, 95% CI)	Subtotals only
5.1 Short-term, follow-up 6 months	3	873	Risk Ratio (IV, Random, 95% CI)	1.20 [1.10, 1.30]
5.2 Long-term, follow-up 12 months	3	1174	Risk Ratio (IV, Random, 95% CI)	1.08 [0.94, 1.23]
5.3 Very long-term, follow-up longer than 12 months	1	351	Risk Ratio (IV, Random, 95% CI)	0.95 [0.80, 1.13]
6 Proportion who had ever returned to work	12		Risk Ratio (IV, Random, 95% CI)	Subtotals only
6.1 Short-term, follow-up 6 months	4	675	Risk Ratio (IV, Random, 95% CI)	0.87 [0.63, 1.19]
6.2 Long-term, follow-up 12 months	8	3822	Risk Ratio (IV, Random, 95% CI)	1.03 [0.97, 1.09]
6.3 Very long-term, follow-up longer than 12 months	3	938	Risk Ratio (IV, Random, 95% CI)	0.95 [0.88, 1.02]
7 Proportion who had ever returned to work, sensitivity analysis (low risk of bias studies only)	8		Risk Ratio (IV, Random, 95% CI)	Subtotals only
7.1 Short-term, follow-up 6 months	2	160	Risk Ratio (IV, Random, 95% CI)	1.06 [0.86, 1.31]
7.2 Long-term, follow-up 12 months	6	1935	Risk Ratio (IV, Random, 95% CI)	1.04 [0.96, 1.11]
7.3 Very long-term, follow-up longer than 12 months	1	351	Risk Ratio (IV, Random, 95% CI)	0.97 [0.87, 1.08]

Analysis 1.1. Comparison 1 Return-to-work outcomes, Outcome 1 Time to return to work.

Analysis 1.2. Comparison 1 Return-to-work outcomes, Outcome 2 Time to return to work, sensitivity analysis (low risk of bias studies only).

Analysis 1.3. Comparison 1 Return-to-work outcomes, Outcome 3 Cumulative sickness absence in work days.

Analysis 1.4. Comparison 1 Return-to-work outcomes, Outcome 4 Proportion at work at end of the follow-up.

Analysis 1.5. Comparison 1 Return-to-work outcomes, Outcome 5 Proportion at work at end of the follow-up, sensitivity analysis (low risk of bias studies only).

Analysis 1.6. Comparison 1 Return-to-work outcomes, Outcome 6 Proportion who had ever returned to work.

Analysis 1.7. Comparison 1 Return-to-work outcomes, Outcome 7 Proportion who had ever returned to work, sensitivity analysis (low risk of bias studies only).

Comparison 2. Patient-reported outcomes

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Pain - scale 0 to 100 (higher score indicates improvement) - MID 10.0	7		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1 Short-term, follow-up 6 months	4	427	Mean Difference (IV, Random, 95% CI)	-4.76 [-14.89, 5.36]
1.2 Long-term, follow-up 12 months	6	2319	Mean Difference (IV, Random, 95% CI)	-2.98 [-5.33, -0.63]
1.3 Very long-term, longer than 12 months	1	80	Mean Difference (IV, Random, 95% CI)	-7.20 [-15.76, 1.36]
2 Pain - pooled RDs of workers with an improvement greater than the MID of 10.0	7		Risk Difference (Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.1 Short-term, follow-up 6 months	4		Risk Difference (Random, 95% CI)	-0.03 [-0.11, 0.05]
2.2 Long-term, follow-up 12 months	6		Risk Difference (Random, 95% CI)	-0.03 [-0.06, -0.00]
2.3 Very long-term, longer than 12 months	1		Risk Difference (Random, 95% CI)	-0.02 [-0.11, 0.07]
3 Overall function - scale 0 to 100 (higher score indicates improvement) - MID 10.0	6		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.1 Short-term, follow-up 6 months	3	295	Mean Difference (IV, Random, 95% CI)	8.13 [3.95, 12.32]
3.2 Long-term, follow-up 12 months	5	2235	Mean Difference (IV, Random, 95% CI)	2.74 [-0.15, 5.64]
4 Overall function - pooled RDs of workers with an improvement greater than the MID of 10.0	6		Risk Difference (Random, 95% CI)	Subtotals only
4.1 Short-term, follow-up, 6 months	3		Risk Difference (Random, 95% CI)	0.16 [-0.04, 0.37]
4.2 Long-term, follow-up 12 months	5		Risk Difference (Random, 95% CI)	0.00 [-0.09, 0.09]
5 Physical function - scale 0 to 100 (higher score indicates improvement) - MID 8.4	5		Mean Difference (IV, Random, 95% CI)	Subtotals only
5.1 Short-term, follow-up 6 months	3	336	Mean Difference (IV, Random, 95% CI)	3.47 [-3.26, 10.20]
5.2 Long-term, follow-up 12 months	4	1860	Mean Difference (IV, Random, 95% CI)	2.19 [-2.29, 6.67]
5.3 Very long-term, follow-up longer than 12 months	1	78	Mean Difference (IV, Random, 95% CI)	1.85 [-2.25, 5.95]
6 Physical function - pooled RDs of workers with an improvement greater than the MID of 8.4	5		Risk Difference (Random, 95% CI)	Subtotals only
6.1 Short-term, follow-up 6 months	3		Risk Difference (Random, 95% CI)	0.03 [-0.07, 0.13]
6.2 Long-term, follow-up 12 months	4		Risk Difference (Random, 95% CI)	0.01 [-0.02, 0.03]
6.3 Very long-term, follow-up longer than 12 months	1		Risk Difference (Random, 95% CI)	0.0 [-0.02, 0.02]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
7 Social function - scale to 0 to 100 (higher score indicates improvement) - MID 11.7	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.1 Long-term, follow-up 12 months	2	1636	Mean Difference (IV, Random, 95% CI)	2.84 [-0.09, 5.77]
8 Social function - pooled RDs of workers with an improvement greater than the MID of 11.7	2		Risk Difference (Random, 95% CI)	Subtotals only
8.1 Long-term, follow-up 12 months	2		Risk Difference (Random, 95% CI)	0.01 [-0.02, 0.04]
9 Mental function - scale to 0 to 100 (higher score indicates improvement) - MID 7.3	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
9.1 Short-term, follow-up 6 months	1	125	Mean Difference (IV, Random, 95% CI)	1.85 [-2.67, 6.37]
9.2 Long-term, follow-up 12 months	3	1737	Mean Difference (IV, Random, 95% CI)	3.14 [1.16, 5.11]
9.3 Very long-term, follow-up longer than 12 months	1	78	Mean Difference (IV, Random, 95% CI)	6.09 [0.56, 11.63]
10 Mental function - pooled RDs of workers with an improvement greater than the MID of 7.3	3		Risk Difference (Random, 95% CI)	Subtotals only
10.1 Short-term, follow-up 6 months	1		Risk Difference (Random, 95% CI)	0.0 [-0.01, 0.01]
10.2 Long-term, follow-up 12 months	3		Risk Difference (Random, 95% CI)	0.00 [-0.01, 0.01]
10.3 Very long-term, follow-up longer than 12 months	1		Risk Difference (Random, 95% CI)	0.0 [-0.01, 0.01]
11 Depression - scale 0 to 27 (higher score indicates deterioration) - MID 5.0	4		Mean Difference (IV, Random, 95% CI)	Subtotals only
11.1 Short-term, follow-up 6 months	3	252	Mean Difference (IV, Random, 95% CI)	0.37 [-2.81, 3.55]
11.2 Long-term, follow-up 12 months	2	420	Mean Difference (IV, Random, 95% CI)	-0.00 [-1.07, 1.07]
12 Depression - pooled RDs of workers with an improvement greater than the MID of 5.0	4		Risk Difference (Random, 95% CI)	Subtotals only
12.1 Short-term, follow-up 6 months	3		Risk Difference (Random, 95% CI)	0.03 [-0.07, 0.12]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
12.2 Long-term, follow-up 12 months	2		Risk Difference (Random, 95% CI)	0.01 [-0.04, 0.06]
13 Anxiety - scale 0 to 21 (higher score indicates deterioration) - MID 4.0	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
13.1 Short-term, follow-up 6 months	2	208	Mean Difference (IV, Random, 95% CI)	-0.02 [-3.24, 3.21]
13.2 Long-term, follow-up 12 months	2	420	Mean Difference (IV, Random, 95% CI)	0.97 [-0.17, 2.12]
14 Anxiety - pooled RDs of workers with an improvement greater than the MID of 4.0	3		Risk Difference (Random, 95% CI)	Subtotals only
14.1 Short-term, follow-up 6 months	2		Risk Difference (Random, 95% CI)	-0.01 [-0.08, 0.07]
14.2 Long-term, follow-up 12 months	2		Risk Difference (Random, 95% CI)	0.02 [-0.03, 0.08]

Analysis 2.1. Comparison 2 Patient-reported outcomes, Outcome 1 Pain - scale 0 to 100 (higher score indicates improvement) - MID 10.0.

Study or subgroup	RTWCP		usual practice		Mean Difference Random, 95% CI	Weight	Mean Difference Random, 95% CI
	N	Mean(SD)	N	Mean(SD)			
Heterogeneity: Not applicable							
Test for overall effect: Z=1.65(P=0.1)							
Favours RTWCP					0	Favours usual practice	

Analysis 2.2. Comparison 2 Patient-reported outcomes, Outcome 2 Pain - pooled RDs of workers with an improvement greater than the MID of 10.0.

Study or subgroup	RTWCP	usual practice	Risk Difference		Weight	Risk Difference
	N	N	(SE)	IV, Random, 95% CI		IV, Random, 95% CI
2.2.1 Short-term, follow-up 6 months						
Bültmann 2009	0	0	-0.1 (0.072)		21.08%	-0.13[-0.27,0.01]
Feuerstein 2003	0	0	-0 (0.04)		38.52%	-0.03[-0.11,0.05]
Lambeek 2010	0	0	0.1 (0.071)		21.47%	0.09[-0.05,0.23]
Rossignol 2000	0	0	-0.1 (0.078)		18.92%	-0.07[-0.22,0.08]
Subtotal (95% CI)					100%	-0.03[-0.11,0.05]
Heterogeneity: Tau ² =0; Chi ² =5.06, df=3(P=0.17); I ² =40.7%						
Test for overall effect: Z=0.81(P=0.42)						
2.2.2 Long-term, follow-up 12 months						
Bültmann 2009	0	0	-0.1 (0.072)		3.82%	-0.13[-0.27,0.01]
Feuerstein 2003	0	0	-0 (0.053)		7%	-0.03[-0.13,0.07]
Jensen 2012	0	0	0 (0.044)		10.2%	0[-0.09,0.09]
Lambeek 2010	0	0	0 (0.067)		4.44%	0.01[-0.12,0.14]
Myhre 2014	0	0	-0 (0.039)		12.92%	-0.04[-0.12,0.04]
Purdon 2006	0	0	-0 (0.018)		61.62%	-0.03[-0.07,0.01]
Subtotal (95% CI)					100%	-0.03[-0.06,-0]
Heterogeneity: Tau ² =0; Chi ² =2.82, df=5(P=0.73); I ² =0%						
Test for overall effect: Z=2.15(P=0.03)						
2.2.3 Very long-term, longer than 12 months						
Feuerstein 2003	0	0	-0 (0.046)		100%	-0.02[-0.11,0.07]
Subtotal (95% CI)					100%	-0.02[-0.11,0.07]
Heterogeneity: Not applicable						
Test for overall effect: Z=0.44(P=0.66)						
				-0.2 -0.1 0 0.1 0.2		
				Favours RTWCP	Favours usual practice	

Analysis 2.3. Comparison 2 Patient-reported outcomes, Outcome 3 Overall function - scale 0 to 100 (higher score indicates improvement) - MID 10.0.

Study or subgroup	RTWCP		usual practice		Mean Difference Random, 95% CI	Weight	Mean Difference Random, 95% CI
	N	Mean(SD)	N	Mean(SD)			
2.3.1 Short-term, follow-up 6 months							
Bültmann 2009	54	9.1 (15.7)	30	3.3 (12.5)		46.62%	5.84[-0.29,11.97]
Lambeek 2010	61	76 (20.9)	60	65 (26.3)		24.44%	11.01[2.55,19.47]
Rossignol 2000	45	17.2 (19.7)	45	7.8 (17.9)		28.94%	9.4[1.62,17.18]
Subtotal ***	160		135			100%	8.13[3.95,12.32]

					Favours usual practice	Favours RTWCP

Analysis 2.4. Comparison 2 Patient-reported outcomes, Outcome 4 Overall function - pooled RDs of workers with an improvement greater than the MID of 10.0.

Analysis 2.5. Comparison 2 Patient-reported outcomes, Outcome 5 Physical function - scale 0 to 100 (higher score indicates improvement) - MID 8.4.

Analysis 2.6. Comparison 2 Patient-reported outcomes, Outcome 6 Physical function - pooled RDs of workers with an improvement greater than the MID of 8.4.

Analysis 2.7. Comparison 2 Patient-reported outcomes, Outcome 7 Social function - scale to 0 to 100 (higher score indicates improvement) - MID 11.7.

Analysis 2.8. Comparison 2 Patient-reported outcomes, Outcome 8 Social function - pooled RDs of workers with an improvement greater than the MID of 11.7.

Analysis 2.9. Comparison 2 Patient-reported outcomes, Outcome 9 Mental function - scale to 0 to 100 (higher score indicates improvement) - MID 7.3.

Analysis 2.10. Comparison 2 Patient-reported outcomes, Outcome 10 Mental function - pooled RDs of workers with an improvement greater than the MID of 7.3.

Analysis 2.11. Comparison 2 Patient-reported outcomes, Outcome 11 Depression - scale 0 to 27 (higher score indicates deterioration) - MID 5.0.

Analysis 2.12. Comparison 2 Patient-reported outcomes, Outcome 12 Depression - pooled RDs of workers with an improvement greater than the MID of 5.0.

Analysis 2.13. Comparison 2 Patient-reported outcomes, Outcome 13 Anxiety - scale 0 to 21 (higher score indicates deterioration) - MID 4.0.

Analysis 2.14. Comparison 2 Patient-reported outcomes, Outcome 14 Anxiety - pooled RDs of workers with an improvement greater than the MID of 4.0.

ADDITIONAL TABLES

Table 1. Involved disciplines in the intervention groups

	Occupational or rehabilitation physician	General practitioner	(Occupational) physiotherapist	Psychologist, psychiatrist, psychotherapist	Occupational therapist	Social worker	Chiropractor	Other
Bültmann 2009	X	—	X	X	—	X	X	—
Davey 1994	X	—	X	X	X	—	—	—
Donceel 1999	X (social insurance physician)	X	—	—	—	—	—	Other healthcare personnel, social insurance agent
Feuerstein 2003	—	—	—	—	—	—	—	“[E].g. supervisor, injury compensation specialist, medical providers, claims examiner”
Jensen 2012	X	X	X	—	X	X	—	—
Lambeek 2010	X	—	X	—	X	—	—	Medical specialist
Lindh 1997	X	—	X	X	X	X	—	Nurse, vocational counsellor
Myhre 2014	X	—	X	—	—	—	—	Case worker, medical specialist, group discussions, lecturer
Purdon 2006	—	—	X	X	—	—	X	Podiatrists, osteopaths and dieticians
Rossignol 2000	X	—	X	—	—	—	X	—
Scholz 2015	X (insurance physician)	X	X	—	X	—	—	Outpatient care provider, inpatient care provider, other care provider
Stapelfeldt 2011	X	X	X	—	X	X	—	—
Van der Feltz-Cornelis 2010	X	X	—	X	—	—	—	—
Volker 2015	X	X	—	X	—	—	—	Web-based eHealth Modules

X = involved discipline

Return-to-work coordination programmes for improving return to work in workers on sick leave (Review)

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APPENDICES

Appendix 1. MEDLINE search strategy

1. "absenteeism"[tw]
2. "sick days"[tw]
3. "illness days"[tw]
4. "sick listed"[tw]
5. ("long term"[tw] OR "absence"[tw] OR "leave"[tw]) AND ("disability"[tw] OR "sickness"[tw] OR "sick"[tw])
6. ("benefit"[tw] OR "benefits"[tw] OR "pension"[tw] OR "pensions"[tw]) AND ("claimant"[tw] OR "claimants"[tw] OR "claim"[tw] OR "claims"[tw])
7. "work disablement"[tw]
8. "work disability"[tw]
9. "working disability"[tw]
10. "work absence"[tw]
11. ("injured"[tw] OR "injury"[tw] OR "accident"[tw] OR "sickness"[tw] OR "sick"[tw] OR "disability"[tw] OR "disabled"[tw] OR "disablement"[tw] OR "invalid"[tw] OR "invalidity"[tw] OR "absent"[tw] OR "absence"[tw]) AND ("worker"[tw] OR "workers"[tw] OR "employee"[tw] OR "employees"[tw])
12. ("sickness"[tw] OR "disability"[tw] OR "disabled"[tw] OR "disablement"[tw] OR "invalid"[tw] OR "invalidity"[tw] OR "absent"[tw] OR "absence"[tw] OR "out of work"[tw] OR "social security"[tw] OR "social insurance"[tw]) AND ("benefit"[tw] OR "benefits"[tw] OR "beneficiaries"[tw] OR "beneficiary"[tw] OR "claimant"[tw] OR "claimants"[tw] OR "claim"[tw] OR "claims"[tw] OR "pension"[tw] OR "pensions"[tw] OR "pensioners"[tw] OR "pensioner"[tw] OR "compensation"[tw] OR "compensations"[tw])
13. "Insurance, disability"[tw]
14. "disability insurance"[tw]
15. ("workman's"[tw] OR "workman"[tw] OR "workmans"[tw] OR "workmen's"[tw] OR "workmen"[tw] OR "workmens"[tw] OR "worker's"[tw] OR "worker"[tw] OR "workers"[tw]) AND ("compensation"[tw] OR "compensations"[tw])
16. "case management"[tw]
17. "case manager"[tw]
18. "absence management"[tw]
19. "assertive community treatment"[tw]
20. "management programme"[tw]
21. "management program"[tw]
22. ("project"[tw] OR "programme"[tw] OR "program"[tw] OR "model"[tw] OR "interview"[tw] OR "interviews"[tw] OR "plan"[tw] OR "measure"[tw] OR "measures"[tw] OR "intervention"[tw] OR "interventions"[tw] OR "rehabilitation"[tw] OR "management"[tw]) AND ("co ordinator"[tw] OR "coordinator"[tw] OR "coordination"[tw] OR "co ordination"[tw] OR "coordinated"[tw] OR "co ordinated"[tw] OR "multidisciplinary"[tw] OR "multi disciplinary"[tw] OR "multi professional"[tw] OR "multiprofessional"[tw] OR "multimodal"[tw] OR "multi modal"[tw] OR "integrated"[tw] OR "patient centred"[tw] OR "patient focused"[tw] OR "individual"[tw] OR "individually"[tw] OR "face to face"[tw] OR "one on one"[tw] OR "in person"[tw] OR "personal"[tw] OR "personally"[tw] OR "customized"[tw] OR "customised"[tw] OR "tailored"[tw] OR "on the job"[tw] OR "work focused"[tw] OR "work related"[tw] OR "workplace"[tw] OR "work location"[tw] OR "work-site"[tw] OR "work place"[tw] OR "job site"[tw] OR "worksite"[tw] OR "occupational"[tw] OR "vocational"[tw] OR "return to work"[tw] OR "return to work" [mesh] OR "counselling"[tw] OR "reintegration"[tw])
23. "rehabilitation"[tw] AND ("project"[tw] OR "programme"[tw] OR "program"[tw] OR "plan"[tw] OR "model"[tw] OR "measure"[tw] OR "measures"[tw] OR "intervention"[tw] OR "interview"[tw] OR "interviews"[tw] OR "intervention"[tw] OR "interventions"[tw] OR "management"[tw])

24. "randomized controlled trial"[pt]
25. "controlled clinical trial"[pt]
26. "randomized"[tiab]
27. "randomised"[tiab]
28. "randomly"[tiab]
29. "trial"[ti]
30. "clinical trials as topic"[mesh: noexp]
31. OR / 1 - 15
32. OR / 16 - 23
33. OR / 24 - 30
34. AND / 31 - 33

Appendix 2. EMBASE search strategy

((("absenteeism" OR "sick days" OR "illness days" OR "sick listed" OR ("long term" OR "absence" OR "leave") NEAR/3 ("disability" OR "sickness" OR "sick")) OR ((("benefit" OR "benefits" OR "pension" OR "pensions") AND ("claimant" OR "claimants" OR "claim" OR "claims")) OR "work disablement" OR "work disability" OR "working disability" OR "work absence" OR ("injured" OR "injury" OR "accident" OR "sickness" OR "sick" OR "disability" OR "disabled" OR "disablement" OR "invalid" OR "invalidity" OR "absent" OR "absence") AND ("worker" OR "workers" OR "employee" OR "employees")) OR (("sickness" OR "disability" OR "disabled" OR "disablement" OR "invalid" OR "invalidity" OR "absent" OR "absence" OR "out of work" OR "social security" OR "social insurance") NEAR/3 ("benefit" OR "benefits" OR "beneficiaries" OR "beneficiary" OR "claimant" OR "claimants" OR "claim" OR "claims" OR "pension" OR "pensions" OR "pensioners" OR "pensioner" OR "compensation" OR "compensations")) OR "Insurance, disability" OR "disability insurance" OR ((("workman?s" OR "workman" OR "workmans" OR "workmen?s" OR "workmen" OR "workmens" OR "worker?s" OR "worker" OR "workers") NEAR/3 ("compensation" OR "compensations")) AND ("case management" OR "case anager" OR "absence management" OR "assertive community treatment" OR "management programme" OR "management program" OR ("project" OR "programme" OR "program" OR "model" OR "interview" OR "interviews" OR "plan" OR "measure" OR "measures" OR "intervention" OR "interventions" OR "rehabilitation" OR "management") NEAR/3 ("co ordinator" OR "coordinator" OR "coordination" OR "co ordination" OR "coordinated" OR "co ordinated" OR "multidisciplinary" OR "multi disciplinary" OR "multi professional" OR "multiprofessional" OR "multimodal" OR "multi modal" OR "integrated" OR "patient centred" OR "patient focused" OR "individual" OR "individually" OR "face to face" OR "one on one" OR "in person" OR "personal" OR "personally" OR "customized" OR "customised" OR "tailored" OR "on the job" OR "work focused" OR "work related" OR "workplace" OR "work location" OR "work-site" OR "work place" OR "job site" OR "worksite" OR "occupational" OR "vocational" OR "return to work" OR "counselling" OR "reintegration")) OR ("project" OR "programme" OR "program" OR "plan" OR "model" OR "measure" OR "measures" OR "intervention" OR "interview" OR "interviews" OR "intervention" OR "interventions" OR "management") NEAR/3 "rehabilitation"))):ti:ab:de AND ([controlled clinical trial]/lim OR [randomized controlled trial]/lim OR "randomized":ti:ab OR "randomly":ti:ab OR "trial":ti OR "controlled clinical trial":de OR "single blind procedure":de OR "double blind procedure":de OR "triple blind procedure":de OR (doubl* next blind*):ti:ab OR (singl* next blind*):ti:ab OR (assign*):ti:ab OR (allocate*):ti:ab OR (volunteer*):ti:ab) AND [embase]/lim

Appendix 3. CINAHL search strategy

TX ((("absenteeism" OR "sick days" OR "illness days" OR "sick listed" OR ("long term" OR "absence" OR "leave") AND ("disability" OR "sickness" OR "sick")) OR ((("benefit" OR "benefits" OR "pension" OR "pensions") AND ("claimant" OR "claimants" OR "claim" OR "claims")) OR "work disablement" OR "work disability" OR "working disability" OR "work absence" OR ("injured" OR "injury" OR "accident" OR "sickness" OR "sick" OR "disability" OR "disabled" OR "disablement" OR "invalid" OR "invalidity" OR "absent" OR "absence") AND ("worker" OR "workers" OR "employee" OR "employees")) OR (("sickness" OR "disability" OR "disabled" OR "disablement" OR "invalid" OR "invalidity" OR "absent" OR "absence" OR "out of work" OR "social security" OR "social insurance") AND ("benefit" OR "benefits" OR "beneficiaries" OR "beneficiary" OR "claimant" OR "claimants" OR "claim" OR "claims" OR "pension" OR "pensions" OR "pensioners" OR "pensioner" OR "compensation" OR "compensations")) OR "Insurance, disability" OR "disability insurance" OR ((("workman?s" OR "workman" OR "workmans" OR "workmen?s" OR "workmen" OR "workmens" OR "worker?s" OR "worker" OR "workers") AND ("compensation" OR "compensations")) AND ("case management" OR "case manager" OR "absence management" OR "assertive community Treatment" OR "management programme" OR "management program" OR ("project" OR "programme" OR "program" OR "model" OR "interview" OR "interviews" OR "plan" O "measure" OR "measures" OR "intervention" OR "interventions" OR "rehabilitation" OR "management") AND ("co ordinator" OR "coordinator" OR "coordination" OR "co ordination" OR "coordinated" OR "co ordinated" OR "multidisciplinary" OR "multi disciplinary" OR "multi professional" OR "multiprofessional" OR "multimodal" OR "multi modal" OR "integrated" OR "patient centred" OR "patient focused" OR "individual" OR "individually" OR "face to face" OR "one on

one" OR "in person" OR "personal" OR "personally" OR "customized" OR "customised" OR "tailored" OR "on the job" OR "work focused" OR "work related" OR "workplace" OR "work location" OR "work-site" OR "work place" OR "job site" OR "worksite" OR "occupational" OR "vocational" OR "return to work" OR "counselling" OR "reintegration")) OR (("project" OR "programme" OR "program" OR "plan" OR "model" OR "measure" OR "measures" OR "intervention" OR "interview" OR "interviews" OR "intervention" OR "interventions" OR "management") AND "rehabilitation")) AND (TI (randomly OR randomi?ed OR trial) OR AB (randomly OR randomi?ed))

Appendix 4. PsycINFO search strategy

((("absenteeism" OR "sick days" OR "illness days" OR "sick listed" OR ("long term" OR "absence" OR "leave") ADJ3 ("disability" OR "sickness" OR "sick")) OR (("benefit" OR "benefits" OR "pension" OR "pensions") AND ("claimant" OR "claimants" OR "claim" OR "claims")) OR "work disablement" OR "work disability" OR "working disability" OR "work absence" OR ("injured" OR "injury" OR "accident" OR "sickness" OR "sick" OR "disability" OR "disabled" OR "disablement" OR "invalid" OR "invalidity" OR "absent" OR "absence") AND ("worker" OR "workers" OR "employee" OR "employees")) OR (("sickness" OR "disability" OR "disabled" OR "disablement" OR "invalid" OR "invalidity" OR "absent" OR "absence" OR "out of work" OR "social security" OR "social insurance") ADJ3 ("benefit" OR "benefits" OR "beneficiaries" OR "beneficiary" OR "claimant" OR "claimants" OR "claim" OR "claims" OR "pension" OR "pensions" OR "pensioners" OR "pensioner" OR "compensation" OR "compensations")) OR "Insurance, disability" OR "disability insurance" OR ("workman?s" OR "workman" OR "workmans" OR "workmen?s" OR "workmen" OR "workmens" OR "worker?s" OR "worker" OR "workers") Adj3 ("compensation" OR "compensations")) AND ("case management" OR "case manager" OR "absence management" OR "assertive community Treatment" OR "management programme" OR "management program" OR ("project" OR "programme" OR "program" OR "model" OR "interview" OR "interviews" OR "plan" OR "measure" OR "measures" OR "intervention" OR "interventions" OR "rehabilitation" OR "management") ADJ3 ("co ordinator" OR "coordinator" OR "coordination" OR "co ordination" OR "coordinated" OR "coordinated" OR "multidisciplinary" OR "multi disciplinary" OR "multi professional" OR "multiprofessional" OR "multimodal" OR "multi modal" OR "integrated" OR "patient centred" OR "patient focused" OR "individual" OR "individually" OR "face to face" OR "one on one" OR "in person" OR "personal" OR "personally" OR "customized" OR "customised" OR "tailored" OR "on the job" OR "work focused" OR "work related" OR "workplace" OR "work location" OR "work-site" OR "work place" OR "job site" OR "worksite" OR "occupational" OR "vocational" OR "return to work" OR "counselling" OR "reintegration")) OR (("project" OR "programme" OR "program" OR "plan" OR "model" OR "measure" OR "measures" OR "intervention" OR "interview" OR "interviews" OR "intervention" OR "interventions" OR "management") ADJ3 "rehabilitation"))).tw. AND ("random*?.ti.ab. OR "trial?.ti.)

Appendix 5. CENTRAL search strategy

("Absenteeism" OR "sick leave" OR "sick absence" OR "sickness absence" OR "sick listed" OR ("long term" AND ("sickness" OR "sick")) OR "sickness benefit" OR "sickness benefits" OR ("benefit" OR "benefits" OR "pension" OR "pensions") AND ("claimant" OR "claimants" OR "claim" OR "claims")) OR "work disablement" OR "working disablement" OR "work disability" OR "working disability" OR ("injured" OR "injury" OR "accident" OR "sickness" OR "sick" OR "disability" OR "disabled" OR "disablement" OR "invalid" OR "invalidity" OR "absent" OR "absence") AND ("worker" OR "workers" OR "employee" OR "employees")) OR (("disability" OR "disabled" OR "disablement" OR "invalid" OR "invalidity" OR "absent" OR "absence" OR "out of work" OR "Social Security" OR "Insurance OR Disability") AND ("benefit" OR "benefits" OR "beneficiaries" OR "beneficiary" OR "claimant" OR "claimants" OR "claim" OR "claims" OR "pension" OR "pensions" OR "pensioners" OR "pensioner")) AND ("case management" OR "case management" OR "case manager" OR "absence management" OR "assertive community Treatment" OR "management programme" OR "management program" OR ("project" OR "programme" OR "program" OR "Model" OR "interview" OR "interviews" OR "plan" OR "measure" OR "measures" OR "intervention" OR "interventions" OR "rehabilitation" OR "rehabilitation" OR "management") AND ("co ordinator" OR "coordinator" OR "coordination" OR "co ordination" OR "coordinated" OR "coordinated" OR "multidisciplinary" OR "multi disciplinary" OR "multi professional" OR "multiprofessional" OR "multimodal" OR "multi modal" OR "integrated" OR "patient centred" OR "patient focused" OR "individual" OR "individually" OR "face to face" OR "one on one" OR "in person" OR "personal" OR "personally" OR "customized" OR "customised" OR "tailored" OR "on the job" OR "work focused" OR "work related" OR "workplace" OR "occupational" OR "vocational" OR "return to work" OR "counselling" OR "reintegration")) OR ("project" OR "programme" OR "program" OR "plan" OR "Model" OR "measure" OR "measures" OR "intervention" OR "interview" OR "interviews" OR intervention OR interventions OR "management") AND "rehabilitation"))

CONTRIBUTIONS OF AUTHORS

Drafting the manuscript: NV, SS, RK, SE, JB, WB.

Coordinating the manuscript: NV.

Developing search strategies: SS, RK.

Writing the manuscript: NV, SS, TZ, SE, WB, JB, RK.

DECLARATIONS OF INTEREST

Regina Kunz: EbIM, Evidence-based Insurance Medicine at the University Hospital in Basel, is funded in part by donations from public insurance companies and a consortium of private insurance companies without restrictions on how the donations are used.

Nicole Vogel: None known.

Stefan Schandelmaier: None known.

Thomas Zumbunn: employer received payment for the statistical analyses he conducted for the publication on which this review is based.

Shanil Ebrahim: None known.

Wout de Boer: None known.

Jason Busse: acts as a consultant to Prisma Health Canada, a private incorporated company funded by employers and insurers that consults on and manages long-term disability claims.

SOURCES OF SUPPORT

Internal sources

- EblM, Evidence-based Insurance Medicine, University of Basel Hospital, Basel, Switzerland.

Salary for Nicole Vogel, Wout de Boer and Regina Kunz

External sources

- No sources of support supplied

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

We planned to consider follow-up times of short-term (up to three months) and long-term (closest to 12 months) as different. As it turned out, we found some studies with a follow-up time extending considerably longer than 12 months and therefore changed our classification: we regarded a last follow-up to 6 months as short-term, between 6 and 12 months as long-term and longer than 12 months as very long-term.

Almost all studies (12 of 14) measured return to work using the outcome proportion who had ever returned to work. Study authors seem to regard this outcome as important, so we added it post hoc as a primary outcome.

To make it easier to understand the results, we calculated absolute effects using risk differences.

We did not pre-specify the number of studies required for subgroup analyses, but we described the need to have a sufficient number of studies. We decided 10 studies per meta-analysis was sufficient.

We classified the level of support for the control group as low, moderate or high to get a better understanding of the usual practice. However, we could not use this classification for subgroup analyses. We did not find enough studies to conduct subgroup analyses at all.

We intended to perform subgroup analyses according to the lengths of history of sick leave of participants and the intensity of return-to-work coordination programmes. We did not find enough information to conduct these analyses.

INDEX TERMS

Medical Subject Headings (MeSH)

*Return to Work [statistics & numerical data]; *Sick Leave [statistics & numerical data]; Absenteeism; Follow-Up Studies; Mental Disorders [epidemiology]; Musculoskeletal Diseases [epidemiology]; Patient Reported Outcome Measures; Program Evaluation [*methods]; Randomized Controlled Trials as Topic; Time Factors

MeSH check words

Humans