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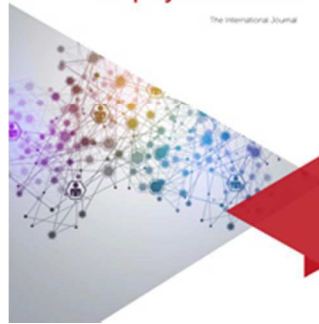
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**Do return to work interventions for workers with disabilities and health conditions achieve employment outcomes and are they cost effective? A systematic narrative review**

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3 **Do return to work interventions for workers with disabilities and health conditions**  
4 **achieve employment outcomes and are they cost effective? A systematic narrative**  
5 **review**  
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11 **Introduction**  
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15 This study reviews existing evidence on the effectiveness of return to work initiatives aimed  
16 at the disabled and those with long-standing/chronic health conditions. Disabled workers  
17 form a particularly vulnerable category of the labour market, with respect to pay and broader  
18 subjective measures regarding their treatment at work (Fevre *et al.*, 2016). This vulnerability  
19 has been recognised as an international development problem as well as a national problem  
20 by countries such as Britain which are aiming to increase the employment levels and work  
21 situation of disabled workers (Gov.uk, 2017). However, achieving these outcomes requires  
22 workplaces to be able and willing to accommodate the requirements of disabled workers, and  
23 have the capacity to ensure that they reach their fullest potential. Moreover, long term  
24 success is contingent on sustained employment of disabled workers and the effectiveness of  
25 rehabilitative return to work policies and practices. The latter form the scope of this review.  
26 More specifically, the two key research questions are: What is the available evidence on  
27 effective interventions in terms of employment outcomes and cost effectiveness?  
28 Additionally, are there gaps in evidence with regard to the effectiveness of interventions for  
29 certain conditions?  
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48 It should be noted that the rehabilitation and accommodation of workers with  
49 disabilities or chronic health conditions is a contested domain. Central to work and  
50 employment are struggles over resources and control; the latter have encompassed  
51 contestations regarding skill, reward and working time (see, for example, Thompson and van  
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3 den Broek, 2010). There has also been an intensification of the struggle over another front:  
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5 illness, sick leave, disability, and the relative capability to perform specific types of work  
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7 (see, for example, Taylor *et al.*, 2010). Return to work accommodations following sick leave  
8  
9 require active engagement from a range of actors within the workplace and the allocation of  
10  
11 appropriate resources (James *et al.*, 2006). The resources put into return to work interventions  
12  
13 may be diverted from other well-being initiatives, and therefore justification of their costs is  
14  
15 important.  
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18         Within the literature, various potentially vulnerable groups of workers have received  
19  
20 attention, with some authors highlighting the need to protect the rights of groups such as  
21  
22 immigrants or women or older workers (Lain and Loretto, 2016). However, with the  
23  
24 exception of a limited number of studies of long term absence (e.g. Cunningham *et al.*, 2004,  
25  
26 2006; Taylor *et al.*, 2010), disabled workers and those with long term health conditions have  
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28 received relatively little attention in the employment relations literature, with most attention  
29  
30 being paid to them within the medical and social policy fields (Berthoud, 2008; van  
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32 Amelsvoort *et al.*, 2014). Meanwhile, the return to work literature often lacks a clear focus on  
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34 musculoskeletal conditions and mental health (Cullen *et al.*, 2017; Follmer and Jones, 2018).  
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36 Yet, disabled workers and those with health conditions are arguably some of the most  
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38 vulnerable in the workforce in terms of income and employment security, facing  
39  
40 disadvantage due to factors directly related to disability, and indirect factors such as  
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42 education and age, resulting in 'poor employment prospects' (Berthoud, 2008: 132; Schur *et al.*,  
43  
44 2009). Those with mental health conditions can face a particular disadvantage (Berthoud,  
45  
46 2008), due to a lack of knowledge about their condition, stigma and prejudice (Erickson *et al.*,  
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48 2013).  
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52         At the same time, workers who take sickness absence are often subject to disciplinary  
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54 action (see, for example Taylor *et al.*, 2010). Yet, positive action within the workplace can  
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3 yield dividends: effective return to work practices can be of mutual benefit for both the  
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5 worker and the organisation (Collins and Cartright, 2012). Such action is required for those  
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7 who currently have a disability or health conditions, and is pertinent for an ageing workforce,  
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9 given increased longevity and changes to the statutory pension age which may mean an  
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11 increasing population of older workers who need to have accommodation for ongoing health  
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13 conditions (Lain and Loretto, 2016).  
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16 Against this background, this paper details a systematic narrative review of both the  
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18 UK and international literature in order to assess the evidence on interventions intended to  
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20 enable people with common health conditions (including those that are long-standing) to  
21  
22 remain in work or return to work. The article proceeds as follows. The next section briefly  
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24 considers some of the influences on and impact of government initiated programmes to help  
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26 disabled people to enter and sustain employment, followed by what is already known about  
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28 how the return to work of existing employees can be effectively supported within the  
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30 workplace. This is followed by explaining the research methods used, and key findings of the  
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32 review, highlighting the gaps in evidence. The conclusions reflect on the implications of the  
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34 research base for policy and practice and indicate specific possible routes for future research.  
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### 39 **The influences on and impact of government initiated programmes to help disabled** 40 **people to enter and sustain employment** 41 42 43

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46 Many countries have acknowledged the need to tackle disability and employment, and have  
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48 ratified the UN Convention on Rights of People with Disabilities which covers a broad range  
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50 of areas including job retention measures and vocational rehabilitation (UN, 2016). These  
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52 measures aim to address the disability employment gap between those who do and do not  
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54 have a disability. In the UK, the disability employment gap is between 30 and 45 percent,  
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3 depending on which data are used (Fevre *et al.*, 2016). Other countries across the world have  
4 wide variation in disability gaps, but differences in levels are at least partly due to the way in  
5 which disability is perceived and stigmatised, since what is not recognised is not counted  
6 (Mont, 2004). National governments have attempted to address disability gaps in various  
7 ways. The type of government initiatives varies according to country and region but can  
8 cover a broad scope of activities. In the UK, for example, they include: those aimed at people  
9 with common health conditions, such as Job Retention and Rehabilitation Pilots (JRRP)  
10 within workplaces, and Fit for Work services, offering case-managed, multidisciplinary  
11 services for workers (HM Government, 2010; DWP, 2011a); Remploy, helping disabled  
12 people to become independent through work; and WORKSTEP, providing support for  
13 disabled people and their employers. Programmes which have recently received additional  
14 investment include the Access to Work scheme, which provides means-tested workplace-  
15 based support, and the Improving Access to Psychological Therapies programme (IAPT)  
16 which assists those with depression and anxiety disorders who are within and outside of the  
17 workplace (Gov.uk, 2017). However, it has been found difficult to assess which programmes  
18 are the most effective in encouraging entry to work and return to work, and there are few  
19 robust evaluations of programmes and their effects, albeit that some evidence has suggested  
20 the value of vocational advice, training and work placement as well as wage subsidies and  
21 workplace adjustments (Needels and Schmitz, 2006; Clayton *et al.*, 2011). In other countries,  
22 similar attempts have been made to enable disabled people to enter work and sustain work.  
23 Legislation and policy have included cash incentives, anti-discrimination laws and quotas,  
24 vocational rehabilitation and training, supported employment, wage subsidies and other  
25 employer incentives, which have had varying degrees of success. Where the onset of  
26 disability occurs during employment, disability management programmes have been  
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3 introduced, within which, return to work strategies are perceived to be a central feature  
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5 (Mont, 2004).  
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### 9 **Return to work strategies and factors influencing their effectiveness**

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13 Return to work strategies may include a number of features, including: identifying workers  
14 who may be at risk of sickness absence; enabling access to medical treatment and support  
15 such as re-training and adjustments; communication and coordination between the  
16 stakeholders potentially involved in the return to work process including those who have  
17 been off sick, line managers, occupational health, HR managers and trade unions; access to  
18 worker representation; policy frameworks including naming those accountable for actions;  
19 ensuring that appropriate actions are undertaken; and evaluation of the effectiveness of  
20 strategies, with identification and addressing of weaknesses (Cunningham *et al.*, 2004; James  
21 *et al.*, 2006). In terms of specific interventions, there have been recommendations for multi-  
22 domain interventions including health care provision, coordination of services and workplace  
23 accommodations to reduce time away from work (Cullen *et al.*, 2017).  
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37 There are a number of factors that might affect whether and how such strategies can  
38 be carried out in practice. Some relate to organisational policy, and whether disability is  
39 included in diversity initiatives (Erickson *et al.*, 2013). Others relate to the type of job and  
40 work tasks and processes in place (James *et al.*, 2006; Joosen *et al.*, 2017): since people with  
41 disabilities are more likely to be in contingent work, they may find that employers are less  
42 likely to make adjustments to suit their specific needs (Schur, 2003), and return to work for  
43 someone with a mental illness might be challenging if their work is emotionally demanding,  
44 while someone with a musculoskeletal disorder might struggle in a physically demanding  
45 environment (Wiemer *et al.*, 2017). Other factors relate to organisational dynamics. For  
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3 example, coordination between stakeholders may be impaired by divergent interests (Fevre *et*  
4 *al.*, 2016), and the ability of disabled workers to voice their concerns might be prevented by a  
5 lack of, or ineffective union representation (Heyes, 2011; Weller, 2012). Disabled workers  
6 may also find it difficult to disclose their disability, or find that disclosure affects how they  
7 are treated. For example, in a survey of workers with disabilities, 80% had disclosed their  
8 disability in their current or most recent workplace, but almost a quarter had then experienced  
9 long term negative consequences as a result (von Schrader *et al.*, 2014).  
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18 Line manager's and senior managers' support is also essential for effective return to  
19 work (James *et al.*, 2006; Erickson *et al.*, 2014), particularly for those with mental health  
20 disorders (Joosen *et al.*, 2017), and supportive contact with occupational health, the union  
21 representative, the human resources department, their supervisor and co-workers has been  
22 shown to lead those on long-term sickness absence to be more positive about return to work  
23 (Selander *et al.*, 2015). However, in order for co-workers to be aware of capabilities and how  
24 to interact with their disabled colleagues, disability awareness training should be provided  
25 (Fevre *et al.*, 2016). Although in countries such as the UK, most organizations provide such  
26 training (Erickson *et al.*, 2013), this is not always the case, and it is therefore important to  
27 understand employers' attitudes (Wiggett-Barnard and Swartz, 2012). Although employers  
28 acknowledge that disabled workers may have a wider skill set, better morale and retention,  
29 they can still tend to think that disabled people are less productive than non-disabled people  
30 and fear the costs of adjustments (Needels and Schmitz, 2006). Within lean organisations,  
31 they can also tend to focus on performance, and treat sickness as a disciplinary matter  
32 (Cunningham *et al.*, 20014; Taylor *et al.*, 2010; Fevre *et al.*, 2016). The assistive technology  
33 and flexible work schedules required for effective return to work (see Erickson, 2013) may  
34 then not be regarded as feasible.  
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3 The following sections explain the research methods and findings of return to work  
4 interventions, focusing on a range of conditions covering both physical and mental health.  
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### 8 9 **Systematic narrative review methods and scope of the review**

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13 A systematic narrative review of the literature was undertaken in order to assess the  
14 effectiveness of interventions for mild to moderate mental health, musculoskeletal and  
15 cardio-respiratory conditions, which together account for about two-thirds of those taking  
16 sickness absence, long-term incapacity benefits and ill-health retirement (Waddell *et al.*,  
17 2008). In following the 'biopsychosocial model' (WHO, 2001 in Waddell *et al.*, 2008:109),  
18 the types of intervention included in the review were defined as: clinical or medical  
19 interventions that might promote employability such as pain management relief, counselling  
20 and psychotherapy; workplace-based such as return to work interviews and adaptations to  
21 workplace equipment; social interventions, such as financial support and travel arrangements;  
22 and 'well-being' policies such as physical activity and stress management initiatives.  
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35 However, these are not always mutually exclusive categories. For example, workplace  
36 rehabilitation can involve both medical interventions and workplace adaptations. The  
37 interventions were evaluated in terms of their impact on employment outcomes, assessed  
38 through indicators such as: sickness absence levels or duration; job insecurity; productivity;  
39 the duration and type of employment after return to work; and the proportion exiting work  
40 and claiming incapacity benefit or its equivalent.  
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48 The review comprised two stages: 1) searching for evidence published between 2005  
49 and 2011 using the Swetswise, Jstor, Emerald and Cochrane databases, which together cover  
50 a broad footprint of academic peer-reviewed journals, to cover the conditions and  
51 interventions indicated above; and 2) of this evidence, identifying single empirical studies  
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3 and reviews of studies that referred to the costs and benefits of interventions and/or included  
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5 meta-analyses of studies including effect sizes (and costs).  
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7 The initial review of the above databases used the following keywords: return to  
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9 work; vocational/medical/occupational rehabilitation/therapy; work/job retention; workplace  
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11 intervention; bio/psychosocial intervention; back to work; sickness absence/management;  
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13 absenteeism; sick leave/pay; early intervention; work/job loss; and incapacity benefit. The  
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15 keywords were initially derived from content analysis of more general reviews of  
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17 interventions for return to work, in addition to commonly assessed conditions within the job  
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19 retention and return to work literature. This search resulted in the retrieval of over 1,800  
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21 abstracts, which were subsequently reviewed to identify those that might include data on  
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23 employment outcomes. Conceptual articles and those that included only health or quality of  
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25 life outcomes, but not employment outcomes were excluded. The results of the search are  
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27 summarised in Figure (i) below.  
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33 Insert figure (i) here  
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37 Subsequently, whole articles were retrieved in order to critically appraise the rigour of the  
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39 research methods employed, using established criteria from a range of research methods texts  
40  
41 including Bryman and Bell (2007). The criteria included: appropriateness of design to the  
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43 research aims and objectives; appropriate population and sampling frame; elimination of bias  
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45 or due reflection on the role of the researcher; ethical considerations taken into account; and  
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47 appropriate forms of quantitative and qualitative analysis. After taking account of these  
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49 considerations, 154 articles remained, covering studies from 24 countries. In order to provide  
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51 information on costs and benefits, the review included detailed consideration of those studies  
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53 that included standard (econometric) meta-analysis of data, and 'effect size' data (comparing  
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3 the relative improvement of the treatment group versus a control group, measured by  
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5 considering the difference between the mean improvements divided by the pooled initial  
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7 standard deviation).  
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### 11 **Findings: the benefits and costs of interventions**

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16 The review found different proportions of relevant evidence for the three conditions:  
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18 musculoskeletal disorders, cardio-respiratory conditions and mental health conditions,  
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20 particularly when narrowing the findings down to those that included reference to  
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22 employment outcomes. In terms of employment outcomes, there was considerably more  
23  
24 evidence for interventions for low back pain (within the field of musculoskeletal disorders)  
25  
26 than for the other conditions, and therefore this evidence will be considered in further detail.  
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28 Notably, there was very limited evidence for interventions for cardio-respiratory and mental  
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30 health conditions which referred to any employment outcomes.  
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#### 35 *Musculoskeletal disorders*

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40 A relatively large number of sources (18 of the 102 that referred to musculoskeletal  
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42 disorders) did not specify a particular condition, and of these only two reviews and one  
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44 empirical study considered the use of medical or clinical interventions. Within this category  
45  
46 of intervention, only one study covered employment outcomes (Abasolo *et al.*, 2007). This  
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48 intervention was run by rheumatologists, with a follow up after 12 months, and it was found  
49  
50 that temporary work disability episodes were significantly shorter in the intervention group.  
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53 Meanwhile cognitive behavioural therapy (CBT) was found to be incorporated into a  
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55 broader approach involving other interventions, with two studies pointing toward a level of  
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3 success in return to work (Leon *et al.*, 2009; Bethge *et al.*, 2010). For example, in the Leon *et*  
4 *al.* (2009) study, CBT was used in addition to a rheumatologic care programme, and although  
5  
6 there were no differences in the duration of sick leave after six months, the relapse was less  
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8 in the intervention group after 24 months.  
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11 Workplace based interventions were more widely covered. One empirical study  
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13 (Clayton and Verow, 2007) suggested that temporary work modifications might have no  
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15 effect on sickness absence, however three studies (McCluskey *et al.*, 2006; Streibelt *et al.*,  
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17 2006; Bultmann *et al.*, 2009) and two reviews of empirical studies (Van Oostrom *et al.*, 2009;  
18  
19 Carroli *et al.*, 2010) revealed the value of workplace related interventions, with the latter one  
20  
21 indicating both cost effectiveness and positive employment outcomes. The McCluskey *et al.*  
22  
23 (2006) study involved a non-randomised controlled trial in a UK company, using  
24  
25 occupational health guidelines-based rehabilitation and early contact, addressing  
26  
27 psychosocial barriers, with temporarily modified work and coordination between  
28  
29 stakeholders involved in the return to work process, resulting in significantly reduced  
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31 absence. Similarly, in the study by Bultmann *et al.* (2009), there was coordinated and tailored  
32  
33 work rehabilitation, and sickness absence was again significantly reduced. The Carroli *et al.*  
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35 (2010) review of controlled intervention studies indicated that interventions with a workplace  
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37 component were more likely to be cost effective than others.  
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42 Most of the 102 studies on musculoskeletal disorders that covered employment  
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44 outcomes focused on low back pain (48 out of the 102). Therefore, the results are broken  
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46 down further for this sub-condition of MSDs. There was some evidence from a review of the  
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48 literature on randomised controlled trials (RCTs) that a multidisciplinary approach including  
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50 cognitive behavioural therapy and workplace-focused interventions were effective in terms of  
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52 employment outcomes for this condition (Hoffman *et al.*, 2007), with moderate to long-term  
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54 effects on return to work. Moreover, two empirical studies on functional restoration (Sivan *et*  
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3 *al.*, 2009; Bontoux *et al.*, 2009) showed some positive effects in terms of functional activity,  
4 vocational status and reduced sick leave. However, these studies were not RCT designs. A  
5 number of studies also addressed graded activity - a programme focusing on the use of  
6 physical exercise which is based on operant-conditioning behavioural principles. However,  
7 there was no evidence of positive employment outcomes of graded activity (see, for example,  
8 Hlobil *et al.*, 2005; Steenstra *et al.*, 2006. Again, there was very limited evidence on  
9 employment outcomes for physiotherapy interventions for low back pain (see the review of  
10 RCTs by Rubinstein, 2011). Further forms of intervention included pain management and  
11 education (see, for example the review by Engers *et al.*, 2008, which showed some positive  
12 effects in respect of short-term and long-term return to work), and lumbar supports (where  
13 there was no evidence of effective employment outcomes). In contrast, there was some  
14 evidence from Germany and Scandinavia that suggested positive effects for vocational  
15 rehabilitation, as shown in table (i) below.

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38 The final form of intervention for low back pain was workplace rehabilitation, and here a  
39 number of studies involving RCTs pointed towards both positive employment outcomes and  
40 cost effectiveness, as summarised in table (ii).

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52 However, this evidence was predominantly from the Netherlands, where employers have a  
53 greater responsibility for the return to work process than in many other countries.  
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3 With regard to specific musculoskeletal disorders other than low back pain, such as  
4 back and neck problems, RCTs were scarce. However, for upper limbs and extremities, there  
5 was some evidence for the positive effect of clinic-based work hardening on return to work  
6 (Cheng *et al.*, 2007), and a review of evidence advocated the combining of both medical and  
7 ergonomic interventions for return to work and work retention (Kim *et al.*, 2008). Evidence  
8 for other conditions was generally found to be small scale or unreliable.  
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### 16 17 18 *Cardio-respiratory conditions and mental health conditions*

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22 Only 11 studies referred to employment outcomes for cardio-respiratory conditions. Of these,  
23 the notable examples included two relatively small scale studies which showed some support  
24 for psychological (Monpere *et al.*, 2009) and medical advice (Broadbent *et al.*, 2009), with  
25 both showing improved return to work. In contrast, studies using RCTs indicated some  
26 support for early return to work after heart surgery (Kovoor *et al.*, 2006) and for workplace  
27 rehabilitation (Kittel and Karoff, 2008).  
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35 Mental illness also received relatively little attention. This is surprising given that it is  
36 the leading cause of sickness absence and dependence on incapacity benefits in most high-  
37 income countries (Harvey, 2009), including the UK. However, there were only 38 studies and  
38 three reviews found on the employment outcomes of return to work interventions for this  
39 category of health condition. Some evidence pointed toward the benefit of psychological  
40 interventions. However, of these, the nature of the interventions with positive effects varied  
41 greatly, including an experimental design used to assess cognitive retraining for those with  
42 brain injury which improved return to work (Klonoff *et al.*, 2007), a randomised experiment  
43 on neurocognitive enhancement therapy with vocational services for those with schizophrenia  
44 which resulted in higher rates of people in competitive employment (Bell *et al.*, 2008) and a  
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3 randomised controlled trial evaluating a combined intervention of cognitive behavioural  
4 therapy and workplace initiatives for people with psychological complaints which improved  
5 return to work (Blonk *et al.*, 2006). More generally, there was a lack of evidence on  
6 workplace interventions for those with mental health conditions (as also indicated by  
7 Oostrom *et al.*, 2009).  
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14 Where evidence was found, this tended to be focused on depression, with some  
15 evidence for positive employment outcomes from RCTs evaluating psychological and work  
16 based interventions using interventions such as telephone cognitive behavioural therapy to  
17 improve work productivity (Bee *et al.*, 2010), occupational therapy and psychiatric treatment  
18 which reduced work loss days (Schene *et al.*, 2007), enhanced depression treatment resulting  
19 in increased self-reported productivity (Lo Sasso *et al.*, 2006), and telephone outreach, care  
20 management and optional psychotherapy (Wang *et al.*, 2008).  
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29 Other evidence emerged for severe mental health conditions or brain injury on the  
30 value of vocational rehabilitation, but the effect varied depending on client group (Watzke *et al.*,  
31 2006; Vanderploeg *et al.*, 2008). Similarly, the results of placement support appeared to  
32 be variable, with studies in the United States (Leff *et al.*, 2005; Cook *et al.*, 2008) and Hong  
33 Kong (Tsang *et al.*, 2009) indicating higher employment rates, but one in the UK (Howard *et al.*,  
34 2010) not showing any significant differences.  
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42 With regard to stress, there was often a blurring between stress and the related  
43 concepts of distress and burnout (a reduced interest in work and physical exhaustion), and  
44 even with the clinically diagnosed condition of depression: some studies referred to an  
45 intervention as stress management, but then measured the impact on depression, distress or  
46 burnout (see de Vente *et al.*, 2007; Grossi and Santell, 2009). There was also contradictory  
47 evidence on whether initiatives were effective, and most evidence pointed toward a lack of  
48 effect, particularly over the longer term. Indeed, where RCTs were used, only one suggested  
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3 positive effects and this was in terms of reduced sickness absence (Limm *et al.*, 2011). The  
4 others generally suggested that interventions had no impact (e.g. De Vente *et al.*, 2007;  
5 Bakker *et al.*, 2007). For distress, no studies showed positive employment outcomes. In  
6  
7 summary, the evidence base for interventions for those with mental health conditions was  
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9 very weak. Moreover, very little of the research that showed positive employment outcomes  
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11 was UK based.  
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### 16 17 18 *Evaluating the benefits and costs of interventions* 19

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22 The above review of evidence on employment outcomes for those with musculoskeletal  
23 conditions showed that low back pain has received a disproportionate level of attention. In  
24 contrast, little research on cardio-respiratory conditions covered employment outcomes, a gap  
25 that was also evident for mental health conditions. Although stress (and the related concepts  
26 of distress and burnout) is very topical, the review did not demonstrate the effectiveness, in  
27 employment terms, of interventions for people with this condition.  
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35 More generally, the review found relatively few existing meta-analyses of quantitative  
36 evidence that showed the economic benefits and costs of interventions, and although studies  
37 examining health outcomes often included effect sizes, this was less often the case for  
38 employment outcomes. The area offering the most potential for effect-size meta-analysis was  
39 that of multidisciplinary workplace-related interventions for musculoskeletal conditions (low  
40 back pain). However, this evidence highlighted the importance of considering different sub-  
41 groups (Steenstra *et al.*, 2009). In the Steenstra *et al.* (2009) study, the major variables were  
42 age group and sickness in the previous year, with the older group and those with sickness in  
43 the previous year showing a much better response to the intervention, in terms of return to  
44 work. In the study by Anema *et al.* (2007) covering workplace rehabilitation followed by  
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3 graded activity, there was improved return to work, and there was follow-up after 12, 26 and  
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5 52 weeks, however, the length of sickness absence was only 2-6 weeks. There is therefore a  
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7 need to identify the subgroups that cause a modifier effect on intervention efficacy.  
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## 10 11 **Conclusions** 12 13

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15 Government welfare policy is at least partly driven by the cost imperative. However, it is  
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17 impossible to make evidence-based policy on disability and employment without clear  
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19 evidence regarding whether return to work interventions are effective. This article reveals  
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21 that knowledge remains inadequate, and this is particularly the case in areas where the  
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23 definition of disability or incapacity to perform work may be open to contestation, such as in  
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25 the area of mental health. The only areas with a reasonably strong body of evidence for  
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27 positive employment outcomes were: workplace-based interventions for those with  
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29 musculoskeletal disorders and particularly for low back pain; cognitive behavioural therapy,  
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31 vocational rehabilitation and workplace rehabilitation for low back pain; psychological  
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33 interventions for depression; and supported employment for those with severe mental health  
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35 conditions. Even in these areas, very few studies included information on intervention costs,  
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37 and these were not balanced against employment outcomes. Evidence was also lacking on  
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39 whether the return to work was *sustained*, and the *type* of work to which employees returned,  
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41 with a lack of longitudinal studies, tracking participants at 6 months, one year, and two years  
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43 after the intervention. Sophisticated meta-analyses of data that included effect sizes, costs and  
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45 benefits was generally only available for workplace-based interventions for musculoskeletal  
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47 conditions (see, for example, Carolli *et al.*, 2010; Lambeek *et al.*, 2010a, 2010b), and few of  
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49 these considered the modifying effects of particular subgroups of people or situations.  
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3 The review's findings have a number of implications. There is some evidence of  
4 positive and sustainable employment outcomes for those with lower back pain and certain  
5 mental health conditions. For example, evidence on lower back pain indicates that vocational  
6 rehabilitation, cognitive behavioural therapy, and workplace-based rehabilitation can enable  
7 employment outcomes such as remaining in employment, reduced sick leave, and effective  
8 return to work. Therefore, these are areas that could be targeted by government assistance, in  
9 collaboration with unions and employers. However, as the earlier discussion highlighted, this  
10 might assume effective workplace coordination between the various stakeholders, willingness  
11 to disclose conditions, and ability to voice needs and concerns. It might also assume a  
12 government policy focus on support for interventions, perhaps through employer incentives  
13 or increased regulation, rather than on welfare cuts.

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27 There are also implications arising from this review for future avenues of research. A  
28 key recommendation is to call for more interdisciplinary studies. For example, while clinical  
29 research with this review focused on health outcomes, it lacked consideration of employment  
30 outcomes such as productivity, quality of work, and staying in work. Future studies within  
31 the field of clinical research might therefore include evaluation of such outcomes. They  
32 might also move beyond analysis of specific forms of intervention, to incorporate an  
33 examination of the barriers to uptake such as the stigma that is often associated with mental  
34 illness (Follmer and Jones, 2018) concerns around disclosure (von Schrader *et al.*, 2014),  
35 differences of opinion among workplace stakeholders (Fevre *et al.*, 2016), and a lack of  
36 effective support from line managers, senior managers or workplace representatives.

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48 Methodologically, there is a need for further research that includes the quantitative  
49 measurement of the cost effectiveness of interventions in addition to longitudinal studies that  
50 involve rigorous quantitative and qualitative research and take account of organisational  
51 sector and intersectionality (see, for example, Weaver *et al.*, 2016), covering not only the  
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3 health condition but also other identities such as gender, age and race (Follmer and Jones,  
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5 2018).

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7 Finally, much of the most useful evidence was drawn from Sweden, Denmark, and  
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9 Germany where relatively large amounts are spent on rehabilitation and supported  
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11 employment (see, for example, Heyes, 2013), but the likely effectiveness of interventions  
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13 will be influenced by the broader welfare context of employment protection legislation,  
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15 sickness benefits and disability (Prinz and Tompson, 2009). Further research should be  
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17 carried out in liberal market economies such as Britain and the United States and emerging  
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19 economies where safety nets for those with disabilities are absent or inadequate. More  
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21 generally, in order to achieve the sustained employment of disabled workers, there should be  
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23 a more holistic approach to the research undertaken, and in line with the argument by Frege  
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25 and Kelly (2013:17), stronger attempts to ensure ‘dignified working conditions, social justice  
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27 and human rights’ at the policy and organisational levels.  
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41 government department.  
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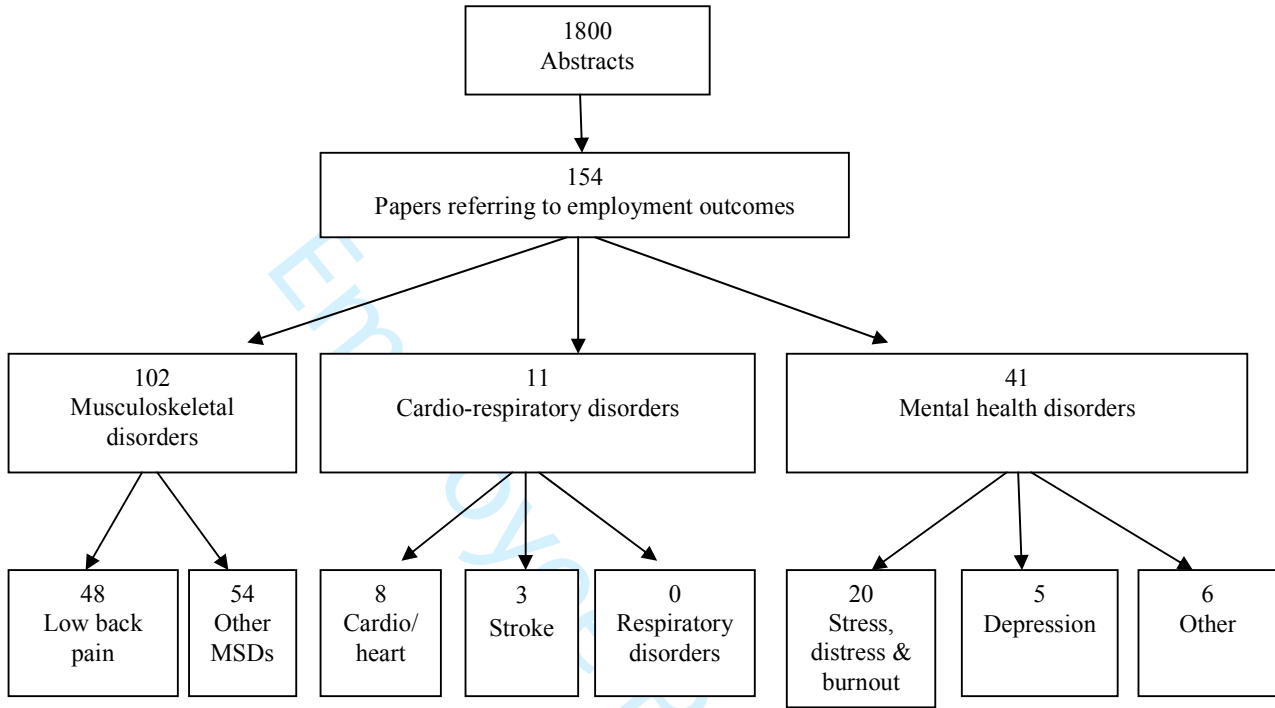
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**Figure (i) Flow diagram of source retrieval**



**Table (i) Rehabilitation interventions for low back pain**

<b>Author/date</b>	<b>Intervention</b>	<b>Method &amp; sample</b>	<b>Key findings</b>
Norlund et al (2009)	Multidisciplinary rehabilitation (mainly studies from Scandinavia )	Review-RCTs or controlled clinical trials. Effectiveness on RTW for people on sick leave due to low back pain	Intervention significantly increased rate of RTW in patients with subacute pain. No significant difference for chronic pain.
Kool et al (2007)	Function-centred rehabilitation (FCT)/ pain centred treatment (PCT) (Switzerland )	RCT- 174 patients with more than 6 weeks' sick leave	After 1 year, intervention group (FCT) had significantly more work days than PCT control group. Differences in unemployment and permanent disability pension not significant.
Schiltenswolf et al (2006)	Biopsychosocial intervention including psychotherapy (Germany)	RCT- 64 patients with first time sick leave between 3-12 weeks due to low back pain. 2 groups-biomedical therapy/ biopsychosocial therapy	Two years after therapy, higher proportion of those in intervention group required no further sick leave due to low back pain

**Table (ii) Workplace rehabilitation interventions for low back pain**

<b>Author/date</b>	<b>Intervention</b>	<b>Method &amp; sample</b>	<b>Key findings</b>
Williams et al (2007)	Workplace rehabilitation interventions-systematic review 1982-2005	Review- Workers with low back pain	Clinical interventions with occupational interventions and RTW/ modified work interventions were effective in quicker RTW.
Lambeek et al (2010a; 2010b)	Integrated care- patient directed and workplace directed intervention- ergonomics, graded activity based on cognitive behavioural therapy (Netherlands)	RCT-134 patients with low back pain	Earlier median duration until sustainable return to work for intervention group (88 days/ 208 days). After 12 months follow up, costs for intervention group were lower than for usual care group
Van Duijn et al (2010)	Structured interventions including work-focused ones	Review-Interventions for workers with low back pain and costs/ benefits	Only early interventions likely to be cost beneficial are inexpensive work-focused enhancements
Anema et al (2004)	Ergonomic interventions (Denmark, Germany, Israel, Sweden, Netherlands)	Questionnaires and interviews Multinational cohort of 1631 workers fully sick-listed for 3-4 months due to low back pain	Workplace adaptations were effective for RTW. Adaptation of job tasks and working hours were effective for RTW after more than 200 days' sick leave.
Steenstra et al (2006)	Multi-stage RTW program- work modifications, case management, physio, and usual care by occupational physician (Netherlands)	RCT-Workers sick-listed for 2 to 6 weeks due to low back pain.	Measured at start, 12 weeks, 26 weeks, 52 weeks of sick leave. Intervention group RTW earlier than usual care group and slightly higher costs.
Steenstra et al (2009)	Workplace intervention (Netherlands)	RCT- subgroup analysis 196 workers with sick leave due to subacute nonspecific low back pain	Intervention more effective in RTW for workers with previous sick leave.
Anema et al (2007)	Workplace rehab/ graded activity	RCT- 196 participants sick-listed 2 to 6 weeks for non-specific low back pain randomised to workplace rehab/ usual care.; 112 participants still sick-listed at 8 weeks randomised into graded activity	Follow-up at 12, 26, 52 weeks after sick leave started. Time until RTW for those in workplace rehab less than control group. Graded activity had a negative effect on RTW.