Workplace health: support for employees with disabilities and long-term conditions

Appendices

Methods, evidence and recommendations

October 2016

National Institute for Health and Care Excellence

Workplace health: support for employees with disabilities and long-term conditions

Table of contents

Appendix 1 Review Protocol

Component of protocol	Description	Additional comments
Review question 1	**What are the most effective targeted or organisational interventions to support employees with disabilities or long term conditions (LTCs) to return to or stay in work?** A targeted intervention is defined as an intervention focused on individuals or groups in the workplace who have disabilities and / or LTCs. Interventions could include but are not limited to: Non treatment workplace programmes to help people manage their condition for example motivational interviewing (to strengthen belief in ability to work). Adjustments in work activities, station, process or place (including assistive technology or practices, changes to job design and flexible working). Job coach or peer support (including workplace champions) Information, advice or training (including self-support information) Access and transport to work Redeployment An organisational intervention is defined as an intervention that may be delivered across the whole workplace, but aims to support employees with disabilities and/or LTCs. Interventions could include but are not limited to: Educational campaigns and workplace groups to promote positive attitudes and tackle discrimination and stigma Workplace initiatives to show people how to get help from employee support schemes Risk assessment and assessment of work capacity or work ability Systems for monitoring employees with disabilities and long-term conditions and responding to need	The 2 'effectiveness' questions in the scope have been merged into one question here as it will only require 1 search and does not require 2 questions in STAR set-up. The difference between organisational and targeted is anticipated to be best handled at synthesis stage (particularly as some studies may contain both elements). There is a potential interface between targeted and organisational interventions. This will be considered further at the synthesis stage (see synthesis below). Redeployment, is considered under 'reasonable adjustment' in the equality act 2010 (which supersedes the Disability discrimination Act 1995, 2005). Reasonable adjustments can be quite interpretive. It is included here for inclusivity, and to reflect that some interventions may include reasonable adjustments as a component of an intervention.
Sub question to question 1	What impact do the deliverer, setting, timing, frequency, duration and intensity of the intervention(s) have on the effectiveness and acceptability of different interventions?	It is anticipated that this sub question will be addressed at the

Component of protocol	Description	Additional comments
		synthesis stage (see synthesis below, p.9).
Review question 1 components	*What impact does the **deliverer** of targeted or organisational interventions to support employees with disabilities or long term conditions to return to or stay in work have on their effectiveness and acceptability?* *What impact does the **setting of delivery** have on the effectiveness and acceptability of targeted or organisational interventions to support employers with disabilities or long term conditions to return to or stay in work?* *What impact does the **timing** (e.g. after work) of targeted or organisational interventions to support employees with disabilities or long term conditions to return to or stay in work have on their effectiveness and acceptability?* *What impact does the **frequency, duration and intensity** of targeted or organisational interventions to support employees with disabilities or long term conditions to return to or stay in work have on their effectiveness and acceptability?*	In the context of organisation interventions the deliver could be the employer or other external organisation
Context and objectives	To determine the effectiveness of targeted or organisational interventions offered in the workplace to support employees with disabilities or long term conditions to stay in work or return to work.	
Searching	The identification of evidence for this review will conform to the methods set out in Chapter 5 of the Developing NICE Guidelines: the manual The search will use a standard approach. The search will combine terms for LTCs with workplace with intervention terms. The list of LTCs is based on their prevalence but may not be fully comprehensive. Filters for RCTs, observational studies and systematic reviews will be used. In the smaller databases that do not support the use of filters, the search will encompass all study types (i.e. no filter will be applied). The initial search strategy will be developed in MEDLINE (Ovid Interface) and tested against known relevant papers. It will be translated for use with other databases and websites. Sources to be searched: Core Databases: Embase (Ovid); MEDLINE and MEDLINE in Process (Ovid) ASSIA (Proquest) ;CENTRAL (Ovid); Cochrane Database of Systematic Reviews (Ovid); DARE (records up to March 2014 only) (Ovid); ; Health Management Information Consortium	The search has not been restricted to RCT study designs due to the nature of the work in this area and also the relatively low number of hits when the RCT filter was applied (approximately n= 750). The expansion of the search beyond RCT study designs was also felt to resolve any issues that might present from PHAC regarding limitations of RCT and the area of workplace health.

Component of protocol	Description	Additional comments
	(HMIC) (Ovid); PsycINFO (Ovid); Sociological Abstracts (Proquest); Social Policy and Practice (Ovid) Other databases: AMED (Allied and Complementary Medicine) (Ovid); Campbell Collaboration reviews; Clinicaltrials.gov (U.S. National Institutes of Health); Social Care Online (social care) (SCIE); Social welfare at the British Library (British Library); TRoPHI (ePPI Centre); DoPHER (ePPI Centre). Core websites: NICE website(iIn addition, former Health Development Agency (HDA) documents); NHS Evidence; OpenGrey; Public health observatories; Scottish Government and Welsh Government (where policy for the topic is devolved); Health Evidence Canada. Work related websites: Acas: British Chambers of Commerce; British Psychological Society; Centre for Employment Studies Research: Centre for Mental Health; Chartered Institute of Environmental Health; Chartered Institute for Personnel and Development; Chartered Management Institute; Department of Health; Department for Work and Pensions; HSE; Institute for Occupational Safety and Health; Institute for Employment Studies; London Health Commission; National Audit Office; Oxford Health Alliance; UK Commission for Employment and Skills; Investors in People; Association of Chartered Physiotherapists in Occupational Medicine; College of Occupational Therapy. Supplementary search activities : Backwards and forwards citation searching of key references identified during screening (e.g. all included studies; relevant systematic reviews) will be undertaken The reference lists of previous reviews for NICE as part of the development of PH19 will also be scanned for relevant trials. A search of Medline and other databases for chronic conditions with greater prevalence in minority ethnic populations (e.g sickle cell disease, lupus erythematosus). Where there are any obvious gaps in the evidence base further supplementary activities may be undertaken. Filters and restrictions applied at search stage: Filters for RCTs, observational studies and systematic reviews will be used in the major databases. In the smaller databases that do not support the use of filters, the search will encompass all study designs. Date restricted to January 2000 The following publication types will be filtered out at the searching stage: news articles; commentaries; editorials; letters; “notes”; animal studies. Publications that are not in English language.	

Component of protocol	Description	Additional comments
	Documenting the search process – search documentation will conform to the methods set out in Section 5.9 of the Developing NICE Guidelines: the manual See Appendix 1 for details of the Medline search strategy.	
Type of study to be included	**Inclusion:** Studies with a clear control group or suitable and clear comparator will be included – controlled studies only (e.g. RCTs, non-randomised controlled trials, controlled trials, cohort studies; interrupted times series, single group pre-test post- test studies, and other controlled studies. Process evaluations related to included outcome evaluations will also be included.). Studies must report one or more primary outcomes (i.e. a workplace / employment outcome. See page 10). **Exclusion:** Studies without a control group or suitable and clear comparator will be excluded. Systematic reviews will not be included but used as a source of primary studies only.	The search has not been restricted to RCT designs due to the nature of the work in this area and also the relatively low number of hits when the RCT filter was applied (approximately n= 750). The expansion of the search beyond RCT design was also felt to resolve any issues that might present from PHAC regarding limitations of RCT designs and the area of workplace health
Population	Employees who have **an existing disability or long-term mental or physical health condition*** (for example, asthma, cancer, Crohn's disease, dementia, depression, diabetes, hearing impairment, multiple sclerosis, obesity, osteoarthritis or sight impairment, lupus, sickle cell disease, thalassemia). * For the purposes of this review an 'existing disability or long-term condition' may or may not have been diagnosed, and includes people who self-identify with a condition, and those who are enrolled in any type of employee assistance programme (EAP). Employees can be: in work and never had a sickness episode	For some conditions there will be a fluctuating nature to symptoms (Crohn's disease), whereas others may be constant or slowly declining (sight impairment) this will be considered in guideline development process dependent on the studies identified from the search. At weeding stage we will include studies of people whether they have been or are on short or

Component of protocol	Description	Additional comments
	be in work but previously had periods of sickness absence, or be currently on sickness absence (including these employees in receipt of sick pay – including statutory sick pay, or equivalent schemes). **Exclusions:** People who are unemployed. People who are unable to work due to disability or LTC (for example, anyone receiving benefits that cover unemployment due to disability or long term condition). People who are self-employed and who are not employed or contracted to work by an organisation of any size. Children and young people under 16.	long-term sickness leave. This may be narrowed at a later date following discussion with PHAC topic members.
Intervention	**Inclusion:** Targeted interventions for employees with disabilities or LTCs if the intervention is the responsibility of the employer (whether providing an intervention in the workplace, or referring employees outside the workplace for support). These include but are not limited to: non-treatment workplace programmes to help people manage their health condition, such as motivational interviewing (to strengthen belief in ability to work) adjustments in work activities, station, processes or place (including assistive technology or practices, changes to job design and flexible working)[1] job coach or peer support (including workplace champions) information, advice or training (including self-support information) access and transport to work redeployment. Employment Assistance Programmes (EAP's) **Organisational interventions,** include but are not limited to:**:** education campaigns and workplace groups to promote positive attitudes and tackle discrimination and stigma showing people how to get help from employee support schemes risk assessment and assessment of work capacity or work ability systems for monitoring employees with disabilities and long-term conditions and responding to need.	'Treatment' workplace programmes to help people manage their health conditions' are defined as interventions or programmes that are 'clinical' and more medical in nature for example computerised cognitive behaviour therapy for depression or anxiety (TA97) or treatment for the early management of persistent non-specific low back pain (CG88) – and are excluded from this guideline. The distinction between 'clinical' and non-treatment interventions can be difficult to assess at the title and abstract stage of identifying relevant research. Screening at this stage will necessarily be over inclusive and will be narrowed at the stage of screening full-text papers.

[1]Employers must make reasonable adjustments to make sure disabled workers aren't seriously disadvantaged when doing their jobs.

Component of protocol	Description	Additional comments
	Exclusions: Workplace prevention strategies to mitigate health problems or functional decline in the general workforce. Universal health screening at work (for example, sight tests).Screening may be a component of some relevant workplace interventions. National employment and social security policies. Interventions that manage clinical diagnosis, management and treatment of conditions are excluded (e.g. making HIV treatment accessible in the workplace) - *interventions delivered in a clinical setting are unlikely to meet this criterion and will be excluded at intervention criterion* Interventions which do not occur in the workplace or are not referred from the workplace Interventions which are not targeted towards, or aim to support workers with disabilities or LTCs. Managing sickness absence (including long-term absence). This is covered in the NICE guideline PH19 'Managing long-term sickness absence and incapacity for work'. Training interventions for supervisors and managers as these are covered by NICE guideline NG13 Workplace policy and management practices to improve the health and wellbeing of employees Where the emphasis of an intervention is' work as treatment'	
Comparator	Other intervention Usual care or no intervention	
Outcomes	Primary outcomes: To meet our inclusion criteria a study must report one or more workplace or employment outcomes. These include but are not restricted to: Participation in work. (Typically reported as days of sickness absence or days in work) Productivity and performance. Secondary outcomes Changes in patterns of work (e.g. flexible / part-time). Adjustments in work activities, station, processes or place. Adoption of (or referral to) employee support programmes. Measures of physical and mental health and wellbeing. Self-confidence, self-efficacy, coping skills. Changes in organisational culture, policies and practice. Acceptability (employer and employee).	To meet our inclusion criteria a study must report one or more workplace or employment outcomes. Secondary outcomes reported will also be data extracted.
Setting	**Inclusion:** The workplace and any setting where employees have been referred to from the workplace.	The setting is broad but interventions that manage clinical diagnosis, management and

Component of protocol	Description	Additional comments
	Exclusions: Clinical interventions that manage diagnosis, management and treatment of conditions are excluded) - *interventions delivered in a clinical setting are unlikely to meet this criterion and will be excluded at intervention criterion* Interventions which do not occur in the workplace or are not referred from the workplace	treatment of conditions are excluded so most interventions delivered in a clinical setting are unlikely to meet this criterion and will be excluded on the basis of intervention criterion.
Other inclusion/exclusion criteria	Research conducted in non-OECD countries will be excluded. (A list can be found at: http://www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm) Research not reported in the English language will be excluded Dissertations and theses will be excluded Conference abstracts will be excluded Opinion pieces (e.g. letters, editorials, commentaries) will be excluded Published prior to January 2000	It is acknowledged that some OECD countries for example USA have a different workplace health context where health insurance payments/premiums by employers and health insurance companies have a key influence and role in the area. Where difference in context arise these will be noted and outlined where appropriate.
Selecting evidence (data screening)	**Stage 1. Title abstract screening (weeding)** All references from the database searches will be downloaded, de-duplicated and screened on title and abstract against the criteria above. Where no abstract is available and the title or keywords indicate the study might be relevant the full-text of the item will be obtained. A randomly selected initial sample of 10% of records will be screened by two reviewers independently. The rate of agreement for this sample will be recorded, and if it is over 90% then remaining references will screened by one reviewer only. Disagreement will be resolved through discussion. Where abstracts meet all the criteria, or if it is unclear from the study abstract whether it does, the full text will be retrieved. **Stage 2. Full text screening** Full-text screening will be carried out by two reviewers independently on 100% with a 10% check by a third reviewer. Disagreement will be resolved through discussion. Reasons for exclusion at full paper will be recorded.	
Data extraction and quality assessment	Quality assessment and data extraction for all included studies will be conducted using the tools in Developing NICE guidelines: the manual. All studies will be critically appraised and data extracted by one reviewer, with all data checked in detail by a	

Component of protocol	Description	Additional comments
	second reviewer. Any differences will be discussed and resolved by a third party where necessary. All extracted data will be captured in evidence tables.	
Data synthesis	Evidence will be synthesised narratively in the first instance. If sufficiently homogeneous and high-quality data are located, meta-analysis may be considered. Data will be synthesised in appropriate groupings according to different factors (e.g. type of disability or LTC, type of intervention). The synthesis will report any unintended consequences or adverse outcomes Within the synthesis attention will be given to identifying evidence relevant to the sub-question: What impact does deliverer, setting, timing, frequency, duration and intensity of the intervention have on the effectiveness and acceptability of different interventions?	
Subgroup analysis	Where possible, the effectiveness of interventions for subgroups will be disaggregated and reported, along with any differential effect on different subgroups in included studies. Appropriate sub-group analyses might investigate: Population or demographic factors Targeted interventions Organisational interventions Stay in work Return to work Nature of disability or LTC Intervention types	This list of groupings are not exhaustive and may change as results from the searches are analysed
Other information/criteria	Potential equality issues are also discussed in the Equalities impact assessment form. Where appropriate the PROGRESS-Plus criteria will be used in accordance with *Developing NICE Guidelines: the manual* (NICE 2014).	

Appendix 2 Medline Search strategy

166	exp Workplace/ or exp Employment/ or exp Work/ or exp Industry/	321450
167	((job* or employ* or work*) adj (place* or site* or setting* or location* or organisation* or organization* or force*)).ti,ab.	9710
168	(workplace* or business* or shop* or factory or factories or company or companies or office* or industry or industries).ti,ab.	217990
169	(employee* or employer*).ti,ab.	40965
170	((labor or labour) adj market*).ti,ab.	2693
171	or/166-170	520899
172	Return to Work/	656
173	Employment, Supported/	931
174	Rehabilitation, Vocational/	8658
175	Social Support/	54536
176	Occupational Health/	26347
177	Occupational Health Services/	9813
178	((return* or stay* or remain* or back or keep* or retain*) adj2 work*).ti,ab.	11404
179	((support* or competitive) adj2 (work* or employment)).ti,ab.	6718
180	rehabilit*.ti,ab.	105319

181	(self management adj (programme or program)).ti,ab.	593
182	((peer or social) adj2 support*).ti,ab.	25426
183	((work* or employment or occupational) adj2 (intervention* or health* or accreditat* or train*)).ti,ab.	55417
184	(motivational adj2 interview*).ti,ab.	1914
185	((regulat* or adapt * or adjust* or change* or modif* or redesign* or re-design*) adj2 (premise* or building* or work* or equipment or office* or shop* or industry or industries or factory or factories or company or companies or practice* or hour* or responsib* or environment* or job*)).ti,ab.	39256
186	((flex* or part-time or "part time") adj4 (career* or employ* or work* or time* or job* or hour* or intervention*)).ti,ab.	7812
187	((job* or employmernt* or work*) adj2 coach*).ti,ab.	116
188	redeploy*.ti,ab.	378
189	workplace champion*.ti,ab.	1
190	(self help or self support*).ti,ab.	5090
191	or/172-190	315053
192	171 and 191	47239
193	randomized controlled trial.pt.	404926
194	randomized controlled trial/	404926
195	controlled clinical trial.pt.	91220

196	random allocation/	85320
197	Placebos/	33768
198	clinical trial, phase ii/ or clinical trial, phase iii/	34643
199	Observational Study as Topic/	899
200	Observational Study/	12410
201	Epidemiologic Studies/	6304
202	exp Case-Control Studies/	733146
203	exp Cohort Studies/	1466725
204	Cross-Sectional Studies/	198488
205	Controlled Before-After Studies/	48
206	Historically Controlled Study/	21
207	Interrupted Time Series Analysis/	60
208	Comparative Study.pt.	1727637
209	case control$.tw.	81710
210	case series.tw.	36550
211	(cohort adj (study or studies)).tw.	92556
212	cohort analy$.tw.	3917
213	(follow up adj (study or studies)).tw.	37567
214	(observational adj (study or studies)).tw.	46357

215	longitudinal.tw.	141766
216	prospective.tw.	359542
217	retrospective.tw.	281956
218	cross sectional.tw.	170947
219	Meta-Analysis.pt.	57890
220	Meta-Analysis as Topic/	14720
221	Review.pt.	1980500
222	exp Review Literature as Topic/	8262
223	(metaanaly$ or metanaly$ or (meta adj3 analy$)).tw.	68651
224	(review$ or overview$).ti.	285785
225	(systematic$ adj5 (review$ or overview$)).tw.	63489
226	((quantitative$ or qualitative$) adj5 (review$ or overview$)).tw.	4764
227	((studies or trial$) adj2 (review$ or overview$)).tw.	26547
228	(integrat$ adj3 (research or review$ or literature)).tw.	5918
229	(pool$ adj2 (analy$ or data)).tw.	15436
230	(handsearch$ or (hand adj3 search$)).tw.	5646
231	(manual$ adj3 search$).tw.	3367
232	or/193-231	5737687
233	192 and 232	17260

234	limit 233 to (english language and yr="2000 - 2015")	11699
235	limit 234 to (comment or editorial or news or letter)	62
236	234 not 235	11637
237	animals/	5538709
238	humans/	14226612
239	237 not 238	3986044
240	236 not 239	11559
241	((long term or long-term) adj4 (condition* or ill*)).ti,ab.	5646
242	(chronic adj4 (diesease* or illness* or condition*)).ti,ab.	35109
243	Chronic Disease/	227431
244	Disabled Persons/	33220
245	((disabled or disability) adj3 (person* or people*)).ti,ab.	5284
246	Hypertension/	200123
247	hypertension.ti,ab.	276237
248	Depression/	83458
249	(depress* or anxiet*).ti,ab.	377587
250	Asthma/	108938
251	Asthma.ti,ab.	109367
252	Diabetes Mellitus/	95138

253	diabet*.ti,ab.	413209
254	Coronary Disease/	128354
255	((Coronary or ischemic) adj Heart Disease).ti,ab.	58882
256	(heart attack* or angina or myocardial infarction).ti,ab.	163463
257	Renal Insufficiency, Chronic/	8402
258	(chronic adj3 (kidney disease* or renal insufficiency)).ti,ab.	25053
259	Hypothyroidism/	24456
260	Hypothyroidism.ti,ab.	22793
261	Stroke/	66462
262	Ischemic Attack, Transient/	18437
263	(Stroke or Transient Ischemic Attack).ti,ab.	147305
264	Pulmonary Disease, Chronic Obstructive/	25439
265	Chronic Obstructive Pulmonary Disease.ti,ab.	27918
266	cancer*.ti,ab.	1101808
267	Atrial Fibrillation/	37733
268	(atrial fibrilation or atrial fibrillation).ti,ab.	39313
269	Mental Health/	23680
270	((mental or somatic) adj (health or illness*)).ti,ab.	89358
271	Schizophrenia.ti,ab.	76013

272	Heart Failure/	90390
273	heart failure.ti,ab.	107606
274	Epilepsy/	63862
275	epilepsy.ti,ab.	70134
276	Cataract/	24299
277	cataract*.ti,ab.	42416
278	Dementia/	39242
279	dementia.ti,ab.	66477
280	(cognitive adj (impair* or disorder*)).ti,ab.	34218
281	Hypertension/	200123
282	hypertension.ti,ab.	276237
283	Arthritis, Rheumatoid/	85088
284	?Arthritis.ti,ab.	125529
285	Kidney Diseases/	73572
286	(kidney adj (disease* or failure*)).ti,ab.	41555
287	Multiple Sclerosis/	42659
288	Multiple Sclerosis.ti,ab.	49794
289	Colitis/	13636
290	Colitis.ti,ab.	44705

291	Crohn Disease/	32429
292	Crohn* Disease.ti,ab.	31557
293	Musculoskeletal Diseases/	8902
294	(Musculoskeletal adj (Disease* or disorder* or pain)).ti,ab.	7988
295	(spinal cord injur* or paraplegi*).ti,ab.	35134
296	Stress, Psychological/	92899
297	psychological stress*.ti,ab.	5385
298	HIV/	17149
299	Acquired Immunodeficiency Syndrome/	75651
300	(hiv or aquired immunodeficiency syndrome).ti,ab.	232906
301	Vision Disorders/ or Blindness/	40381
302	((sight or hearing or vision) adj3 (impairment* or disabilit* or disorder*)).ti,ab.	11259
303	blindness.ti,ab.	18939
304	Hearing Loss/	9309
305	deafness.ti,ab.	15928
306	((carpal adj tunnel) or (repetitive adj strain*)).ti,ab.	7916
307	(parkinson* adj disease*).ti,ab.	57487
308	Parkinson Disease/	50981
309	((intellectual or developmental or psychiatric) adj disabilit*).ti,ab.	10492

310	(burn* or amputat*).ti,ab.	95353
311	(limb adj injur*).ti,ab.	764
312	(chronic adj2 fatigue).ti,ab.	5296
313	Intellectual Disability/ or burns/ or amputation/	103891
314	or/241-313	4327280
315	240 and 314	5266
316	limit 315 to (english language and yr="2000 - 2015")	5266
317	(comment or editorial or news or letter).pt.	1558923
318	316 not 317	5266
319	animals/	5538709
320	humans/	14226612
321	319 not 320	3986044
322	**318 not 321**	**5266**

Appendix 3a: Evidence Tables review 1 section 4 of report

Staal et al 2004

Study details	Population	Intervention/comparator	Results	Notes
Study Staal et al 2004 **Quality score** ++ **Study type** RCT **Location and setting** Netherlands, occupational health services department of an airline company **Study aims** Effect of graded activity vs. UC in employees of Dutch airline **Length of follow up** 3m and 6m **Source of funding** Dutch Health Insurance Council (CVZ grant DPZ t69/0) ***Linked Study(ies)*** Hlobil et al 2007 Substantial sick-leave costs	**Number of participants:** 134 (n = 67 Graded Activity; n= 67 usual care) **Participant characteristics** Graded activity: mean age: 38 (+/- 9); men/women: 64/3; sample mainly Baggage/aircraft turnaround (n=35); absence from work at the start 34 [full] 33 [partial]; mean functional status 13.3 +/- 4.6; mean pain severity 6.7 +/-1.8); median duration of absence for current LBP pre randomisation n = 43 (31-68) days Usual care: mean age: 37 (+/- 8; men/women 62/5; sample mainly Baggage/aircraft turnaround (n=32); absence from work at the start 31 [full] 36 [partial]; mean functional status 13.0 +/- 4.9; mean pain severity 6.4 +/-1.7; median duration of absence for current LBP pre randomisation n = 41 (25-65) days **Inclusion criteria:** listed as absent from work due to LBP – full or partial absence for non-specific back pain/symptoms for minimum 4 weeks	**Comparator:** Usual guidance from Dutch occupational physicians (OP) Back pain management strategy – advising on ergonomics, prevention and RTW schedules + advising and communicating with other stakeholders **Intervention:** Usual guidance (Usual care) from Dutch occupational health care system + graded activity Physiotherapist (trained in behavioural principles + 3 x 2hr sessions on patient – therapist interactions) supervised sessions at Schiphol airport: • Medical history and physical examination - assess and to reassure participants (RE pain etc.) • 1hr exercise session x twice weekly until RTW for up to 3m – decided between Physio* and patient) • General (aerobic) exercises (e.g. cycling or rowing) + tailored activity (mostly gym-based strengthening exercises) • First 3 sessions – max reps assessed for each exercise with average used as a 'baseline' for specifying gradually progressive exercise scheme • Participant ask to propose RTW 'date' and with physio set gradually increasing quota for each exercise to achieve exercise goal – goal setting • Exercise commenced at session 4 at sub-max – physio provide verbal	**Outcomes:** Days absent from work of LBP (electronic employee records) – initial and recurrent Days post randomisation to RTW Functional status (Roland Disability Questionnaire) Pain (average pain intensity – *tool not outlined*) Physical activity (not a primary outcome) assessed via Baecke Questionnaire **at baseline only** **Results:** **Functional status** via longitudinal analysis of covariance: @3m (n=124); graded activity (GA) 6.3 (SD+/- 6.7) vs. UC:4.9 (+/- 6.2); @6m (n=120); GA: 7.8 (SD+/-6.6) vs. UC: 6.4 (SD+/- 6.6) Effect of GA: -1.5 (SD -0.33 to 0.4) 95% CI p=0.11 **Pain Severity** during previous week via longitudinal analysis of covariance @3m (n=122); GA: 2.8 (SD+/- 2.4) vs. UC: 2.5 (SD+/- 2.8); @6m (n=118); GA: 2.9 (SD+/-3.1) vs. UC: 2.7 (SD+/- 2.8) Effect of GA: -0.4 (SD -1.1 to 0.4) 95% CI p>0.2	**Limitations identified by the author** Some participants partially RTW on modified/ active sick leave arrangements but were kept on the 'absent list'– the study acknowledges this **Limitations identified by the review team** Power calculation (power of 0.90 significance 0.05) 70 participants in each arm (n=67) Sample was predominantly male in both arms; majority baggage and aircraft turnaround services (this would match with the LBP)

savings due to a graded activity intervention for workers with non-specific sub-acute low back pain Eur Spine J (2007) 16:919–924 STAR ID #516905	**Exclusion criteria:** LBP with radiation below the knee with signs of nerve compression; CV contraindications for physical activity via PAR-Q; legal or pregnancy conflict between employer and worker.	praise at goal achievement and improvement (not pain) • **Goal was not aerobic endurance/strength but to increase awareness of what can be done and pain awareness** • Before RTW participants could RTW with modified hours or duty • Participants could also consult OP and GP throughout the intervention period – GP's and OP informed about the study and advised to follow Dutch College of GP guidelines *Same physio treated each patient Mean intervention duration 7 weeks; mean number of sessions: 8.4;	**Graded activity** – n = 67, 3 non adherers (data on functional status @3m = 62; @6m = 61; data on pain @3,=61; @6m=60) Average intervention duration 7 weeks; median duration of absent for work post randomization: varied due to provider issues in summary: physio 1: 7 participants – median days RTW 53 days physio 2: 15 participants – median days RTW 54 days physio 3: 44 participants – median days RTW 65 days **Usual care** (UC) – n = 67 (data on absence from work @3m = 64; @6m = 60; data on pain @3m = 63; @6m = 59) Received a mean of 13 (=/-8.4) sessions treatment **Graded activity vs. UC:** Median total number of days absent from work due to LBP post randomisation: graded activity: 58 days vs. UC: 87@6m **Hazard ratio (HR) via Cox regression analysis***: HR: up to 50 days after randomisation 1.0 (CI 0.6 to 1.8; p >0.2) HR: post 50 days after randomisation 1.9 (CI 1.2 to 3.2; p = 0.009 (graded activity) HR per protocol (excluding 3 non-adherers) HR: up to 50 days after randomisation 1.1 (CI 0.6 to 1.9; p >0.2) HR: post 50 days after randomisation 2.0 (CI 1.2 to 3.2; p = 0.004 (graded activity) ** taken at specific time points for work absence data as model assumptions were not met: HR's calculated*	**Other comments** Graded activity: 11 participants utilised nonsteroidal anti-inflammatory (n=8) or pain killers (n=3) during intervention UC: 22 participants utilised nonsteroidal anti-inflammatory (n=16) or pain killers (n=6) during intervention

			by adding an interaction between specific follow-up periods and treatment allocation to the model.	

Bee et al 2012

Study details	Population	Intervention/comparator	Results	Notes
Study Bee et al 2012 **Quality score** **+** **Study type** RCT **Location and setting** Telephone based CBT in a large communications company. UK **Study aims** To examine the feasibility of telephone-delivered cognitive behavioral therapy (T-CBT) in an occupational context, with reference to participant recruitment, treatment	**Number of participants:** **Intervention:** Telephone based CBT, N=26 (follow up n=15) **Control::** Usual care, N=27 (follow up n=17) **Participant characteristics** Employees absent from work with mild to moderate mental health difficulties. Age: mean 45. (SD 8.9) years; 51% male; 96% Caucasian; 55% university/ college education. Authors do not report whether groups were comparable. **Inclusion criteria:** Employees of a large communications company absent from work with mild/moderate mental health difficulties for 8 to 90 days authorized by general practitioner certificate.	**Intervention:** Multi component. Telephone CBT (T-CBT) service. T- CBT was delivered over 12 weeks by one of two registered graduate mental health workers. Participants worked with therapists through regular phone calls to identify and challenge negative thoughts, develop self-care skills and complete workbook exercises emphasizing behavioural activation. Therapists received 12 h of didactic instruction and role-play and weekly supervision from a senior CBT therapist. All patients had access to usual care, including primary and occupational health services. **Comparator:** Usual care (including primary and occupational health services).	**Outcomes:** Symptom severity via the 34-item Clinical Outcomes in Routine Evaluation outcome measure (CORE-OM). 14-item Hospital Anxiety & Depression Scale (HADS) Work and Social Adjustment Scale (WSAS) Actual and effective working hours quantified by the World Health Organization Health and Work Performance Questionnaire. **Analysis:** Outcomes were measured at baseline and 3-months via postal questionnaires. All were measured using validated self-report tools. Analysis was based on intention to treat. Logistic regression identified potential predictors of loss to follow-up. Effect sizes were estimated alongside tests of significance to inform power calculations for a future trial. **Results:** *Feasibility (treatment delivery):* 23 (88%) individuals had ≥1 T-CBT session. 19 (73%) attended all appointments. Mean (S.D.) session number was 4.5 (3.2) and mean (S.D.) session length was 28.32 (18.24) minutes.	**Limitations identified by the author** Loss to follow-up (40%) was high but remained comparable to other similar studies. Although internal validity was heightened through allocation concealment via central randomisation, confidence intervals around effectiveness estimates were wide. The relatively high loss to follow-up means that bias may be present. **Limitations identified by the review team** None **Other comments** This was a rigorously conducted feasibility study. The authors believe that delivery of T-CBT in an occupational context is feasible with evidence of potential effect.

adherence, follow-up and effect. **Length of follow up** 3 months **Source of funding** Not reported. **Linked study(ies)** *None*	**Exclusion criteria:** Severe or complex disorders (psychosis, comorbid personality disorder), de-generative cognitive disorders, substance misuse or active self-harm.		*Feasibility (loss to follow-up):* 21 patients (40%) failed to return 3-month outcome data. Non-respondents were more likely male (adjusted OR =5.4, 95% CI =1.4–21.6] and more severely ill (adjusted OR=1.1, 95% CI=1.02–1.2). *Effectiveness:* Changes in symptom severity: no significant effect for T-CBT over usual care (Adjusted mean difference [AMD] 4.73, 95%CI−0.32 to 9.78; effect size 0.63, p=0.065) When the intervention and comparison groups were compared there were statistically significant improvements in some workplace outcomes: Hours worked/week (effect size 0.88, p= 0.006) Effective work hours/ week (effect size 0.75, p=0.002) Anxiety and depression - no significant effect (AMD 5.60; 95%CI −1.08 to12.28; P=.097); and Work and social adjustment - no statistically significant effect (AMD 6.66; 95%CI −0.02 to13.36, effect size 0.77; p=.051). Self-perceived job performance - no significant effect observed in T-CBT over usual care (AMD 1.28 95%CI1.12 to 3.69, effect size 0.13; p=0.286). There was no significant difference between the groups on self-perceived job performance. Authors report that clinical outcomes were not statistically significant when the intervention and comparison groups were compared. They also reported that the direction of effect favoured T-CBT.	

Lerner et al 2012

Study details	Population	Intervention/comparator	Results	Notes
Study Lerner et al 2012 **Quality score** + **Study type** RCT **Location and setting** State Government in Maine (USA); Public sector employer **Study aims** Tests the hypothesis that compared to usual care for employees with depression the Work and Health Initiative (WHI) will result in greater improvements in work performance and work productivity **Length of follow up** 4 months **Source of funding** This study was sponsored by the National Institute of Mental Health 1	**Number of participants:** 193/1525 were eligible that completed initial screening 79 enrolled: 59(I); 27 (C) Follow up: Intervention n=47, control n=25. **Participant characteristics:** Public sector employees with depression. No statistically significant differences between I and C groups on either demographic characteristics or clinical outcomes. Mean age was 45.6 years (SD=9.4). Males comprised 21.5% (n=17) and 78.5% was female (n=62). Most were White (98.7%, n=76). The majority (64.6%, n=51) had professional, technical or managerial occupations, WHI treatment and usual care groups had similar levels of baseline at-work performance and work absences (p > .05) on four WLQ scales scores, the productivity loss score, work absences and productivity loss due to absences Depression at baseline and depression history 25.6% (n=20) met criteria for MDD, 46.8% (n=37) met screening criteria for dysthymia, and	**Intervention:** Work and Health Initiative (WHI) is provided over the phone by Employee Assistance Programme (EAP) counsellors trained in its methods: • **Work Coaching and Modification** interventions target specific job performance difficulties related to depression, guiding the employee to change modifiable aspects of work methods and/or work conditions. • **Care Coordination** involves outreach by the counsellor to the employee and his or her primary care physician (PCP) or other prescribing professional to promote adherence to already prescribed antidepressants and the use of evidence-based depression treatment. Counsellors provide psycho-education about the impact of depression • **Cognitive-Behavioural Therapy (CBT) Strategies** uses an adapted version of the workbook, Creating a Balance to help employees change behaviours and cognitions that accompany depression and may interfere with functioning. **Comparator:** Usual care: standard EAP services	**Outcomes:** Changes in at-work performance as measured by the WLQ (25-item version - scores range from 0% (limited none of the time) to 100% (limited all of the time): four dimensions of performance: • time management • performance of physical tasks, • mental-interpersonal tasks • output tasks WLQ at-work Productivity Loss Score - the weighted sum of the four scale scores, indicates the percentage reduction in at-work productivity relative to a healthy benchmark group. WLQ Work Absence Module measured self-reported time missed from work in the past two weeks due to health or medical care. Absence-related productivity loss was the ratio of time missed in the past two weeks to time usually spent working. A secondary outcome was the change in depression symptom severity as measured by the PHQ-9. **Analysis:** All outcomes were measured using validated measurement tools. Not an intention to treat analysis. However, sensitivity analysis of results conducted including those who dropped out using last observation carry-forward.	**Limitations identified by the author** Utilization of usual care was left up to the employee, which may have diluted its impact Sample too small to detect impact of each intervention (WHI) component Brief follow-up Limited external validity (single Employment Assistance programme; sample – predominantly white and rural) Potential confounding “All employees regardless of group were free to use other primary care, specialty care, behavioural health programs and/or standard EAP services”

<table>
<tr>
<td>R34 MH072735-01A1.
Linked Study(ies)
None</td>
<td>26.6% (n=21) met criteria for both; The average PHQ-9 depression symptom severity was moderate at 12.8 (SD=5.2)
Total sample ability to perform tasks related to time management was impaired an average of 44.9% (SD=19.7%) of the time in the prior two-week period.
Ability to perform mental and interpersonal job tasks was impaired an average of 37.7% (SD=15.3%) of the time in the past two weeks
At-work productivity was reduced by an average of 10.2% (SD=4.1%) in the two-week period prior to baseline. On average, employees missed 1.5 (SD=1.6) workdays due to health problems in the two weeks prior to baseline for an average productivity loss of 15.0% (SD= 14.6);
Inclusion criteria
18 to 62 years old and employed ≥15 hours per week, and fulfilled the criteria for current major depressive disorder (MDD) and/or dysthymia. Five out of nine symptoms at qualifying levels on the Patient Health Questionnaire depression scale (PHQ-9) and no recent bereavement

Exclusion criteria
Planning to retire within two years; receiving work disability benefits; active alcoholism or drug-abuse based on the five-</td>
<td></td>
<td>Results

All outcomes improved significantly (p<.01) in the WHI treatment group. The magnitude of the change (improvement) in all outcomes was significantly larger in the WHI treatment group than in the usual care group (p<.01). All of the improvements in the WHI treatment group represented moderate to large effects. Differences between change scores (WHI vs. UC) at 4 months post-intervention.

<table>
<tr><th></th><th>change</th><th>Effect size*</th><th>p-value</th><th>DF</th></tr>
<tr><td>Time management</td><td>-15.4</td><td>-0.73</td><td>0.005</td><td>1.62</td></tr>
<tr><td>Phys. Tasks</td><td>-11.7</td><td>-0.54</td><td>0.027</td><td>1.64</td></tr>
<tr><td>Men.-Int Tasks</td><td>-9.5</td><td>-0.59</td><td>0.017</td><td>1.64</td></tr>
<tr><td>Output tasks</td><td>-0.7</td><td>-0.70</td><td>0.006</td><td>1.64</td></tr>
<tr><td>% produc. Loss (At work)</td><td>-0.78</td><td>-0.78</td><td>0.002</td><td>1.61</td></tr>
<tr><td>Days missed/2 weeks</td><td>-1.7</td><td>-0.87</td><td>0.001</td><td>1.65</td></tr>
<tr><td>% produc. Loss (absence)</td><td>-15.0</td><td>-0.90</td><td>0.001</td><td>1.61</td></tr>
<tr><td>PHQ-9 Symptom severity</td><td>-6.8</td><td>-1.09</td><td>0.001</td><td>1.66</td></tr>
</table>
* A higher value on each variable signifies a worse outcome, a negative change score indicated an improvement from baseline. Effect sizes of ≥0.8 are assumed to be large, effect sizes of 0.5-0.8 are moderate, and effect sizes of 0.2-0.5 are assumed to be small.</td>
<td>Limitations identified by the review team

Multiple (n=3) interventions delivered – impossible to disaggregate and attribute effect

Other comments
This may have been a pilot study for Lerner et al 2015.

All employees regardless of group were free to use other primary care, specialty care, behavioural health programs and/or standard EAP services. To minimize the threat of contamination the study subjects contacting the EAP for services were assigned to non-study counsellors and study counsellors were required to follow strict confidentiality procedures and not share study information.</td>
</tr>
</table>

	item CAGE; pregnant or six months postpartum; schizophrenia or bipolar disorder; non-English speaking and/or reading; and/or diagnosed with one or more of 12 medical conditions that have symptoms that potentially interfere with working (e.g., angina, congestive heart failure, stroke, diabetes, chronic obstructive lung disease)			

Lerner et al 2015

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Study
Lerner et al 2015
Quality score
++
Study type
RCT
Location and setting
19 employers and five related organizations

Study aims
Study tested an telephone intervention aimed at improving work functioning (reducing presenteeism, absenteeism and work productivity loss) and depression symptom severity among middle-aged and older adults with depression and work limitations vs. Usual care

Length of follow up
4m</td>
<td>Number of participants:
Intervention: N=217 (n=190 at follow up)
Control: N=214 (n=190 at follow up)
Participant characteristics
Mean age (SD): 54.7 (+/- 6.1)

Female: 72%

At-work productivity loss (APL): 10.3% (+/-4.4)

Days missed in past 2 weeks: 1.2 (+/-2.2)

Productivity loss (PL) due to absence: 14.6% (+/-18.8)

The intervention and control groups were comparable on baseline characteristics except the proportion of married individuals was larger in the usual-care group (58% versus 46%, p=.01) as was the mean number of baseline comorbid general medical conditions (3.2 versus 2.7, p<.01).

Inclusion criteria
age 45 or older and employed
Depression as measured by the Patient Health Questionnaire–9 (PHQ-9)
At-work limitations indicated by a productivity loss score ≥5%</td>
<td>Intervention: Work-focused intervention (WFI) counselling delivered by telephone.
Comparator: Usual care (UC) - no direct care to the usual-care group.

All study participants were shown Web links to depression information and care resources including care offered through their affiliated study site. Most sites offered EAPs and insurance coverage (medical, behavioral, and pharmacy).

During the study, participants were not restricted from using other services

Intervention:
Telephone-based counselling provided three integrated modalities:
• care coordination - addresses barriers to functional improvement related to a misalignment of goals and expectations among the individual with depression, his or her regular provider, and the counsellor
• cognitive-behavioural therapy strategy development - addresses psychological barriers to functional improvement
• Work coaching and modification - addresses barriers to functioning resulting from imbalances between the characteristics of the worker and those of the job and work environment - A customized plan is developed that guides the participant to change specific work behaviours,</td>
<td>Outcomes:
Change in productivity loss scores measured with the Work Limitations Questionnaire (WLQ).
Change in WLQ work performance scales,
Absences: based on responses to the WLQ Time Loss Module.

Depression: Assessed with the Patient Health Questionnaire-9.

Analysis:
All outcomes are measured using validated self-response tools.
The study was projected to have 85% power to detect three standard errors on the productivity loss score which is the primary outcome for the study. It is unclear whether the study was powered to detect significant differences on other outcomes.

Mixed effects models were modified to assess the impact on results of including participants with missing follow-up data. Some effect sizes were slightly smaller but retained significance.

Results
At 4 months post-intervention when the intervention group were compared with the control group, all outcomes were improved for the intervention group at statistically significant levels.

On the basis of the mixed-effects models
<table>
<tr><th>Outcome</th><th>Change (mean)</th><th>95% CI</th><th>Effect size</th><th>P value</th></tr>
<tr><td>At work productivity loss (%)</td><td>-3.2</td><td>-4.2 to -2.3</td><td>-0.72</td><td><.001</td></tr>
</table>
</td>
<td>Limitations identified by the author
No long term outcomes (4 month follow –up)

Lack of participant blinding.

Sub group analysis
Lerner et al 2015 not sufficient powered for the sub group analysis. This was a post-hoc analysis

Limitations identified by the review team
The interventions is a combination of 3 interventions – cannot disaggregate the impact of each component.

Cash incentive for adherence and intervention fidelity not accounted for

Sample predominately female (72%)</td>
</tr>
</table>

<table>
<tr>
<td>Source of funding
Grant from the National Institute on Aging (NIA) (R01AG033125; No.NCT01163890)
Linked Study(ies)

Adler et al 2015 Improving work outcomes of dysthymia (persistent depressive disorder) in an employed population General Hospital Psychiatry 37(2015) 352–359. STAR ID 514265</td>
<td>on the Work Limitations Questionnaire (WLQ).

Exclusion criteria
Psychosis, bipolar disorder, current alcohol abuse or dependence (which the WFI does not address),
Inability to speak English, and severe physical limitations (a physical component score of ≤35 on the 12-item Short-Form Health Survey)
Sub-group analysis – Dysthymia (Adler et al 2015)

Sample (n=167; WFI = 85 (I); UC = 82 (C)

Mean age: 54.6

Female: 73.7%

Mean PL: 8.5 %(SD=3.6).

mean days Missed in past 2 weeks: 1.1 workdays (SD +/- 1.7).

Mean APL: 10.6%(SD+/- 15.8)</td>
<td>work processes, or environmental conditions, to begin using compensatory strategies—or both.

Eight 50-minute telephone sessions every two weeks (four months total) with a masters-level counsellor with EAP experience. Intervention stresses the acquisition of self-care strategies through “homework.”

Study personnel provided the counsellors with 2.5 days of in-person WFI training. Fidelity to the intervention was supported by weekly group supervision by telephone and individualized support

Comparator:
Each participant was advised to contact a health care provider (for example, primary care physician, psychiatrist, or behavioural health specialist) and, when applicable, an employer-sponsored employee assistance program (EAP). The study provided no direct care to the usual-care group.</td>
<td>
<table>
<tr><td colspan="5">Time at-work limitations by task</td></tr>
<tr><td>Time management</td><td>-15.6</td><td>-20.2 to -11.0</td><td>-0.67</td><td><.001</td></tr>
<tr><td>Physical tasks</td><td>-7.1</td><td>-11.3 to -2.9</td><td>-0.37</td><td><.001</td></tr>
<tr><td>Mental and interpersonal tasks.</td><td>-11.1</td><td>-14.8 to -7.5</td><td>-0.63</td><td><.001</td></tr>
<tr><td>Output tasks</td><td>-14.0</td><td>-18.9 to -9.1</td><td>-0.61</td><td><.001</td></tr>
<tr><td colspan="5">Absences due to health or medical care</td></tr>
<tr><td>N days missed</td><td>-0.8</td><td>-1.3 to -.4</td><td>-0.31</td><td><.001</td></tr>
<tr><td>Productivity loss due to absences (%)</td><td>-6.4</td><td>-10.4 to -2.4</td><td>-0.30</td><td><.01</td></tr>
<tr><td>Depression symptom severity</td><td>-3.7</td><td>-4.8 to-2.5</td><td>-0.60</td><td><0.001</td></tr>
</table>

At-work productivity loss improved 44% (p<.001) in the WFI group compared with 13% (p<.001) in the usual-care group (p<.001 for the difference in change)
Improvements as measured by the four WLQ work performance scales were significant in favour of the WFI group (p<.001 for all scales). WFI group scale scores improved 44% to 47% (p<.001 for each scale). Usual-care group improved significantly on two WLQ scales (mental and interpersonal tasks and output tasks, p≤.001 for

</td>
<td>Other comments
Cash prize incentives for screening, completion of 4 sessions and completing follow – up questionnaires</td>
</tr>
</table>

both), but the improvements in work performance were less than 40% of those achieved by the WFI group

- Absences declined by 53% in the WFI group versus 13% in the usual-care group (p<.001)
- Mean depression symptom severity scores fell by 51% (p<.001) in the WFI group versus 26% (p<.001) in the usual-care group (p,.001 for the difference in change)
- Attending a greater number of WFI sessions resulted in lower (better) at-work productivity loss and depression severity at follow-up. A dose-response relationship was demonstrated. For every additional session attended, there was a .49% productivity loss improvement (p<.001) and a .32-point reduction in depression severity (p<.05).
- Comparing usual-care group participants accessing standard EAP services (n=21) to the WFI group resulted in small changes in the effect sizes (statistical significance was maintained).

Sub-group analysis
A post-hoc sub-group analysis (Adler et al 2015) of the 167 participants screened positive for dysthymia and without current major depressive disorder assessed the impact of WFI compared to UC. Results were similar to the main study with the intervention group experiencing statistically significant improvements across all but three outcomes (physical tasks, % productivity lost due to absence, number of days missed due to health or medical care).

Outcomes	Change (mean)	95% CI	Effect size	p-value
At work productivity loss (%)	-3.3	-4.6 to -2.0	-0.91	<0.001
Time at-work limitations by task				
Time management	-15.2	-21.7 to -8.7	-0.68	<0.001

			Physical tasks	-4.3	-10.4 to -1.8	-0.29	0.17
			Mental and Interpersonal tasks	-11.2	-15.7 to -6.6	-0.83	<0.001
			Output tasks	-17.5	-24.4 to -10.5	-0.86	<0.001
			Absences due to health or medical care				
			N days missed	-0.5	-1.1 to -0.1	-0.31	0.09
			Productivity loss due to absences (%)	-4.0	-9.7 to -1.6	-0.23	0.16
			Depression symptom severity	-3.8	-5.0 to -2.6	-0.89	<0.001

Furukawa et al 2012

Study details	Population	Intervention/comparator	Results	Notes
Study Furukawa et al 2012 **Quality score** **++** **Study type** RCT **Location and setting** 13 factories and offices of a large manufacturing company. Japan **Study aims** To evaluate the impact of a workplace telephone-based CBT intervention for workers with subthreshold or mild depression, on depression, and workplace productivity and presenteeism.	**Number of participants:** **Intervention:** Telephone-based CBT (T-CBT) plus EAP, N=58 **Control:** EAP alone, N=60 Power calculations indicated a need for 108 participants in each arm to detect effect sizes with 95% CI. **Participant characteristics** Working men and women with sub threshold depression. Average age was approximately 39, and 78% were male. The authors note that there were no notable differences between the 2 groups on demographic or clinical variables. **Inclusion criteria** 1) Age 20–57 at study entry 2) Men and women 3) Currently employed full-time (either regular or temporary)	**Intervention:** A multi-component intervention. T-CBT in addition to the pre-existing Employee Assistance Program (EAP). **Control:** EAP alone The patient manual, shared both by the participant and the therapist, contained all the materials covered in each session, with space for the participant to write own examples. The therapist manual specified the flow of each session, a therapist's post –session checklist and sample emails to be sent to the participant between sessions. The participant and the therapist also shared an ''Activity Pocketbook'' containing homework worksheets that the participant could easily carry and record self-monitoring results, activity results and automatic thoughts. Weekly sessions were designed for completion in 30–45 minutes though lengths varied according to participants' or therapists' need. Each session involved a brief assessment with K6, and a review of the previous session and homework. The first session included education about CBT and the rationale of the program.	**Outcomes:** Beck Depression Inventory-II (BDI -2) K6 (a short (6-item) self-report questionnaire to screen for common mental disorders) Health and Work Performance Questionnaire (HPQ) Composite International Diagnostic Interview (CIDI) Satisfaction (measured with a single item question ''How satisfied are you with the stress management welfare program as provided by your company?'' rated between 1 = ''Very unsatisfied'' through 6 = ''Very satisfied.'') **Analysis** The planned sample size was 108 per arm but the trial was stopped early due to low accrual. All outcomes apart from satisfaction measured using validated self-report questionnaires. Intention to treat analysis conducted. **Results** Depression outcomes: In terms of depression outcomes, tCBT was significantly more effective than the control condition, (effect size estimate 0.69, 95%CI: 0.32 to 1.05; $p<0.001$) for depression severity as measured with BDI-II; and for overall psychological distress as measured with K6 (effect size estimate 0.71, 95% CI: 0.34 to 1.07; $p<0.001$). Work performance outcomes:	**Limitations identified by the author** A major change made to the protocol after trial commencement was the shortening of the follow-up period. Originally it was planned at 15 months. This was prompted by the initial low participation rate. **Limitations identified by the review team** **Other comments** Unclear to what extent changes to protocol noted above and the reduced sample size may have introduced bias. However the authors note that "The participation rate turned out to be much lower

Length of follow up

4 months

Source of funding

The study was funded by Sekisui Chemical Co. Ltd. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Registered at ClinicalTrials.gov (Identifier: NCT00885014).

4) Expected to be employed full-time for 6 months after Screening
5) K6 (a short self-report tool to screen for common mental disorders) scores greater than or equal to 9 at screening
6) Becks Depression Inventory (BDI-2) scores greater than or equal to 10 at screening

Exclusion criteria

Major depressive episode in the past month, as ascertained
by CIDI (We did not exclude dysthymia or major depression
in partial remission)
2) Lifetime history of bipolar disorder, as ascertained by CIDI
3) Any substance dependence in the past 12 months, as
ascertained by CIDI
4) Any other current mental disorder if it constituted the predominant aspect of the clinical presentation and required
treatment not offered in the study
5) Current treatment for a mental health problem from a mental health professional
6) Sick leave for 6 or more days for a physical or mental condition in the past month

Sessions 2–4 focused on increasing pleasant activities
Sessions 5–7 focused on identifying, distancing from and challenging negative automatic thoughts. In Session 8 the participant and the therapist together reviewed the cognitive and behavioural skills covered in the program and created a personal self-care plan for self-monitoring, identification and preparation for high risk situations,
And self-management.
.
Telephone counsellors were master-level, doctor-level and postdoctoral clinical psychologists, social workers or nurses with at least 1 year of clinical experience. Telephone counsellors received at least 12 hours of training followed by role play and have two clients' therapy supervised before they could act as therapists for the study.

T-CBT participants were free to seek assistance through the Employee Assistance Program (EAP) which included stress diagnostics and reduction program on the web, telephone consultation, and email consultation.

.

Comparator: EAP alone - which included stress diagnostics and reduction program on the web, telephone consultation, and email consultation.

When the intervention and control groups were compared there was no statistically significant effect for presenteeism or for the hours worked in the past month.
Satisfaction:
When the intervention and control groups were compared the overall satisfaction score was significantly higher for intervention group: 4.42 (4.17 to 4.67) ($p < 0.001$).

Comparison of intervention & control groups at 4-months

Outcome	**EAP & tCBT (n=58)**	**EAP (n= 60)**	**Effect size**	**P value**
BDI –II	11.0 (9.2 to 12.8)	15.7 (14.0 to 17.4)	0.69 (0.32 to 1.05)	0.001
K6	6.5 (5.5 to 7.5)	9.0 (8.1 to 9.8)	0.71 (0.34 to 1.07)	<0.001
HPQ				
Absolute presenteeism	62.4 (58.1 to 66.7)	59.9 (55.8 to 64.0)	0.15 (-0.21 to 0.52)	0.44
Relative presenteeism	104.0 (95.6 to 112.5)	103.3 (95.2 to 111.3)	0.02 (-0.34 to 0.39)	0.50
Hours worked past 4 weeks	199 (186 to 212)	190 (178 to 203)	0.18 (-0.18 to 0.54)	0.59
Overall satisfaction	4.42 (4.17 to 4.67)	3.57 (3.33 to 3.81)	0.96 (0.57 to 1.35)	<0.001*

The means and their 95% confidence intervals were estimated from maximum likelihood mixed effects models adjusting for stratification variables, age and gender. The effect size was calculated from the difference in the means at 4 months divided by their pooled SD. P-values compare the two groups and are from a mixed model (using all

than we had anticipated. We calculated that this sample size would still allow us to detect an effect size of 0.5 or greater at an alpha error of 0.05 and a beta error of 0.20".

	7) Expected to be on pregnancy leave, maternity leave or nursing leave within 6 months after screening		*randomized individuals, including those with missing follow-up data) which adjusted for stratification variables, age, and gender. * Because this variable did not have the baseline measurement, the means at month 4 and their difference were examined by regression models adjusting for stratification variables, age and gender.*	

Geraedts et al 2014a

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Study

Geraedts et al 2014a

(8 weeks follow-up)

Happy@Work

Quality score

Study type

RCT

Location and setting

The Netherlands

6 different ‘white collar’ companies.

Study aims

To develop and test the effectiveness of a Web-based guided self-help course for</td>
<td>Number of participants:

Intervention: Happy@Work, n=116

Comparator: Care as usual (CAU), n=115

Participant characteristics:

Participants were recruited via 6 different (international) companies in the Netherlands: 2 banking companies (company 1 and 2), 2 research institutes (company 3 and 4), 1 security company (company 5), and 1 university (company 6).

The sample size was guided by a power calculation that required 100 participants in each condition to be able to show an effect-size with 95% confidence interval.

There were no significant differences between the two groups on any baseline demographic measures, apart from country of birth.
<table>
<tr><th>Characteristic</th><th>Intervention (n=116)</th><th>CAU (n=115)</th><th>P</th></tr>
<tr><td>Age (years), mean (SD)</td><td>43 (8.9)</td><td>43.8 (9.6)</td><td>0.51</td></tr>
<tr><td>Gender, n (%)</td><td></td><td></td><td>0.20</td></tr>
<tr><td>Female</td><td>77 (66.4)</td><td>67 (58.3)</td><td></td></tr>
<tr><td>Male</td><td>39 (33.6)</td><td>48 (41.7)</td><td></td></tr>
<tr><td>Country of birth, n (%)</td><td></td><td></td><td>0.03</td></tr>
<tr><td>Netherlands</td><td>107(92.2)</td><td>113 (98.3)</td><td></td></tr>
<tr><td>Other</td><td>9 (7.8)</td><td>2 (1.7)</td><td></td></tr>
</table>
</td>
<td>Intervention:

Dual component

Happy@Work is a brief Web-based intervention. It consists of 2 evidence-based treatments: problem-solving treatment (PST) cognitive therapy, and a guideline for employees to help them to prevent work-related stress. It primarily focuses on depressive symptoms but also incorporates psychoeducation and assignments related to dealing with stress and burnout symptoms. It consists of 6 weekly lessons with an option of 1 week extra time in case of delay. Themes of the lessons are introduction of problem solving (lesson 1), problem-solving methods (lesson 2), changing cognitions (lesson 3), dealing with work-related problems (lesson 4), social support (lesson 5), and relapse prevention (lesson 6).</td>
<td>Outcomes:

Work performance: measured with the general work performance scale of the World Health Organization (WHO) Health and Work Performance Questionnaire (HPQ)

Depression: measured with the Center for Epidemiological Studies Depression scale (CES-D)

Anxiety: measures with the anxiety subscale of the Hospital Anxiety and Depression Scale (HADS).

Burnout: measured with the Dutch version of the Maslach Burnout Inventory-General Scale (MBI).

Absenteeism: self-report measured at 12 month follow up only.

Analysis:

All outcomes were measure using tested and validated tools.

Both intention to treat (ITT) analysis and analysis of participants who completed the intervention (per protocol analysis) were conducted. (Completion of the intervention was defined as completion of ≥5 lessons of the intervention).

Conducted linear regression analyses to determine differences between the intervention group and the CAU group with the posttreatment score as the dependent variable and group (intervention or CAU) as the predictor variable while controlling for baseline scores for every outcome measure.</td>
<td>Limitations identified by the author

Attrition was significantly higher in the intervention group. Though no selection bias was identified, and would have been accounted for in analysis However imputing 26% of the data may have led to unreliable estimates of effect.

Completion of the intervention in this study was low. Only 26.7% of the participants completed the</td>
</tr>
</table>

employees with depressive symptoms. To examine impact on symptoms of depression, anxiety, and burnout, and work performance.

Length of follow up

8 weeks and 12 months

Source of funding

This study is funded by Body@Work Research Center for Physical Activity, Work and Health, Amsterdam and the EMGO Institute for Health and Care Research, VU University Amsterdam and VU University

Marital status, n (%)			0.46
Relationship	86 (74.1)	90 (78.3)	
No relationship	30 (25.9)	25 (21.7)	
Education, n (%)			0.25
Low	11 (9.5)	5 (4.3)	
Middle	31 (26.7)	37 (32.2)	
High	74 (63.8)	73 (63.5)	
Working hours, mean (SD)	33.7 (4.8)	34.0 (5.3)	0.65
Working days, mean (SD)	4.3 (0.6)	4.2 (0.7)	0.32

There were no significant differences between the groups on any outcome measures at baseline.

A total of 57 participants (24.7%) were diagnosed with a current major depressive disorder, dysthymic disorder, or both (Intervention n= 23, CAU n=34).

A total of 48 participants (20.8%) were diagnosed with anxiety disorder (Intervention n= 27 participants, CAU n= 21).

Inclusion criteria

Participants were eligible to take part if they were 18 years of age or older, had elevated depressive symptoms as measured by a score of 16 or higher on the Center for Epidemiologic Studies Depression scale (CES-D), were not on partial or full sick leave, had access to the Internet and an email address, and were employed by 1 of the 6 participating companies.

Participants submit their weekly assignment via the website after completion and subsequently receive feedback from a coach, within 3 working days. Coaches were Master's students in clinical psychology with training of 6 hours. All coaches used a protocol-treatment manual throughout the course. All feedback was reviewed by a supervisor before it was placed on the website. The support includes feedback on the assignments and motivational and empathic strategies to keep participants engaged in the course.

Comparator:

Care as usual: The CAU group did not receive treatment or support from the coaches. They were advised to consult their (occupational) physician or a psychologist if they wanted treatment. Participants who were interested were sent a copy of the self-help book version of the intervention after having completed the posttreatment assessment.

Results:

Treatment adherence: Of participants in the intervention group, 9.5% (11/116) did not start or complete the first lesson of Happy@Work. Lesson 1 was completed by 90.5% (105/116), lesson 2 by 75% (87/116), lesson 3 by 57.8% (67/116), lesson 4 by 49.1% (57/116), lesson 5 by 38.8% (45/116), and lesson 6 by 26.7% (32/116). A total 29 of 116 participants dropped out of the intervention, the other participants were not able to complete more lessons within the time limit of 7 weeks.

8 weeks follow up: All participants improved between baseline and post-treatment on all outcomes measured.

There was no significant difference in depression scores between the intervention group/all and the 45 course completers (CC) when compared to CAU.

There was no significant difference between the intervention/all or intervention CC and control group on work performance.

There were small but significant differences in some outcomes, with the intervention/all group improving more on anxiety symptoms (d=0.16, 95% CI –0.09 to 0.42, P=.04) and the exhaustion dimension of the MBI (d=0.17, 95% CI –0.09 to 0.43, P=.02) compared to CAU.

Course completers also improved more on anxiety symptoms compared to CAU (d=0.19, 95% CI –0.16 to 0.53, P=.04), but not on the exhaustion dimension of the MBI.

No significant between-group differences were found on the cynicism dimension of the MBI, the reduced professional efficacy dimension of the MBI, and work performance.

Effects of intervention (n=116) versus care-as-usual (n=115) group with course completers (CC) (n=45)

Outcome	Pretest, mean (SD)	Posttest, mean (SD)	Effect size,[a] Cohen's d (95% CI)

entire course within 7 weeks, and 38.8% completed lesson 5 within 7 weeks. Therefore, our analysis of improvement scores in the subgroup of course completers has a lack of power.

Participants all primarily white collar workers with high educational levels. Raises uncertainty about generalisability to general workforce.

Limitations identified by the review team

None.

Other comments

<table>
<tr>
<td>Medical Center Amsterdam.

Linked Studies

Geraedts et al 2014b

(12 month follow up)

Geraedts et al 2013 (design of study)</td>
<td>Exclusion criteria

Unstable (<1 month) medication use for depressive symptoms and having a legal labour dispute with the employer.</td>
<td>Participants in both conditions had access to any additional (mental) health care.</td>
<td>
<table>
<tr><td></td><td></td><td></td><td>Between (all)</td><td>Between (CC)</td></tr>
<tr><td>CES-D</td><td></td><td></td><td>0.16 (–0.10, 0.41)</td><td>0.29 (–0.05, 0.64)</td></tr>
<tr><td>Int. (all)</td><td>25.7 (7.5)</td><td>15.8 (10.6)</td><td></td><td></td></tr>
<tr><td>CAU</td><td>26.1 (7.0)</td><td>18.3 (9.1)</td><td></td><td></td></tr>
<tr><td>Int.(CC)</td><td>25.3 (6.5)</td><td>15.1 (10.4)</td><td></td><td></td></tr>
<tr><td>HADS</td><td></td><td></td><td>0.16 (–0.09, 0.42) [b]</td><td>0.19 (–0.16, 0.53) [b]</td></tr>
<tr><td>Int. (all)</td><td>10.6 (3.8)</td><td>7.6 (3.8)</td><td></td><td></td></tr>
<tr><td>CAU</td><td>10.2 (3.2)</td><td>8.3 (3.6)</td><td></td><td></td></tr>
<tr><td>Int.(CC)</td><td>10.7 (3.6)</td><td>7.5 (4.0)</td><td></td><td></td></tr>
<tr><td>MBI-exhaustion</td><td></td><td></td><td>0.17 (–0.09, 0.43)[c]</td><td>0.17 (–0.18, 0.52)</td></tr>
<tr><td>Int. (all)</td><td>3.3 (1.2)</td><td>2.7 (1.2)</td><td></td><td></td></tr>
<tr><td>CAU</td><td>3.3 (1.1)</td><td>3.0 (1.2)</td><td></td><td></td></tr>
<tr><td>Int.(CC)</td><td>3.3 (1.2)</td><td>2.7 (1.1)</td><td></td><td></td></tr>
<tr><td>MBI-cynicism</td><td></td><td></td><td>0.30 (0.05, 0.57)</td><td>0.31 (–0.04, 0.65)</td></tr>
<tr><td>Int. (all)</td><td>2.8 (1.3)</td><td>2.4 (1.3)</td><td></td><td></td></tr>
<tr><td>CAU</td><td>3.1 (1.3)</td><td>2.8 (1.3)</td><td></td><td></td></tr>
<tr><td>Int.(CC)</td><td>2.7 (1.2)</td><td>2.4 (1.3)</td><td></td><td></td></tr>
<tr><td colspan="3">MBI-reduced professional efficacy</td><td>0.10 (–0.16, 0.36)</td><td>0.30 (–0.05, 0.65)</td></tr>
</table>
</td>
<td>None</td>
</tr>
</table>

			Int. (all)	2.6 (1.0)	2.4 (1.0)		
			CAU	2.7 (0.9)	2.5 (0.9)		
			Int.(CC)	2.4 (1.0)	2.2 (1.0)		
			HPQ-4			0.00 (–0.26, 0.26)	0.07 (–0.28, 0.41)
			Int. (all)	4.1 (1.6)	3.6 (1.5)		
			CAU	4.3 (1.8)	3.6 (1.5)		
			Int.(CC)	4.3 (1.7)	3.4 (1.5)		
			[a]The effect size is presented as Cohen's d: the number of standard deviations in the intervention group has improved more than the CAU group; (CAU mean–intervention mean)/pooled SD. Effect sizes of ≥0.8 are assumed to be large, effect sizes of 0.5-0.8 are moderate, and effect sizes of 0.2-0.5 are assumed to be small. [b]P=.04. [c]P=.02.				
			12 months follow up (data from linked study Geraedts et al 2014b)				
			Depression: All participants improved between baseline and 12 month follow up. However, the overall estimated mean difference between the groups over time was not significant.				
			There were no significant differences between the groups over time on any of the remaining outcomes.				

Scheel et al 2002a

Study details	Population	Intervention/ comparator	Results	Notes
Study Scheel et al 2002a **Quality score** + **Study type** Cluster RCT **Location and setting** Municipalities in 3 counties of Norway. **Study aims** Evaluate the effectiveness of two different interventions which aim to increase the use of active sick leave among patients with low back pain. **Length of follow up** 1 year **Source of funding** Norwegian Royal Ministry of Health and Social Affairs	**Number of participants:** 65 municipalities. Total n = 6179 Passive intervention (21 municipalities) n = 2045 Proactive intervention (22 municipalities) n = 2232 Control group (22 municipalities) n = 1902 **Participant characteristics** Passive intervention: mean age(SD) 39.2(11.5); %male 46.4% Proactive intervention: mean age(SD) 40.7(11.8); %male 51.7% Control group: mean age(SD) 40.2(11.5); %male 52.1% Other characteristics reported were % with sciatica; Work factors including job satisfaction (7 point Likert scale for the question "*Altogether, how much do you enjoy your work?*"), Physically demanding work (7 point Likert scale for the question "*Do you have to work bent, twisted or in other position that stress your back?*"); other factors recorded were % with previous back pain (yes or no answer to "*Have you in*	**Intervention:** Passive intervention: Included reminders about ASL on the sick leave form (completed by the GP); A standard agreement to initiate ASL; targeted information (format of information not reported); desktop summary of clinical guidelines for low back pain (emphasising the importance of staying active) for GPs. Proactive intervention: As above but with added component of a continuing education workshop for GPs and a trained resource person to facilitate the use of ASL	**Outcomes** **Primary outcomes:** - Days off work – total number of days off work in the year after enrolment. Days off were defined as days 100% compensated by the NIA. Days on ALS were considered as days absent. - Long-term disability – defined as the proportion of patients with absence exceeding 50 weeks - Quality of Life – measured using subscales on physical functioning and bodily pain from the Medical Outcomes Trust Short Form (SF-36). Taken at time of enrolment and after 3 months on sick-leave **Secondary outcomes:** - Average number of recurrent episodes of sick leave for back pain - Patient satisfaction with management of their back pain case by GP, NIA and the employer – 4 questions answered at baseline and at 3 months. - Additional analysis: 1. Patients on ASL compared across groups for total number of sick days before starting ASL; 2. Outcomes for non-ASL patients compared with ASL patients for all 3 groups combined (2 x intervention, 1 x control) **Results** - Days off work – No significant differences between the groups for 1. First episode of sickness (Control, median 56, mean±SD 113.7 ± 2.7; Passive, median 55, mean±SD 110.6±2.5; Proactive, median 57, mean±SD 112.7±2.4); and 2. All sick-leave (Control, median 71, mean±SD 128.5 ± 2.8; Passive, median 68, mean±SD 124.8±2.7; Proactive, median 70, mean±SD 127.7±2.6). No p-values reported	**Limitations identified by the author** Low response rate for the quality of life questionnaire set. 2381 out of 6179 (38.5%) returned the 3-month survey form with at least one or more of the baseline or outcome questions answered. 2380 out of 2381 included enough data to calculate the standard score for SF-36. The finding that ASL patients returned to work more quickly than non-ASL (regardless of study group) could reflect self-selection of those individuals that take ASL rather than a benefit of ASL itself.

and the Work Environment Fund of the Confederation of Norwegian Business and Industry Oslo, Norway. ***Linked study/ies*** Scheel et al 2002b	*the course of the last 12 months been on sick leave because of back problems?*"), and positivity to ASL (4 point response to the question "*Would you consider an option where you could return to your work while still on sick leave and your employer adapted your work situation to your needs while the NIA continued to pay full benefits?*"). There were no significant difference between the three groups with respect to all participant characteristics; with the exception being the proportion of women was 5%-6% higher in the passive intervention group. **Inclusion criteria** - Patients with low back pain, as diagnosed with one of the following ICPC diagnoses: L02 (back symptoms/complaints), L03 (low back symptoms/complaints), L84 (back syndromes without radiation), or L86 (intervertebral disk ruptures with radiating pain). - Employees on sick-leave for longer than 16 days (when benefits are processed by the National Insurance Administration (NIA)) **Exclusion criteria** Pregnant women; self-employed people; employees on part-time sick-leave	**Comparator:** Control group: Participants who met the inclusion criteria were monitored with the same outcome measures as mentioned for the other two groups (see 'outcomes'), but no intervention was offered.	- Long-term disability – proportion of patients who returned to work within 50 weeks was similar in the 3 groups (Control 89.1%, Passive 90%, Proactive 89%). No significant differences between : proactive vs control group: differences -0.1, CI -2.5 to 2.3, p =0.9301 passive vs active group: differences -1.0, CI -3.4 to 1.4, p = 0.8547 proactive vs (control and passive group combined): differences -0.6, CI -2.7 to 1.6, p = 0.8268 - Quality of life – There was no significant difference between proactive and passive, control, or combined passive and control groups. Severely low response rate for the 3 month survey and authors do not report baseline measures (only the change from baseline at 3 months). See 'limitations' section. - Proportion of recurrent episodes of sick leave for back pain was similar across the 3 groups (Control 11.2%, Passive 11.6%, Proactive 11.8%) - Results of the patient satisfaction survey collected 3 months after enrolment were similar across the 3 groups - ASL patients only comparison: ASL patients in the proactive group started on ASL a mean of 24.2 days earlier than the control group (P=0.0402, based on comparison of log days off) and 9.6 days earlier than the passive group (P= 0.8979). The median length of sick-leave in the proactive group (56 days) was significantly shorter than control group (86 days) (P <0.0005) but not the passive group ((67.5 days) (P = 0.13). - ASL patients vs non-ASL patients (regardless of study group): For those on sick-leave longer than 12 weeks, patients on ASL (n = 663) took 11 days fewer off than non-ASL patients (n = 1995) (95% CI 1.6 to 20.4 days). ASL patients returned to work before 50 weeks more often (85.2%) than non-ASL patients (71.9%) (cluster adjusted $\chi^2 = 47.4854$, $P < 0.0001$) **Analysis** Methods specific to cluster randomisation were used, including cluster adjusted χ^2 and *t* tests.	**Limitations identified by the review team** - No baseline measures taken for the following outcome measurements: days off work, long-term disability, average number of recurrent episodes, patient satisfaction of sick-leave for back pain. - For the quality of life outcome measures, authors do not report baseline outcomes alone nor do they report any differences occurring at baseline. - Self-selection bias cont. - there are no details of job type variation within the samples (i.e. patients in more senior roles may have been under more pressure to return to work sooner). **Other comments** None

			Days off work were log transformed before parametric tests because of skewness. To account for patient- and municipality-level covariates and improve the accuracy of estimates, a hierarchical regression model was estimated for each main outcome.	

Sundstrup et al 2014

Study details	Population	Intervention/comparator	Results	Notes
Full citation Sundstrup et al 2014a **Quality score** **++** **Study type** RCT **Location and setting** Denmark **Study aims** Evaluate the effect of two contrasting interventions on work ability among slaughterhouse workers with chronic pain and work disability **Length of follow up**	**Number of participants**: N = 410 invited; N= 135@baseline clinical examination; ***N=66 Participants*** **Participant characteristics:** slaughterhouse workers with upper-limb chronic pain and work disability; aged 18–67 years; **Inclusion criteria** **C**urrently working at a slaughterhouse for ≥30 hours/week; Pain intensity in the shoulder, elbow/forearm, or hand/wrist of ≥3 on a 0–10 VAS scale during the last 3 months; Stating at least "some" work disability scoring on a 5-point scale when	**Intervention:** 10 weeks of supervised strength training for the shoulder, arm, and hand muscles (3 times per week, 10 minutes per session) at their worksite (n=33) - 8 resistance exercises; Training intensity (loads) was progressively increased from 20 repetition maximum (RM) at the beginning of the training period to 8 RM during the latter phase according to the principle of periodization and progressive overload; All training sessions took place in designated training rooms located at the worksites and were supervised by a skilled instructor, who instructed the participants in correct exercise techniques, and performing individual exercise adjustments when needed. Participants provided with exercise equipment for home	**Outcomes:** **Sundstrup et al 2014a** Change from baseline to 10-week follow-up in the work ability index (WAI) **Sundstrup et al 2014b** Changes in shoulder, elbow, and hand pain (primary outcome) Disability of the Arm, Shoulder and Hand (DASH) work module; Maximal voluntary isometric contraction strength (MVC) was obtained for the shoulder and wrist muscles(secondary outcomes) **Analysis: (Resistance training vs ergonomics)** **Sundstrup et al 2014a**: WAI scores • Change in WAI scores@10 wk follow-up: A priori hypothesis testing showed a group×time interaction for WAI scores (P<0.05) • WAI score overall: mean 0.3, (95%CI -1.1 to 1.7) vs. -2.2 (95%CI -3.5 to -0.8) – between group difference *2.3** (95%CI 0.9–3.7) , p= 0.012 • WAI item 2: work ability in relation to the demands of the job – mean 0.0, (95%CI -1.1 to 1.7) vs. mean -2.2, (95% -3.5 to -0.8) – between group difference 0.7 (95%CI 0.3 to1.2), p=0.003 • WAI item 7: mental resources - increased following strength compared with ergonomic training: mean 0.1 (95%CI -0.1 to 0.4) vs. mean -0.3 (95%CI -0.5 to 0.0) – between group difference: mean 0.3 (95%CI 0.1 to 0.6) p=0.021 • Effect size (Cohen's d) of the change in WAI score with strength compared with ergonomic training was 0.52 and categorized as moderate (≥0.50). **unconfirmed typo in paper - should be 2.5*.	**Limitations identified by the author:** Lack of blinding – perceived Exclusion and inclusion criteria used limit the generalizability of results **Limitations identified by the review team** Small sample; absence of power calculation External validity Significant difference between arms for age (0.05) in the resistance training group **Other comments** Baseline average WAI score for participants was

10 weeks **Source of funding** **Linked studies:** Sundstrup et al 2013 (RCT Protocol) Sundstrup et al 2014b Effect of Two Contrasting Interventions on Upper Limb Chronic Pain and Disability: A Randomized Controlled Trial Pain Physician	asked: "During the last 3 months, did you have any difficulty performing your work due to pain in the shoulder, arm, or hand?"; No participation in strength training during the last year; Receiving no ergonomic instruction during the last year Meeting requirements of clinical examination following inclusion criteria: (i) pain intensity in the shoulder, elbow/forearm, or hand/wrist regions of ≥3 on a 0–10 VAS scale during the last week, (ii) pain lasting >3 months, (iii) frequency of pain of ≥3 days/week during the last week. **Exclusion criteria** Hypertension [systolic blood pressure (BP) >160, diastolic BP >100], a medical history of CVD, carpal tunnel syndrome, recent traumatic injury of the neck, shoulder, arm	training (resistance bands) in case of vacation etc. **Comparator**: Ergonomic training at participant worksite from health and safety managers based on initial assessment of worksite specific assessments (n=33): job specific hands-on training; appropriate guidance and training in how to correctly handle the individual work stations. Health and safety managers and representatives with existing knowledge about ergonomic risk-factors on the specific slaughterhouses provided information necessary to identify ergonomic hazards in the workplace. Based on this information, a trained ergonomic group in each slaughterhouse conducted a job hazard analysis and in correspondence with health and safety managers and safety representatives, developed a system for hazard prevention and control. Participants in the ergonomic group received ergonomic training and education based on the practical outcomes of the	**Sundstrup et al 2014b**: change in pain; change in average pain intensity, work disability (DASH work module questionnaire) and max. muscle strength • The effect size (Cohen's d) of the change in pain was 0.91 and categorized as large (≥ 0.80) with resistance training vs. ergonomic training (based on an % change assessment of participants improvement, no change or worsening of perceived pain intensity) • Average pain intensity: -1.8 (95%CI -2.3 to -1.2) vs. -0.3 (95%CI -0.8 to 0.3); between group difference -1.5 (-2.0 to -0.9) p<0.0001 • DASH-W score [0-100]: 6.5 (95% -13.2 to 0.1) vs. 2.8 (95% -3.7 to 9.4); between group difference -8.8 (-15.6 to -2.0) p< 0.05 • MVC: Shoulder rotation strength (N): 28 (95%CI 19 to 36) vs. -10 (95%CI -18 to -2); between group difference: 37 (95%CI 28 to 45) p < 0.0001 • MVC: Wrist extensor strength (N): 30 (95%CI 18 to 42) vs. -11 (95%CI -23 to 2); between group difference: 42 (95%CI 29 to 54) p< 0.0001	categorized as "good" There is a documented seasonal variation in pain symptoms and SAD (study was undertaken in Aug/Sept and followed up in Dec) The significant difference was seen to be largely driven by a reduction (i.e., worsening) of WAI in the ergonomic group

	or hand regions, or pregnancy; Danish reader/speakers	worksite analysis and the hazard prevention system. Supervisors affiliated with each department of the slaughterhouse monitored and helped participants to continue using proper work practice during the rest of the intervention period		

Viikari-Juntura et al 2012

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Study
Viikari-Juntura et al 2012

Quality score
+

Study type
RCT

Location and setting
6 occupational health units of medium- and large-size private or public enterprises in Finland.

Study aims
Assess the effectiveness of an early part-time sick leave on return to work (RTW) and sickness absence compare to a standard full-</td>
<td>Number of participants:
Intervention group n = 31
Control group n = 31

Participant characteristics

The population was 97% female, with the average age of 44years in each group.

Table1. Differences in baseline characteristics (p values not reported)
<table>
<tr><th></th><th>Intervention</th><th>Control</th></tr>
<tr><td>Job Tenure (yrs)</td><td>12.1 (9.7)</td><td>15.8 (11.4)</td></tr>
<tr><td>Lifting heavy loads (%)</td><td>19</td><td>10</td></tr>
<tr><td>BMI</td><td>25.4 (3.6)</td><td>27.2 (5.3)</td></tr>
<tr><td>Smokers (%)</td><td>32</td><td>23</td></tr>
<tr><td>Pain interference with sleep (0-10)</td><td>4.8 (3.0)</td><td>3.6 (2.7)</td></tr>
<tr><td>Symptoms lasting > 12 weeks (%)</td><td>23</td><td>37</td></tr>
<tr><td colspan="3">MSK pain location</td></tr>
<tr><td>Back (%)</td><td>19</td><td>35</td></tr>
<tr><td>Lower limb (%)</td><td>0</td><td>16</td></tr>
<tr><td colspan="3">Days sickness absence</td></tr>
<tr><td>In previous 30 days</td><td>2.6 (3.3)</td><td>4.8 (7.2)</td></tr>
<tr><td>In previous 90 days</td><td>7.9 (12.0)</td><td>11.3 (13.0)</td></tr>
</table>
All measures are mean (standard deviation), unless stated as a %. BMI = body mass index.</td>
<td>Patients in the 6 enterprises randomly assigned to intervention or control groups. Recruitment for 3/6 of the enterprises was carried out by occupational physician for the company. In the remaining 3 enterprises, referral was to the Finnish Institute of Occupational Health.

In both groups, employees received their regular salary.

Intervention:
Part-time sick-leave where workload is reduced by restricting work time (aim was to reduce working time by about half, achieved in 70% of subjects; or having shorter hours 3-4 days a week, achieved in 30%of</td>
<td>Outcomes:
- Sustained RTW for: a) ≥ 2 weeks; and b) ≥ 4 weeks
- Number of sickness absence days (part-time and full-time)
- Recurrence of sick leave (for any cause) after the initial sick leave period and time to first recurrence

Further outcomes from Shiri et al (linked study):
<u>Pain related:</u> Pain intensity on a scale from 0-10 (0= no pain to 10= the worst possible pain) and pain interference with work and sleep during the last 7 days (from 0=no interference at all to 10=the worst possible interference). Assessed at baseline, and weeks 1, 3, 8, and 12. Week 52 pain measure was accounted for in the region-specific questionnaires below.
<u>Region specific disability</u>: for back pain (Oswestry Disability Index); for cervical-spine-related (Neck Disability Index); for the arm, shoulder and hand (QuickDASH); for the hip or knee (Comprehensive Osteoarthritis Test – COAT). Assessed at baseline and at weeks 1, 3, 8, 12 and 52.
<u>Self-rated general health</u>: Scale of 0-10 (0= worst possible health state to 10= best possible health state). Assessed at baseline and at weeks 1, 3, 8, 12 and 52.
<u>Perceived health-related quality of life</u>: Using the validated questionnaire EQ-5D with 5 dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Continuous and dichotomized variables were used. Assessed at baseline and at weeks 1, 3, 8, 12 and 52.
<u>Depression</u>: assessed using 2 validated questions with yes/no answer: 1. During the past month have you often been bothered by feeling down, depressed, or hopeless; and 2. During the past month have you often been bothered by little interest or pleasure in doing things? Assessed at baseline and weeks 12 and 52.
<u>Sleep disturbance in preceding 4 weeks</u>: Jenkins Sleep Problems Scale assessed at baseline, and weeks 12 and 52.
<u>Productivity loss</u>: participants were asked to give a quantity score and quality score with regards to the work produced in their latest working day (scale 0-10). Productivity calculated with the formula “[1 – (quality/10) x (quantity/10)] x 100%. Assessed at baseline and at weeks 1, 3, 8, 12 and 52.</td>
<td>Limitations identified by the author
- Low power, making subgroup analysis difficult.
- Possible selection bias – very few of the patients recruited via the occupational health institute (3 enterprises) declined participation, compared to those recruited via occupational health physician at their place of work. Refusal data not systematically registered so risk of bias unclear.
- Majority of patients were female – limits generalisability of findings.
- Limited spectrum of industries in the study – limits</td>
</tr>
</table>

<table>
<tr>
<td>time sick leave control.

Length of follow up
12 months

Source of funding
Work Environment Fund, the Ministry of Social Affairs and Health, and the Social Insurance Institution of Finland

Linked Study(ies)

Shiri et al 2013 – further outcome measures reported</td>
<td>The study groups were comparable in the following remaining characteristics: level of education, pain intensity, and pain interference with work.

<u>Shiri et al (linked study)</u> reports further participant characteristics which were comparable across groups: Age; number of times per working day participant has to lift/carry/push >5kg; awkward trunk postures often or constantly for ≥ 1 minute at a time; pain intensity; self-rated general health; standardised disability index; perceived health related quality of life; productivity loss; sleep disturbance, effort reward imbalance (scale 1-5 for each, ratio calculated); procedural justice; relational justice .

Inclusion criteria
-Employees aged 18-60 years
-Permanent or long-term contract of ≥30 working hours a week
-No sick-leave due to musculoskeletal problem for >2 weeks during the preceding month and not >30 days during the preceding 3 months
-No plans for surgical treatment requiring >1 week sickness absence
-No plans for other longer absence (longer than annual paid vacation) during 12 months after enrolment.

Exclusion criteria
-Acute infections
-Symptoms due to major accidental injury
-Suspected occupational injury or disease
-Active inflammatory arthritis; malignant tumour diagnosed or treated during the preceding year</td>
<td>subjects). If appropriate, work tasks were modified to prevent worsening of activity-related symptoms.

After a consent procedure with the employer, the physician made recommendations on the following: duration of partial work disability, whether certain physical loads should be reduced, and any other additional work modifications. A “fit note” was produced for employees to give to their employer after this consultation.

Comparator: Full-time sick-leave.</td>
<td><u>Covariates</u>: individual characteristics such as age, height, weight and date of onset of MSD; physical workload factors; psychosocial workload factors.

Results

<u>Sustained RTW for</u>:
a) <u>≥ 2 weeks:</u> median time: 9 days in both groups
b) <u>≥ 4 weeks:</u> time shorter in the intervention group (median 12 days) compared to the control (median 20 days). This difference was not significant (p = 0.10).

Age-adjusted hazard ratios (HR) for return to work (RTW) for ≥4 weeks was 1.60 (95% CI 0.98–2.63). The effect of the intervention differed for one large enterprise (N=24, age-adjusted HR 1.05, 95% CI 0.43–2.55). For the other five enterprises, the HR were close to 2 (combined HR adjusted for age 2.25, 95% CI 1.10–4.59). Overall HR, controlling for age, pain interference with sleep, and previous sickness absence, was 1.76 (95% CI 1.21–2.56). Further adjustment for pain interference with work increased the HR to 1.84 (95% CI 1.20–2.82).

<u>Number of sickness absence days (part-time and full-time sickness absence) and proportion of potential work time (%):</u>

<table>
<tr><th rowspan="2">Weeks</th><th colspan="2">Intervention</th><th>Control</th></tr>
<tr><th>Part-time (n, %)</th><th>Full-time (n, %)</th><th>Full-time (n, %)</th></tr>
<tr><td>1</td><td>189, 44%</td><td>12, 6%</td><td>209, 96%</td></tr>
<tr><td>2-3</td><td>88, 10%</td><td>72, 17%</td><td>151, 35%</td></tr>
<tr><td>4-8</td><td>100, 5%</td><td>89, 8%</td><td>198, 18%</td></tr>
<tr><td>9-12</td><td>47, 3%</td><td>33, 4%</td><td>109, 13%</td></tr>
<tr><td>13-26</td><td>0, 0%</td><td>417, 14%</td><td>616, 21%</td></tr>
<tr><td>27-52</td><td>0, 0%</td><td>768, 13%</td><td>843, 17%</td></tr>
</table>
</td>
<td>generalisability of findings

Limitations identified by the review team

-Contamination risk unclear. I.e. not known whether participants in communication with one another or if physician could be the same across groups.
-Physicians had made decisions about length of sick-leave and medication before randomisation. This is not discussed further – but it could be interpreted as patients having previously had advice on how long they should be on sick-leave with their symptoms before they were enrolled into the study.
-For Shiri et al, majority of outcome</td>
</tr>
</table>

<table>
<tr>
<td></td>
<td>-Coexisting mental disorder
-Pregnancy
Very severe pain intensity or pain interference with sleep.</td>
<td></td>
<td>Throughout the 12 month follow-up period, the total number of sickness absence days was approx. 20% lower in the intervention than the control (p values not reported).

<u>Recurrence of sick leave (for any cause) after the initial sick leave period and time to first recurrence:</u> Time to first recurrent sick leave was similar in the intervention group (median 29 days) compared to control (median 27 days). Average number of recurrent sick leave spells per person year was higher in the control group (8.6, 95% CI 6.4 to 10.9) compared to the intervention (6.5, 95% CI 5.1-7.9) (p values not reported).

Further results from Shiri et al (linked study):

Socioeconomic differences between intervention and control - the number of elapsed days since symptom onset (42 [I] 48 [C]), pain interference with work (7.5/10 [I] 6.6/10 [C]), and depression rates (14% [I] 23% [C]).

(P values adjusted for BMI, follow-up time, time since beginning of symptoms and baseline measures)

<u>Pain related and region-specific disability:</u> Pain intensity decreased in both control and intervention group during the first 8 weeks and stabilised thereafter. There was no differences between intervention and control during the follow-up period for pain intensity scales (intensity, p= 0.31; work interference, p=0.15; sleep interference, p=0.77) and region-specific disability (p=0.54).

<u>Self-rated general health (SR-GH) and health related quality of life (EQ-5D) in the previous 12 months</u>
<table>
<tr><td></td><td colspan="2">control</td><td colspan="2">intervention</td><td colspan="3">Regression analysis</td></tr>
<tr><td></td><td>Obs</td><td>Mean (SD)</td><td>Obs</td><td>Mean (SD)</td><td>Co-efficient</td><td>95% CI</td><td>P value</td></tr>
<tr><td>SR-GH</td><td>176</td><td>7.0 (1.9)</td><td>180</td><td>7.6 (1.6)</td><td>0.5</td><td>-0.0 to 1.0</td><td>0.07</td></tr>
<tr><td>EQ-5D</td><td>175</td><td>7.2 (1.6)</td><td>177</td><td>6.6 (1.4)</td><td>-0.5</td><td>-0/9 to -0.1</td><td>0.02</td></tr>
</table>
Obs = number of repeated observations; SD = standard deviation; regression coefficients (log scale), 95% confidence intervals (CI) and p-values)</td>
<td>measures were self-reported

Other comments
Study recruitment terminated early due to Finnish sickness benefit scheme being amended in 2010, introducing early part-time sick leave similar to that used in the intervention. Original target size was n = 600.

This study is linked to Shiri et al 2013 as both studies use the same population and intervention. Slight differences between the studies that are worth highlighting include:
-Shiri et al control group size is n=30 (has one fewer person)
-Shiri et al report that 4 out of 6 of the enterprises were delivered the intervention by the occupational health physician</td>
</tr>
</table>

			Other outcomes: There were no significant differences between intervention and control for productivity loss (p = 0.52), sleep disturbance (p=0.77), or depression (p value not reported). Subgroup analysis Pain intensity groups (low <7, high >7): effect of intervention did not differ between groups with regard to the following outcomes: pain-related, region specific disability, general health, quality of life, productivity loss throughout 12-month follow-up. Those in the low pain group at baseline reported sleep problems less frequently during the intervention compared to control (adjusted OR 0.1, 95% CI 0.0 to 0.3). Time since onset of first symptoms before baseline (≤6 weeks, >6 weeks): For the > 6 week subgroup, general health (p =0.05) and quality of life scores (p = 0.03) were higher in the intervention group compared to control throughout 12-month follow-up. Productivity loss at baseline (≤30%, >30%): The intervention was effective for the ≤30% group but not the >30% group for the following outcomes: pain intensity, interference with work (p=0.02), region-specific disability, self-rated general health, and quality of life (0.01). For those in the ≤30% subgroup, employees receiving the intervention reported lower productivity loss than those receiving control throughout the 12-month follow-up (p=0.02). **Analysis** Intention to treat analysis undertaken. Kaplan-Meier analysis to compare time to sustained RTW and the occurrence of recurrent sick leaves. Cox proportional hazard model used to estimate hazard ratios for RTW; goodness-of-fit assessed using the Gronnesby & Borgan test. *In Shiri et al, generalised estimating equation (GEE) with an exchangeable correlation structure was used to detect between-group differences for repeated measures. Different indices and scales were standardised using z-scores.* STATA version 10 was used.	rather than the Finnish Institute of Occupational Health. Viikari-Juntura et al report 3 out of 6. It is unclear whether this is a reporting error or whether there were slight differences in the population.

Workplace health: support for employees with disabilities and long-term conditions

Viljanen et al 2003

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation

Viljanen et al 2003

Quality score

++

Study type

RCT

Location and setting

Finland; office workers

Study aims

Assess the effects and costs of dynamic muscle training and relaxation training for chronic neck pain in female office workers.

Length of follow up

three, six, and 12 months</td>
<td>Number of participants:

393 women were randomised

Participant characteristics:

<table>
<tr><th></th><th>DM</th><th>RT</th><th>Con</th></tr>
<tr><td>Age –yrs (m/sd)</td><td>45 (6.6)</td><td>43 (7.3)</td><td>44 (7.4)</td></tr>
<tr><td>PA≥ 3/week (%/sd)</td><td>59 (44)</td><td>44 (34)</td><td>53 (41)</td></tr>
<tr><td colspan="4">Work related</td></tr>
<tr><td>No (%) quite satisfied with own work</td><td>95 (70)</td><td>101 (79)</td><td>105 (81)</td></tr>
<tr><td>Work stress (1-5)</td><td>30 (5.9)</td><td>30 (6.2)</td><td>29 (5.5)</td></tr>
<tr><td colspan="4">Neck pain – disability at work</td></tr>
<tr><td>Pain (years)</td><td>11 (5.7)</td><td>11 (6.3)</td><td>10 (6.6)</td></tr>
<tr><td>Pain that limits work (years)</td><td>3.3 (3.5)</td><td>2.3 (2.6)</td><td>2.9 (3.9)</td></tr>
<tr><td>Pain intensity (0-10)</td><td>4.8 (2.3)</td><td>4.8 (2.3)</td><td>4.1 (2.2)</td></tr>
<tr><td>Neck disability (0-80)</td><td>29 (15.4)</td><td>29 (14.3)</td><td>26 (13.8)</td></tr>
</table>
</td>
<td>Intervention:

1) Dynamic Muscle (DM) training (n=135): Group based - Dumbbells used in exercises to activate large neck and shoulder muscle groups with instructor; post exercise stretching; from 5th wk on 3 exercises taught, from 9th wk independent exercise with instructor feedback

2) (n=128) Relaxation training (RT) - various techniques based on the progressive relaxation method, autogenic training, functional relaxation, and systematic desensitisation – 12 wks – aimed at activate only those muscles needed for different daily activities and to relax the other muscles – done independently from 5th wk – focus on avoiding unnecessary neck muscle tension

Both groups: Instructed and trained by a physiotherapist three times a week for 30 minutes</td>
<td>Outcomes:

Primary:

Change in intensity of neck pain (0-10 scale; eight question questionnaire)

Secondary:

neck disability (neck disability index)

subjective work ability, (0-10 scale)

cervical range of motion, (inclinometer)

dynamic muscle strength,

sick leave owing to neck pain,

proportion of participants who recovered (subjectively assess – ordinal six point scale)

Depression (primary care developed 10 question index)

Analysis

No significant differences were found between the two training groups and the control group for changes in any outcome</td>
<td>Limitations identified by the author:

Limitations identified by the review team

59-44% of the sample were already performing physical activity ≥3/wk

Other comments

Power calculations were carried out before the study to obtain a power at least equal to 0.80 at the significance level of 0.05 – n=80</td>
</tr>
</table>

Source of funding **Not reported**	<table><tr><td>Work limited by pain (0-10)</td><td>3.3 (2.3)</td><td>3.3 (2.3)</td><td>2.8 (2.1)</td></tr><tr><td>Subjective workability (0-10)</td><td>7.7 (1.1)</td><td>7.6 (1.5)</td><td>7.8 (1.2)</td></tr><tr><td>Depression index score</td><td>16 (4.4)</td><td>16 (4.9)</td><td>16 (4.6)</td></tr><tr><td>No (%) absent from work due to neck pain</td><td>16 (12)</td><td>15 (12)</td><td>16 (12)</td></tr></table> **Inclusion criteria** Female office workers whose employers had a contract with one of the large occupational healthcare centres; Women aged 30-60 years who had had chronic non-specific neck pain for at least 12 weeks. **Exclusion criteria** Cancer, major trauma, rheumatic disease, neural entrapment, or major rehabilitation in the previous three months	each over 12 weeks, followed by one week of reinforcement training six months after randomisation. Training was conducted by experienced physiotherapists in groups of up to 10 people **Comparator** n=130: Ordinary activity - instructed not to change their physical activity or means of relaxation during the 12 months of follow up		

Wolever et al 2012 (#1)

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Wolever et al 2012#1
Quality score
+
Study type
RCT

Location and setting
Workplace, USA
Study aims
1) Evaluate the viability and proof of concept for two mind-body workplace stress reduction programmes (1 x therapeutic yoga-based; 1 x mindfulness-based interventions);
2) Evaluate 2 delivery venues of the mindfulness-based interventions (online vs. in-persons)
Length of follow up
AApprox.12 weeks (within 2 weeks of the end</td>
<td>Number of participants:
Total n = 239
Control = 53
Mindfulness = 96
Yoga = 90

Participant characteristics:
<table>
<tr><th></th><th>control</th><th>Mindful</th><th>yoga</th></tr>
<tr><td>Gender (%male)</td><td>18.9</td><td>22.9</td><td>26.7</td></tr>
<tr><td>Race (% white)</td><td>71.7</td><td>85.4</td><td>74.4</td></tr>
<tr><td>Age (M/SD)</td><td>42.7 (9.7)</td><td>44.3 (9.4)</td><td>41.6 (10.1)</td></tr>
<tr><td>PSS (M/SD)</td><td>23.6 (3.7)</td><td>24.7 (3.5)</td><td>24.9 (4.0)</td></tr>
<tr><td>WLQ Productivity loss</td><td>5.7 (4.6)</td><td>5.5 (4.3)</td><td>4.9 (3.6)</td></tr>
<tr><td>Current pain</td><td>1.5 (1.8)</td><td>1.8 (2.2)</td><td>2.2 (2.4)</td></tr>
<tr><td>Average pain</td><td>2.2 (2.1)</td><td>2.5 (2.2)</td><td>2.6 (2.1)</td></tr>
<tr><td>Worst pain</td><td>3.6 (3.3)</td><td>4.1 (3.0)</td><td>4.5 (3.0)</td></tr>
</table>
Inclusion criteria:
A score of ≥16 on Perceived stress scale questionnaire

Exclusion criteria:
Arrhythmia require medication or pace maker; pregnancy; heavy smoking (one + pack a day) or nicotine use (1 stick of 2mg nicotine gum); medications/illicit drugs that impacts heart rate; any major medical</td>
<td>All participants were screened using PSS
Intervention:
1) Viniyoga stress reduction programme therapeutic yoga worksite stress reduction programme; Lasting 12 wks with 1 x 1hr sessions/week: progressively introduction of ‘tools’ to manage stress (postures ‘asanas’; breathing techniques, guided relaxation, mental techniques, education on home practice). Taught by AVI-trained instructor – offered in worksites + instructional handouts (home practices and yoga work breaks).
2)* Mindfulness delivered face-to-face in classrooms: Lasting 12wks – 1hr sessions (+2hr mindfulness practice intensive at wk 10) - based on principles/practices of mindfulness meditation – mindfulness practices that target work-related stress, work-life balance and self-care (relatively brief 5-15min) designed to be delivered at work +</td>
<td>Outcomes:
<u>Primary:</u>
Perceived stress (10 item perceived stress scale)
<u>Secondary:</u>
Sleep quality (PSQI – Pittsburgh Sleep Quality Index)
Mood (CES-D: Centre for Epidemiological Studies Depression Scale)
pain levels (0-10 current, average and worse – pain numerical rating scales)
work productivity (WLQ – Work Limitations Questionnaire)
mindfulness (CAMS-R: Cognitive and Affective Mindfulness Scale-Revised)
Biological indicators (blood pressure; breathing rate; heart rate variability)
Heart Rate Variability (HRV)
Analysis
Only ITT analysis results reported here for the purposes of this review.
ANCOVA - Observed significant Group x time interaction between the control, mindfulness and yoga groups for :

Perceived stress: F (2, 233) = 8.89, p<0.01, η^2 = 0.07;
Sleep quality: F (2, 233) = 3.03, p<0.05, η^2 = 0.03
CAMS-R: F (2, 233) = 2.51, p=0.08, η^2 = 0.2
Current pain: F (2, 233) = 3.56, p<0.05, η^2 =0.03
Breathing rate: F (2, 233) = 3.02, p<0.05, η^2 =0.03
HRV Coherence ratio: F (2, 233) = 15.86, p<0.001, η^2 =0.12

But not for workplace productivity index or depressive symptoms
ANCOVA – group differences for outcomes for observed significant omnibus F test (post-hoc):
Mindfulness vs. control:

Decrease in perceived stress: F (1, 144) = 21.31, P<0.01, η^2 =0.13

</td>
<td>Limitations identified by the author:
Lack of power to detect differences in productivity
No power calculation
Study undertaken during restructure and job eliminations
Seven different measures of HRV utilised
Limitations identified by the review team
Due to attrition in the mindfulness online vs face to face comparison they were combined – essentially 2 different intervention formats – this increased findings for CAMS-R mindfulness form non-significant (p=0.08) to significance (p<0.01)

Other comments</td>
</tr>
</table>

of the 12-week intervention period) **Source of funding** Aetna Inc and eMindful Inc. Lead authors have an investment in eMindful and Aetna Inc.	condition or psychological disorder; any significant current/previous yoga/meditation experience (several times per week or more than 2 days in last 5 years)	handouts for home and office use **3)*** Mindfulness delivered remotely (online virtual classroom) Lasting 12 wks with 1 x 1hr sessions/week + 2hr mindfulness practice intensive at wk 10 ****due to differences in baseline demographics and outcome measures the 'mindfulness intervention' (2 and 3) were combined in the analysis*** **Comparator** (n=53)**:** Assessment only with no stress management intervention. Provided list of resources available to all employers of the national insurance carrier (fitness programmes; EAP; behavioural health services for depressions, chair massage; wellness coach opportunities)	• Decreases in sleep difficulty: F (1, 144) = 5.17, $p<0.05$, $\eta^2 = 0.04$ • CAMS-R: F(1, 144) = 5.75, $p<0.05$, $\eta^2 = 0.04$ • Greater increases in HRV: F(1, 144) = 4.25, $p<0.05$, $\eta^2 = 0.03$ Yoga vs control • Decreases in perceived stress: F (1, 137) = 8.79, $p<0.1$, $\eta^2 = 0.06$ • Decreases in sleep difficulties: F (1, 137) = 5.94, $p<0.05$, $\eta^2 = 0.04$ • Greater increases in HRV (*from pre-intervention baseline*): F (1, 137) = 29.77, $p<0.001$, $\eta^2 = 0.18$ • Less current pain: F (1, 137) = 6.51, $p<0.01$, $\eta^2 = 0.05$ Mindfulness vs. yoga groups: • No observed significant differences across outcomes Repeated-measures MANCOVAs to measure group differences over time for pain and heart rate variability: • Group x time interaction for HRV: Wilks's $\lambda = 0.85$, $F(6, 462) = 6.70$, $p<0.001$, $\eta 2 = 0.08$ Repeated measures ANCOVA: mindfulness online vs mindfulness in-person (controlling for ethnicity, race, income level): • HRV: F (1, 91) = 3.91, $p<0.05$, $\eta^2 = 0.04$ • Online showed greater increases in HRV coherence	Participants received $75 + $75 gift care to massage therapy studio Half participants in the yoga group (2/4 classes) received a DVD to support home practice – no difference between groups with and without DVD so groups combined for further analysis. - Wolever et al #1 refers to the yoga intervention - Wolever et al #2 refers to the mindfulness intervention

Fleten et al2006

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Fleten et al 2006

Quality score
++
Study type
RCT

Location and setting
Northern Norway,
Study aims:
Determine whether minimal postal intervention had any effect on the length of sick leave.
Length of follow up
One year

Source of funding

Royal Ministry of Health and Social Affairs</td>
<td>Number of participants:
990

Participant characteristics:
<table><tr><th></th><th>Int</th><th>Con</th></tr><tr><td>Gender (m/f)</td><td>192/ 303</td><td>197/ 298</td></tr><tr><td>Age (<41y />40y)</td><td>246/ 249</td><td>260/ 230</td></tr><tr><td>Length of sick leave (<12wks/ >12wks)</td><td>328/ 167</td><td>330/ 165</td></tr></table>Inclusion criteria
Newly sick-listed persons with musculoskeletal or mental disorders.

Exclusion criteria
Full time disability pension</td>
<td>Intervention:
n=495: Minimal postal intervention - received a general information letter (available work measures for sick-listed persons) and a questionnaire (expected length of the current sick leave and any relevant work adjustments for on-going sick leave) as their sick leave passed 14 days There was an option for National Insurance Office (NIO) follow up which 291 participants did with 161 filling in the questionnaire – NIO only knew the study status of 61 participants
Comparator:
n=495 –Care as usual (I assume - no further detail)</td>
<td>Outcomes:
Return to work
Analysis: No overall statistical effect of minimal postal intervention on length of sick leave over control
<u>RTW: Hazard ratios (HR) for Intervention vs. control</u>
<u>All diagnosis</u>: Unadjusted HR: 1.09 (95%CI 0.95 to1.25) p = 0.24; Adjusted HR (gender, age group, educational level, occupation, diagnostic group): 1.07 (95% CI 0.93 to 1.23) p<0.001
<u>Rheumatic Disorders and Arthritis</u>: unadjusted HR 1.62 (95%CI 1.02 to 2.57) p=0.04;
<u>Mental disorders</u>: unadjusted HR 1.42 (95%CI 1.03 to 1.96) p=0.032
<u>By sick leave 12 weeks or longer</u>:
<u>All diagnosis</u>: unadjusted HR 1.39 (95%CI 1.04 to 1.85) p=0.024; adjusted HR 1.42 (95%CI 1.06 to 1.92) p=0.013
<u>Low back pain</u>: unadjusted HR 0.49 (95%CI 0.25 to 0.98) p=0.04; adjusted HR 0.25 (95%CI 0.10 to 0.60, p=0.135)
<u>Other musculoskeletal:</u> unadjusted HR 2.00 (95%CI 1.30 to 3.08) p =0.001; adjusted HR p=0.001 2.03 (95%CI 1.30 to 3.19) p=0.001
<u>Mental disorders</u>: unadjusted HR 2.54 (95%CI 1.32 to 4.87) p=0.004; adjusted HR 3.96 (95%CI 1.46 to 6.00) p=0.047
<u>Odds Ratios for receiving social services benefits due to sickness one year after start of sick leave if sick-listed subject was exposed to minimal intervention at 14 days of sick leave</u>
<u>All diagnosis</u>: Any benefits due to sickness: OR 0.69 (95%CI 0.51–0.93)
<u>Low back pain</u>: Sickness benefits: OR 0.34 (95%CI 0.14–0.81)
<u>Other musculoskeletal disorders</u>: Any benefits due to a sickness OR 0.62 (95%CI 0.39–0.97)
<u>Mental disorders</u>: Rehabilitation or disability benefits OR 0.20 (95%CI 0.06–0.71)
<u>Education >12yrs</u>: Any benefits due to sickness OR 0.44 (95%CI 0.27–0.73); sickness benefits OR 0.48 (95%CI 0.25–0.91)</td>
<td>Limitations identified by the author:
Potential for Hawthorne effect – although results suggest this would be minimal
Limitations identified by the review team
Mean difference in length of sick leave (primary outcome) in subgroups not accounted for in the analysis – sampling bias

Other comments</td>
</tr>
</table>

Appendix 3b: Evidence Tables review 2 section 4.2 of report

Myhre et al 2014

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Study
Myhre et al 2014

Quality score
+

Study type
RCT

Location and setting
Outpatient clinics in 2 University hospitals in Norway

Study aims
To investigate the effect of a work-focussed rehabilitation intervention on return to work (RTW) for patients with neck pain and lower back pain, compared to a control.

Length of follow up
1 year</td>
<td>Number of participants:
Total n = 405
Control = 202
Intervention = 203

Participant characteristics
Control group = % female 48.5%; mean(SD) age 41 (10)
Intervention = % female 44.3%; mean age 40.2 (9.7).

Table 1. baseline characteristics
<table>
<tr><th>Variable</th><th>Control</th><th>Intervention</th></tr>
<tr><td>Occupational categories n, %</td><td></td><td></td></tr>
<tr><td>Low-skilled blue collar</td><td>15.9</td><td>18.2</td></tr>
<tr><td>High-skilled blue collar</td><td>20.4</td><td>22.7</td></tr>
<tr><td>Low skilled white collar</td><td>37.3</td><td>31.5</td></tr>
<tr><td>High skilled white collar</td><td>26.4</td><td>27.6</td></tr>
<tr><td>Physical activity during 1 wk: sedentary (%)</td><td>12.9</td><td>12</td></tr>
</table>
</td>
<td>Comparator: Involved the existing treatment facilities at the two sites (the two hospitals had different standard care). After an initial standard clinical examination at the neck and back pain clinic from the physician, relevant imaging was discussed with the patient. Patients were reassured that daily activities, physical exercise, or work would not hurt or damage their necks or backs. Emphasis was placed on removing fear-avoidance beliefs, restoring activity level, and enhancing self-care and coping.

Intervention: All activities in the control intervention were undertaken, but with an added focus on the RTW process. The patients received individual appointments with the caseworker during the first days of treatment. Work histories, family lives, and obstacles to RTW were discussed. The case-workers contacted participants' employers by phone in most cases (unless the patient refused) to inform them of the program and inquire about possible temporary modifications at work. The patients created a RTW schedule together with the caseworker and the multidisciplinary team. The patients and the caseworkers also discussed relevant issues for a meeting with the employer. The caseworker offered the patients assistance at this meeting, if requested. If sick-leave compensation was an issue, the caseworkers contacted</td>
<td>Outcomes:
- RTW: defined as the first 5 weeks period after randomisation that the patient did not receive sickness benefits, a work assessment allowance pension, or a disability pension from the Norwegian Labour and Welfare Administration.

Results

% RTW at 12 month follow-up: Intervention = 142 (70%); control 152 (75%). Unadjusted HR = 0.91 (CI 0.73-1.13); adjusted HR for age, sex and educational level = 0.94 (CI 0.75-1.17).

Median time to RTW: Intervention 161 days; control 158 days (p = 0.45)

Median total sick leave days at 12 month follow-up: Intervention = 117 days; control = 107 days

Table 3. Outcomes by site (Trondheim and Oslo)
<table>
<tr><th></th><th colspan="2">Trondheim</th><th colspan="2">Oslo</th></tr>
<tr><th></th><th>control</th><th>Int</th><th>Control</th><th>Int</th></tr>
<tr><td>RTW in 12 months (%)</td><td>80 (75%)</td><td>69 (65%)</td><td>72 (75%)</td><td>73 (75%)</td></tr>
<tr><td>Median days until RTW</td><td>157</td><td>176</td><td>158</td><td>150</td></tr>
<tr><td>Breslow test P</td><td colspan="2">0.178</td><td colspan="2">0.750</td></tr>
<tr><td>Unadjusted HR (95% CI)</td><td colspan="2">0.78 (0.57 – 1.06)</td><td colspan="2">1.08 (0.79-1.47)</td></tr>
</table>
</td>
<td>Limitations identified by the author
- Different treatment facilities at the 2 hospitals meant that there was not a comparable control and there were some differences in the intervention group too

- Both control and intervention groups received a thorough clinical examination, which the authors state could have reassured some patients and thereby impeded the detection of RTW differences.

Limitations identified by the review team
- Differences in baseline characteristics are not clear due to no p values reported</td>
</tr>
</table>

Source of funding
The Norwegian Research Council

Linked Study(ies)
none

NRS pain in activity	6.2 (2.2)	6.1 (2.3)
ODI/NDI	38.2 (12.9)	38.6 (13.7)
HSCL-10	1.95 (0.6)	2.04 (0.6)
BQ-PA	13.8 (5.7)	13.8 (5.6)
FABQ-W	26.7 (10.1)	28.6 (9.8)
Off work period before inclusion	115 (71-189)	109 (69-168)

NRS = numeric rating scale; ODI = Oswentry Disability Index; NDI = neck disability index; HSCL = Hopkins symptom checklist; FABQ-PA/W = fear avoidance belief questionnaire physical activity/work; SD = standard deviation.

Other baseline characteristics reported were BMI, smoking (%), education, children, marital status, and Norwegian mother tongue (%) where there were no notable differences between groups. No statistical analysis of differences was undertaken, however.

Inclusion criteria
- Aged 18-60
- Employed
- Have a sick leave duration between 4 weeks and 12 months

Exclusion criteria
- Need for surgical treatment
- Cauda equine syndrome
- Symptomatic spinal deformities
- Osteoporosis with fractures

municipal social services. The medical records and RTW schedules were sent to participants and their general physicians, who managed the patients' sick-leave certificates.

Table 2. summary of intervention/control sessions by site (Trondheim = T and Oslo = O)

	Control		Intervention	
	O	T	O	T
Total duration of intervention (weeks)	3	3	3	3
Sessions with physio	1-2	17	7	7
Lectures	0	8	4	5
Group session	0	4	0	3
Medical specialist appointments	1	2	2	2
Caseworker appointments	0	0	2 (-3)	2

P	0.11	0.63
Adjusted HR (95% CI)	0.76 (0.56-1.04)	1.15 (0.84-1.57)
P	0.085	0.40

Adjusted HR = adjusted for age, sex, and educational level.

Differences in HRs between sites: Intervention p = 0.15; control p = 0.87 (Breslow test)

Post-hoc subgroup analysis for participants aged >41: Median RTW time (days) was shorter in the control group compared to intervention (132 vs 177, p = 0.03)

Analysis
A power calculation was conducted prior to the study, on the basis for the primary outcome of RTW. The sample size was calculated to be 224 included participants. The sample size exceeded this.

ITT analysis. Survival analysis (Kaplan Meier) used to investigate length of sickness absence and Breslow test to compare intervention and control. Cox proportional hazards regression model was used to calculate HR for RTW rate between the 2 treatment groups.

Before combining data from 2 sites, authors state that hospitals were analysed separately and no significant differences were found between the interventions – data was therefore merged into the joint analysis.

Subgroups were formed by sex, education above or below university level, and by median split of the variables: age, pain intensity, disability scores. A survival analysis and comparison of the interventions inside each subgroup were performed.

- Contamination risk was unclear
- It was not possible to conceal treatment allocation, however investigators were blind to the allocation code in the data files for each patient until the analysis were performed.

Other comments
- Employees had the option on whether to include employers in the study but there are no details on the outcome of this. There is a possibility that the employer was not actively involved in the study for some participants.

	- Inflammatory rheumatic diseases - Pregnancy - Legal labour disputes - Insufficient Norwegian language skills - Cardiac, pulmonary or metabolic diseases with functioning restrictions - DSMIV diagnosed mental disorders			

Tamminga et al 2013

Study details	Population	Intervention/comparator	Results	Notes
Full citation Tamminga, et al 2013 **Quality score** **+** **Study type** RCT **Location and setting** The Netherlands - Hospital based **Study aims** To determine the effect of a hospital-based work support intervention for female cancer patients on return-to-work and quality of life. **Length of follow up** 12 months **Source of funding** Stichting Insituut Gak and is part of the research program ‘‘Pathways to work’’ (www.verbeteronderzoek.nl). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript	**Number of participants**: N=133 Intervention: n= 65 (n=61 available for analysis). Comparison: n=68 (n=61 available for analysis). **Participant characteristics:** Mean age (years): 47.5 +/- 8.2 (I); 47.6 +/- 7.8 (C) Female %: 99% (I), 100% (C) Breast cancer diagnosis: 62% Female reproductive cancer: 34% Both groups were comparable across demographic, prognostic or medical characteristics (p=0.82). **Inclusion criteria** Cancer patients between 18 and 60 years of age; treated with curative intent at one of the six participating hospital departments, had paid work, and who were on sick leave **Exclusion criteria** Not sufficiently able to speak, read, or write Dutch, had a severe mental disorder or other severe comorbidity, and for whom the primary diagnosis of cancer had been made more than two months previously	**Intervention:** Hospital-based work support intervention 1) delivering patient education and support at the hospital, as part of usual psycho-oncology care; 2) improving communication between the treating physician and the occupational physician; and 3) drawing-up a concrete and gradual return-to-work plan in collaboration with the cancer patient, the occupational physician, and the employer **Comparator** Usual care	**Outcomes** Return to work Quality of life Work ability Work functioning **Results** Whilst all participants’ outcomes improved there was not significant difference between the groups on any outcome measure**.** Rate of *return to work (RTW)* at 1 year follow –up: 79% **(I);** 79% **(C)** (p=0.97) adjusted to 86% **(I)**; 83% **(C)** (p = 0.61) for *patient death and those with short life expectancy*; Relative Risk of RTW: 1.03 (95% CI 0.84-1.2) Number of calendar days between first day of sick leave and first day at work that was sustained for 4 weeks: Median - 194 days (range 14–435) **(I),** 192 days (range 82–465) **(C);** Median time from initial sick leave until full return-to work was 283 days (range 25–394) **(I),** 239 days (range 77–454) **(C)** (log rank test; p = 0.52). Kaplan-Meier survival analyses: Hazard ratio for partial return-to-work was 1.03 (95% CI 0.64–1.6) full return-to-work 0.88 (95% CI 0.53–1.5) *Quality of life* - (SF-36) statistically significant improvements over time (p ranged between 0.014 to #0.001) but did not differ statistically significant between groups (p ranged between 0.15 to 0.99) *Work ability* (Work ability index [WAI]): improved statistically significant over time (p≤0.001) but did not differ statistically significant between groups (p = 0.58) *Work functioning* (Work Limitations Questionnaire [WLQ]: did not improve significantly over time (p = 0.3) and did not differ significantly between groups (p =0.48)	**Limitations identified by the author:** Inability to include sufficient patients, according to our predetermined power analysis, which led to greater uncertainty in the results (required 109 participants in each arm); Hospitals willing to participate in the study may have already had high quality ‘usual care’; Study contamination via nurses; Possible bias due to all cancer patients were informed about the general aim of the study **Limitations identified by the review team** lack of blinding (highlighted as ‘impossible’ by study authors); Patients who volunteered for the study may have already been aware of the value of RTW **Other comments** Return-to-work rates were high.

				Intervention ‘accepted’ in psycho-ontological care. Half day training of nurses may not have equipped nurses to sufficiently deliver what was required to elicit and effect. Engagement of Occupational physicians was difficult. External validity dependent on equality/disability legislation in the country

Workplace health: support for employees with disabilities and long-term conditions

Hees et al 2012

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Hees et al 2012

Quality score +

Study type
RCT

Location and setting
Netherlands
Study aims
To evaluate the effectiveness of an adjuvant occupational therapy (OT) intervention, compared to treatment as usual (TAU), in employees who are sick-listed because of major depression linked to the work situation.

Length of follow up
6, 12, and 18 months follow-up</td>
<td>Number of participants:
Total n = 117
Intervention (OT) n = 78
Control (TAU) = 39

Participant characteristics:
OT group: mean age was 43.8±9.0; 53% male; 35±5 contracted hours/week; 27.6±10 hours absenteeism; median 5 months (interquartile range 2.8-5.0) duration of absenteeism(NICE analysts have assumed in previous 6 months but there is a lack of detail); 53% had experienced more than 1 depressive episode.

TAU group: mean age 41.5±9.6; 41% male; 32.7± contracted hours/week; 27.1±8.8 hours absenteeism; median 3.8 months (interquartile range 2.0-6.5) duration of absenteeism in previous 6 months; 54% had experienced more than 1 depressive episode.

Baseline outcome measures (clinical and coping/self- efficacy)

<table>
<tr><td></td><td>TAU</td><td>OT</td></tr>
<tr><td>HRSD</td><td>20.1±5</td><td>18±5.1</td></tr>
<tr><td>IDS-SR</td><td>42.1±9.8</td><td>38.7±11.3</td></tr>
<tr><td colspan="3">MOS 36</td></tr>
</table>
</td>
<td>Intervention:
OT consisted of 18 sessions (length not reported); 9 individual, 8 group, and a meeting with the employer.

Individual: therapist tries to relate the presently occurring work stressors to the patient's recurrent ineffective coping-pattern and the patient's progress with the work-reintegration plan is monitored.
Group: use of the ‘Quality of Work' (QW) model, where 5 factors that affect work performance: 'Work Load', 'Autonomy', 'Relationships at Work' 'Job Perspective', and 'Work-Home Interference' are discussed. In every group session (approximately 8 participants), the QW model is discussed, and patients are taught how to evaluate both the positive and negative factors in their own work situation. Each group member decides what dimension within the model is most important to change in his/her own work situation. Group sessions are also used to prepare for the</td>
<td>Outcomes:
Primary outcome: Work participation
-absenteeism (average number of hours of absenteeism over 6 month period)
-time until partial or full RTW (duration of sick leave due to depression in calendar days from start of treatment until partial or full RTW. Partial RTW defined as working an increment of 5 hours (compared to hours worked at baseline) for at least 4 weeks – without recurrence.

Secondary outcomes:
-Depression - Hamilton Rating Scale for Depression (HRSD) and Inventory of Depressive Symptoms – Self Report (IDS-SR)
-At work functioning – weekly self-repot records of work efficiency on a scale of 1-10 (higher ratings for higher productivity). As well as 3 sub-scales of the Work Limitations Questionnaire (WLQ); output, time, mental-interpersonal
-Health related functioning – 3 sub-scales of the Medical Outcomes Study-Short Form (MOS-SF 36); mental health, role limitations due to emotional problems, and role limitations due to physical problems.

Intermediate outcomes:
-Coping with work-related situations – adapted version of the Utrecht Coping List (UCL) – 3 sub-scales: Active problem focussing, avoidance behaviour, passive reaction
-Work-related self-efficacy – 11-item questionnaire on ‘Expectations regarding work resumption’ - validated

Result:
Absenteeism: Decreased significantly for both groups (p<0.001), with highest decrease between 6-12 months (p<0.001) – but no significant difference between groups over time (B (95% CI), -3.1 (-16.2to10.4), p=0.64).

RTW outcomes: at 12 months

<table>
<tr><td>Days until RTW (median, interquartile range)</td><td>TAU</td><td>OT</td></tr>
<tr><td>Partial RTW</td><td>166 (67-350)</td><td>80 (42-172)</td></tr>
</table>
</td>
<td>Limitations identified by the author:
Sample size was sufficient for power analysis but wide variability in duration until RTW may have limited power to detect differences.

Self-report questionnaire for at work functioning

TAU consisted of a highly specialised treatment at an academic department for mood disorders (potential to reduce contrast between groups)

No consensus on how to calculate effect sizes for random coefficient analysis</td>
</tr>
</table>

Source of funding

Netherland Foundation for Mental Health and the National Employee Benefit Schemes

Mental health	31.2±15.6	34.8±15.7
Role emotional	8.6±21.2	12.6±25.4
Role physical	21.8±38.1	28.8±39.5
UCL		
Active problem solving	15.8±4.3	15.4±4
Avoidance	18.1±4.3	17.8±3.6
Passive reaction	17.5±4.4	17.8±4.2
Self-efficacy	2.4±1.1	2.5±1.0

Inclusion criteria

- Aged 18-65
- Diagnosed with major depressive disorder (DSM-IV), duration of at least3 months or duration of absence at least 8weeks
- Absent from work for at least 25% of their contracted hours due to depression
- A relationship between depressive disorder and the work situation

Exclusion criteria

Severe alcohol or drug dependence, bipolar disorder, depression with psychotic characteristics, indication of inpatient treatment

meeting with the employer (through role-playing) and to develop a prevention plan.
Employer meeting: the occupational therapist educates the employer regarding the content of the occupational intervention and the consequences of depression for work performance. The employee has the opportunity to openly discuss work-related difficulties with the employer.
Those in the OT group also had TAU, see below.

Comparator

TAU – treatment by psychiatric residents at out-patient university clinics according to treatment protocol consistent with APA guidelines. Visits included clinical management, including psycho-education, supportive therapy, cognitive behavioural interventions. Therapies supervised weekly by experienced senior psychiatrist. Pharmacotherapy is started according to a protocoled algorithm.

Full RTW	405 (189-613)	361 (193-653)

No significant group differences in time until partial RTW (HR=0.72; 95%CI 0.44-1.11; p=0.14) or time until full RTW (HR=0.93; 95%CI 0.57-1.53; p=0.79).

Secondary outcomes: at 12 months

Outcome	B (95% CI)	P
At work functioning (WLQ)*		
Output	-0.7 (-4.8 to 3.3)	0.72
Time management	-2.6 (-6.7 to 1.4)	0.2
Mental/interpersonal	-2.0 (-5.6 to 1.6)	0.28
Depression		
HRSD	-1.5 (-2.8 to -0.3)	0.03
*HRSD score ≤7 (remission)***	0.6 (0.0 to 1.2)	0.05
*Self-report depression (IDS-SR)****	-1.6 (-3.7 to 0.5)	0.13
Health related functioning		
Mental health	3.2 (-0.2 to 6.3)	0.04
Role emotional	5.5 (-1.8 to 12.9)	0.14
Role physical	-5.2 (-12.8 to 2.3)	0.18

*Over the 18 month follow-up, both groups significantly decreased their work limitations (all WLQ scales p<0.001) and HRSD scores (p<0.001).
**Depression symptom remission was significantly higher in the OT group over time (HRSD score ≤7; OR = 1.8, 95% CI 1.0 to 3.3; p=0.05).
'Sustainable remission' for longer than 6 months was also more common in the OT group (92%) compared to the TAU group (69%) (p=0.04, effect size and CI not reported).
*** IDS-SR scores decreased significantly for both groups (p<0.001), but there were no significant group differences after 18 months (see table above).

Intermediate outcomes: Both groups improved in active coping and self-efficacy (both measures p<0.001), with no differences between groups (all p>0.1).

High proportion of employees with chronic sickness absence (69% absent for more than 3 months) may have diluted intervention effects for employees with shorter sickness absence spells.

Limitations identified by the review team

Due to the nature of the intervention, neither participants nor therapists could be blinded to the allocation status.

Other comments:

	Screening: Participants were referred by occupational physicians, then there was a telephone screening with a senior psychiatrist as well as a 3-hour psychiatric intake with a structured interview. If participants were eligible and agreed to participate, they gave informed consent at this point.		**Analysis** ITT analysis, differences at baseline were taken into account as covariates during the analysis. Missing values accounted for by using multiple imputations and combining using Rubin's rules. RTW outcomes analysed using Cox proportional hazard model and Kaplan-Meier curves. Absenteeism was analysed with random coefficient analysis, using change scores between each follow-up assessment and baseline as dependent variables.	

Macedo et al 2009

Study details	Population	Intervention/comparator	Results	Notes
Study Macedo et al , 2009 **Quality score** **++** **Study type** RCT **Location and setting** **UK -** Rheumatoid Arthritis Center clinics, Guy's and St. Thomas' National Health Service Foundation Trust **Study aims** If a targeted, comprehensive occupational therapy intervention: a) improved overall occupational performance b) resulted in improvements in physical function, work productivity, coping, or disease activity	**Number of participants**: N=32 Intervention n=16 Comparison n=16 **Participant characteristics:** Mean: years (+/- SD) of sample : 50.6 +/- 9.85 Female (sample): 93% disease duration Mean: years (+/-SD) was 10.0 +/- 8.32 years Work status: Intervention: Full-time workers 94% vs. 6% **Inclusion criteria:** Confirmed diagnosis of Rheumatoid Arthritis (RA), were involved in full-time/part-time work or were self-employed, were fluent in English, lived locally, had medium or high work disability risk on the RA Work Instability Scale (RA WIS) , and if they	**Intervention:** 6 months of comprehensive occupational therapy (individualized assessment of the patient's medical history, a work assessment, a functional assessment, and a psychosocial assessment + individualized treatment plan of 6–8 sessions*) + usual rheumatology care *Interventions could include: provision of education on RA, medications, compliance and management within the Rheumatoid Arthritis Center clinics, self-advocacy, work place rights and responsibilities, ergonomic reviews, discussions with employers regarding reasonable accommodations, posture advice, pacing, activities of daily living, stress management, assertiveness, sleep posture and hygiene, exercises, footwear, splinting, and assertive communication.	**Outcomes:** Occupational performance Satisfaction with performance Disability score Work productivity Presenteeism and absenteeism Coping RA disease activity **Results** **<u>Function:</u>** **Canadian Occupational Performance Measure (COPM) -** *clinically significant change has been defined as an increase in 2.0 points***,** COPM satisfaction mean change@6m: 4.08 (+/-2.41)(I), 0.25(+/-2.16) (C) (t-test P=0.001) COPM performance mean change@6m: 3.10 (+/-2.01)(I), -0.28 (+/-1.44)(C) (t-test P=0.001) **Health Assessment Questionnaire (HAQ) disability index (DI) -** *Clinically significant change has been defined as a decrease of 0.2 points* HAQ DI mean change@6m: -0.27 (I), 0.17 (C) (t-test P=0.02) **<u>Work productivity:</u>** **Rheumatoid arthritis work instability scale (RA WIS)** RA WIS **-** *higher score indicates a higher risk of work disability* RA WIS Mean change@6m: -5.33 (+/-3.24)(I), -2.53 (+/-3.74) (C) (t-test P=0.04) **Modified Health Economics Questionnaire combined measures of presenteeism and absenteeism Visual analog scales (VAS) for work performance and work satisfaction affected by RA in the past week** Mean change in VAS work satisfaction@6m: -36.87 (+/- 39.81)(I), -10.06 (+/-31.04)(C) (t-test P =0.001);	**Limitations identified by the author:** Sample size per group (n=16) was slightly lower than required (n=17) to detected outlined changes based on COPM at 0.05 significance and power 0.9 as estimated by the power calculation; Recruitment from specialised inflammatory arthritis clinics meant that participants would already be receiving 'interventions' to achieve DAS28 remission (generalizability); Use of surrogate measures of function and workability; **Limitations identified by the review team** Medical management and rheumatology clinic

Length of follow up 6-month **Source of funding:** Supported by a grant from the Guy's and St. Thomas' Charitable Foundation	provided informed consent **Exclusion criteria** participation in other research studies, had other major comorbidities (e.g., cancer), were pending major surgery, and/or had received an occupational therapy intervention within the past 18 months	**Comparator:** usual care - routine reviews by the rheumatologist. The focus of treatment was on early, aggressive medical management with a goal of achievement of remission (DAS28 score 2.6). No occupational therapist (OT) involvement with these patients. Medical management and rheumatology clinic visit schedules were not changed from normal practice for either group.	Mean change in VAS work performance@6m: -43.20 (+/- 35.01) (I), -4.69 (+/- 43.91)(C), t-test P=0.01) Mean change work days missed per month@6m: -2.80 (+/-6.18) (I), 0.63 (+/- 4.86) (t-test P=0.10) **Coping** : **Arthritis Impact Measurement Scales II** (AIMS2) - *higher score indicates poorer health* Mean Change in scores@6m: Tension 0.34 +/-1.19 (I), 0.91 +/-1.40 (C) (t-test P= 0.23) Mean Change in scores@6m: Mood: 0.50 +/-1.34 (I) , 0.44 +/-1.39 (C) (t-test P= 0.90) Mean Change in scores@6m: Pain: 0.66 +/-2.26 (I), 2.31 +/- 1.74 (C) (t-test P= 0.03) **Arthritis Helplessness Index (AHI)** - *higher score indicates greater perceived helplessness* Mean Change in scores@6m 3.13 +/-6.01 (I) 3.63+/-9.06 (C)(t-test P= 0.02) **EuroQol (EQ-5D) Index** -*a standardised instrument for use as a measure of health outcome. A higher score indicates greater health status.* Mean Change in scores@6m Global: 6.69 +/- 25.46 (I) 20.60+/-31.53 (C)(t-test P= 0.02) Mean Change in scores@6m Index: 0.15+/-0.33 (I) 0.13 +/- 0.29 (C) (t-test P= 0.02) **RA disease activity:** **100-mm pain VAS score in the past week on self-rated health** Mean Change in scores@6m 1.13 (+/- 22.98) (I), 25.31 (+/-24.22) (C) (t-test P= 0.007) **fatigue measured on an ordinal scale** mean change in scores@6m: 0.19 +/-0.66 (I), 0.25 +/-0.86 (C) (t-test P=0.82) **DAS28 score – *Clinically significant change has been defined as a change ≥1.2*** Mean Change in scores@6m : 0.11 (+/-1.21) (I), 0.94(+/-)1.32 (C)(t-test P= 0.03) **Analysis** independent sample t-test then evaluated according to clinically meaningful cut-offs for measures where there was some consensus **Post hoc-analysis** undertaken: Occupational therapy was significantly better than usual care in all models (P<0.01) except the RA WIS (P <0.11). Poorer baseline scores were associated with larger improvement for all measures (P<0.05) except the RA WIS (P<0.271). Change in DAS28 score or erythrocyte sedimentation rate (measures of disease activity scores) had low correlation (<0.3) with changes in COPM	visits were not changed from normal practice in both groups. **Other comments** Half of the 16 participants that received OT intervention had a 'work visit completed and recommendations provided to their employer'

			performance, COPM satisfaction, HAQ, (Function measures) or RA WIS scores (workplace productivity scores)	

Workplace health: support for employees with disabilities and long-term conditions

Taimela et al 2008

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Taimela et al 2008
Quality score
+
Study type
Longitudinal cohort study with 2 embedded RCTs

Location and setting
Corporation in Finland

Study aims
To evaluate the effectiveness of two interventions; one occupational health intervention for employees at high risk of sick leave, and one telephone health counselling intervention for employees at intermediate risk of sick leave. Each intervention was</td>
<td>Number of participants:
Total n = 1341
Total n for High-risk RCT: 418
Total n for Intermediate-risk RCT: 537
Low-risk (LR) = 386

High-risk Intervention = 209; control = 209
Intermediate risk intervention = 268;control = 269

Participant characteristics:
<u>Low risk</u>: Mean age (range) 43 (19-60); 19% female; 52% blue collar; mean (SD), median sickness absence days 5.6 (13.9), 1 day.
<u>Intermediate risk (IR)</u>: Mean age control 42.9, intervention 42.8; control 12% female, intervention 13% female; control 57% blue collar, 58% blue collar; mean (SD),
<u>High risk (HR)</u>: Mean age control 46.8, intervention 46.7; control 6% female, intervention 6% female; control 80% blue collar, 77% blue collar.

N.B sickness absence data taken from 12 months prior to enrolment.

Inclusion criteria
All participants: Permanent employment and aged 18-60
Baseline screening questionnaire given to all participants before randomisation, included questions on lifestyle,</td>
<td>Intervention:
High risk group: initial 90min consultation with the occupational nurse (occupational physician joined if necessary), feedback on the screening questionnaire was given. Nurse kept a file on info on each participant that included the following info: consultation content, any referrals made to other services, health advice received at the occupational health service, any refusals from employees to take further action, if the employee had received treatment at the health centre for the same issues previously (highlighted from the screening questionnaire).

Intermediate risk group: Access to telephone medical counselling from one phone advice centre, delivered by a trained nurse with several years' experience (who had access to the questionnaire results and relevant health databases). Personal</td>
<td>Outcomes
Sickness absence from work: obtained from employer records. Maternity/paternity/carer's leave not included as absence.
Questionnaire: baseline questionnaire on symptoms was retaken at 12 months follow-up.

<u>Results</u>

High risk RCT – results at baseline and 12 month follow-up
<table>
<tr><td>Sickness absence outcomes</td><td>Control</td><td>Intervention</td></tr>
<tr><td colspan="3">Baseline</td></tr>
<tr><td>% with none</td><td>43</td><td>34</td></tr>
<tr><td>Mean (SD) days</td><td>17.9 (36.3)</td><td>19.7 (37.0)</td></tr>
<tr><td>Median days</td><td>4</td><td>6</td></tr>
<tr><td colspan="3">12 month follow-up</td></tr>
<tr><td>% with none</td><td>23</td><td>31</td></tr>
<tr><td>Mean (SD) days</td><td>29.9 (53.3)</td><td>19.3 (44)</td></tr>
<tr><td>Median days</td><td>9</td><td>5</td></tr>
</table>
The group difference between the mean was 11 days (95% CI 1 to 20).

Outcomes from occupational therapist session: 129 saw the therapist. 106 received health advice, 64 had a referral to consultation or hospital outpatient clinic, 6 referred to a group intervention at the occupational health service clinic. Of the 142 employees that visited the occupational health service, 72 had not received earlier treatment for that condition.

<u>Intermediate risk RCT– results at baseline and 12 month follow-up</u></td>
<td>Limitations identified by the author:
- As there was no initial randomisation to getting a screening questionnaire or not, this study cannot genuinely answer the overall question of whether the screening programme as a whole was effective.
- Potential contamination in the control groups (High risk group could also request to have occupational therapist sessions) – although they would not have got questionnaire feedback.

Limitations identified by the review team</td>
</tr>
</table>

compared to a usual occupational healthcare control.

Length of follow up
1 year

Source of funding

Finnish Funding Agency for Technology and Innovation, The Finnish National Fund for Research and Development, Pfizer Oy.

Linked paper

Taimela et al 2010

anthropometrics, sleep disturbances, work-related stress and fatigue, depression, pain, disability due to musculoskeletal (MSK) problems, and a prediction of future working ability.

At least one of the criteria fulfilled for each group (a priori defined cut-off limits):

Topic	HR	IR
Impairment due to MSK conditions at work	Score ≥5	Score 4
Potential depression distress	DEPS score ≥11	DEPS score ≥8
Fatigue	"very much"	
Sleep disturbances	Problems falling asleep. Daytime tiredness daily	Problems falling asleep. Daytime tiredness ≥3 times a week
Future working ability	Uncertain	
Impairment due to MSK conditions in leisure		Score ≥5
Pain frequency and intensity		At least 'moderate' pain that affects working ability ≥3 times a week
Weight problems		BMI ≥30 or ≤18.5

feedback from questionnaire received by post (authors do not report who from). The call centre was always open and cost the amount of a local call.

Comparator
Care as usual for each intervention group: employees in this group could consult their occupational nurse or physician on request, but they were not invited for consultation (like the high risk group) and did not receive feedback on their screening questionnaire.

Sickness absence outcomes	Control	Intervention
Baseline		
% with none	60	55
Mean (SD) days	4.6 (9.5)	5.9 (11.5)
Median days	0	1
12 month follow-up		
% with none	46	45
Mean (SD) days	6.9 (14.3)	7.0 (12.4)
Median days	1	2

Of the employees in the intervention group for the Intermediate risk RCT, only 57 (21%) called the phone advice centre during the 12 month follow-up.

Additional results from post-hoc subgroup analysis in linked paper

Results relate to the high risk group only.

The intervention had a greater effect on employees who did not believe being able to continue at their present job due to health reasons (-74 days; 95% CI -105 to -43) than for those who were uncertain about their future working ability (-4.3 days; 95% CI -18.3 to 9.7) or those who believed in their own working ability (-4.5 days; 95% CI -18.5 to 9.5). (ANCOVA p<0.005)

The intervention had a greater effect on employees with high level of physical impairment (-17.5 days; 95% CI -28.5 to -6.5) than for those with low level of impairment (2.5 days; 95% CI -13.5 to 18.5) with the cut-off limit C5. (ANCOVA p<0.005)

The intervention was more effective if employees had reported more than one health problem (-22.5 days; 95% CI-35.5 to -9.5) than without co-morbidities (1.5 days; 95%CI -11.5 to 14.5). (ANCOVA p<0.005)

Analysis
Intention-to-treat analysis was used. The effectiveness of the interventions was estimated by the difference of mean number of sickness absence days between the randomised groups, and the confidence interval was computed based on t distribution.

Mainly male sample (particularly in high risk trial – 6% female)

Control arm contamination

Power calculation shows that study was underpowered in the intermediate risk group and in the high risk group sample size was also slightly under target.

In sub-group analysis, continuous variables that the authors dichotomized post hoc – may have selected cut-off points that favoured significant interactions.

No follow-up findings reported for low risk group

Other comments

	Excess alcohol consumption | | Males ≥350ml/week, females ≥240ml/week Suspicion of sleep apnoea | | Snoring or shortness of breath while asleep – daily Insufficient sleep | | Difference between the reported need and realisation of sleep ≥2hrs **Exclusion criteria** Employees who had been granted a disability pension (part-/full- time) were excluded.		**Sub-group analysis (post hoc) reported in Taimela et al 2010:** to identify modifying factors for the effectiveness of the high risk group intervention. Analyses were carried out by using ordinary least squares (OLS) regression using both change scores and analysis of covariance (ANCOVA) methods. Dependent variable: sickness absence days during follow-up year Covariate: sickness absence days during preceding year A level of significance of P<0.10 was considered to be relevant for modifiers. Main results are reported treating modifiers as continuous variables when applicable. The p-values were calculated from bootstrapped coefficients and standard errors. Authors dichotomized some continuous variables using cut-off limits that were based on previous findings (e.g. self-rated future working ability).	

Noordik et al 2013

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation:
Noordik et al 2013

Quality score
+

Study type
cRCT

Location and setting
Netherlands, setting not specified but reference to the offer of RTW interventions as part of Dutch guidelines – communication with supervisor was outlined as part of the intervention

Study aims:
We developed an and evaluated the effect of an exposure-based return-to-work(RTW-E) intervention A on time-to-full return to work (RTW) among workers who were on sick</td>
<td>Number of participants: 56 occupational physicians (OP): 35 OP treated 160 workers at the start of their sick leave: 75 workers received RTW-E and 85 workers received CAU.

Participant characteristics:
<table>
<tr><th></th><th>RTW-E</th><th>CAU</th></tr>
<tr><td>Age (mean)</td><td>44.9</td><td>45.9</td></tr>
<tr><td>Male %</td><td>24.3</td><td>33.3</td></tr>
<tr><td>Duration sick leave before inclusion (days)</td><td>36</td><td>34.1</td></tr>
</table>
Occupational physicians characteristics:
<table>
<tr><th></th><th>RTW-E</th><th>CAU</th></tr>
<tr><td>Age (years)</td><td>52.9</td><td>48.3</td></tr>
<tr><td>Male (%)</td><td>57.1</td><td>50</td></tr>
</table>
Inclusion criteria:</td>
<td>Intervention:
Exposure-based return-to-work (RTW-E) intervention integrated into usual care _ CAU and were gradually exposed in vivo to more demanding work situations structured by a hierarchy of tasks evoking increasing levels of anxiety, stress, or anger
Homework assignment forms aimed at preparing, executing, and evaluating an exposure-based RTW plan were collected from the OP to assess compliance
OP in the RTW-E group received two days of training in the RTW-E program + three follow-up tutorial sessions during the inclusion period

Comparator:
CAU: guideline-directed and consists of problem-solving strategies and graded activities – including: stress inoculation training, cognitive restructuring, graded activity, and time contingency during the RTW</td>
<td>Outcomes
time-to-full RTW lasting ≥28 days without recurrence collected via workers' diaries and OP medical records

Secondary outcomes:
time to partial RTW,
the number of recurrences of sick leave,
symptoms of distress, anxiety, depression and somatization [Four-Dimensional Symptom Questionnaire (4DSQ).

Process measures:
Compliance with the RTW-E program,
the frequency of consultations of the worker with the OP,
the reported communication between the worker and his or her supervisor

Analysis:

RTW: at 12 months
RTW-E vs. CAU hazard ratio (HR) 0.55; 95% confidence interval (95% CI) 0.33–0.89].
Workers receiving RTW-E (209 days; 95% CI 62–256) had a prolonged time-to-full RTW compared to workers receiving CAU (153 days; 95% CI 128–178) – p=0.02.

Time-to-partial RTW: at 12 months
Median time-to-partial RTW was 78 (95% CI 60–95) and 70 days (95% CI 60–80) for workers receiving RTW-E and CAU, respectively.
RTE-E vs. CAU: HR 0.89 (95% CI 0.62–1.29),

Mean number of recurrences of sick leave within a one-year follow-up did not differ between both interventions (p=0.96).

No significant differences (P=0.07) were found in the mean number of consultations with the OP between the RTW-E [3.9; standard deviation (SD) 2.2] and the CAU groups (3.4; SD 1.9).</td>
<td>Limitations identified by the author:
Validity of the results of this study may have been limited due to a selection bias because of the absence of allocation concealment of the OP and attrition of workers
Attrition could have introduced a low risk of bias in the estimated median time-to-full RTW and a higher risk of bias in the secondary outcome measures
Comparison treatment is already rather effective in reducing the time-to-full RTW for workers on sick leave due to stress-related disorders – so result in direction of control is not a surprise

Limitations identified by the review team

None</td>
</tr>
</table>

leave due to CMD in comparison to those treated with care-as-usual (CAU). **Length of follow up** 3, 6, 9 and 12m **Source of funding:** STECR Aladdin program **Linked study:** Noordik et al 2009 (cRCT protocol STAR ID 492137)	workers who were on sick leave due to CMD for ≥2 and ≤8 weeks **Exclusion criteria** Workers with a primary somatic disorder according to the OP and those who were not able to speak Dutch	OP in the control group received one day of training to update their skills in counselling workers with CMD according to the Dutch guidelines	**The frequency of communication** with the supervisor during the first three months of sick leave (T1) [p=0.74] and the satisfaction of the workers with the treatment of the OP after 9 months (T3) [p=0.99] did not differ **Health related outcomes:** Overall mean between group difference for distress (p=0.14), depressive symptoms (p=0.13) and somatization (p=0.55) not significant Overall mean between group difference for Anxiety (p=0.004) significant but after adjustment did not differ significantly (p=0.27)	**Other comments** Noordik et al 2009 – aimed for 60 OPs in order to include 200 patients

Arends et al 2014

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Arends et al 2014
Quality score
+
Study type
cRCT

Location and setting
Netherlands; ArboNed (Occupational Health Services)
Study aims
Evaluate the effect of the Stimulating Healthy participation And Relapse Prevention at work (SHARP-at work) intervention to prevent recurrent sickness absence in workers who returned to work after sickness absence due to CMDs.

Length of follow up</td>
<td>Number of participants:
80 participants intervention group (71@3m; 67@6m; 57@12m)
78 control group (67@3m; 55@6m; 50@12m)

Participant characteristics:
<table>
<tr><th></th><th>SHARP</th><th>CAU</th></tr>
<tr><td>Age (yrs)</td><td>41.3 (9.4)</td><td>43.3 (9.8)</td></tr>
<tr><td>Male (%)</td><td>27 (33.8)</td><td>38 (48.7)</td></tr>
<tr><td>RTW %</td><td>48.7 (32.2)</td><td>43.1 (27.2)</td></tr>
<tr><td>Dur. Sickness abs (days)</td><td>130.9 (94.2)</td><td>99.3 (66.1)</td></tr>
<tr><td colspan="3">4DSQ</td></tr>
<tr><td>Distress</td><td>13.8 (7.5)</td><td>15.5 (7.5)</td></tr>
<tr><td>Depression</td><td>1.5 (2.1)</td><td>2.0 (2.4)</td></tr>
<tr><td>Anxiety</td><td>3.1 (3.3)</td><td>3.6 (3.5)</td></tr>
<tr><td>Somatisation</td><td>7.9 (5.3)</td><td>7.9 (5.5)</td></tr>
<tr><td colspan="3">HADS</td></tr>
<tr><td>Depression</td><td>7.0 (4.5)</td><td>7.3 (4.4)</td></tr>
<tr><td>Anxiety</td><td>7.2 (3.9)</td><td>7.8 (3.4)</td></tr>
</table>
Inclusion criteria:
Age 18–63 years; employed in a paid job; a diagnosis of a CMD given by their OP (based on ICD-</td>
<td>Intervention: SHARP-at work intervention – based on Management of mental health problems of workers by occupational physicians of the Netherlands Society of Occupational Medicine. Occupational physicians started intervention 2 weeks post RTW (2 to 5 OP consultations recommended within 3 months post RTW); duration of consultation 30min;
Consultation between worker and supervisor – empower the worker to define own problems and design solutions
5 step problem solving process to find and implement solutions for problems experienced when back at work.
1. Make an inventory of problems and/or opportunities encountered at work after RTW
2. Brainstorm about solutions
3. Write down solutions and the support needed and assess the applicability of these solutions</td>
<td>Outcomes: (via administrative OHS data)

Recurrent sickness absence days (defined as ≥30% decrease in working hours per week due to sickness absence). No limits were set for the duration of the ≥30% decrease When a worker increased again in number of working hours per week above the 30% threshold, this was recorded as the end of the recurrence episode

Recurrent sickness absence incidence due to all causes

Time to first episode of recurrent sickness absence (measured in calendar days).

Effect modification: modification of the group effects by:

Size of company: Company size was assessed with one single question and dichotomised to <100 workers versus >100 workers.

Decision latitude: Job Content Questionnaire. Items were scored on a 4-point Likert scale ranging from 1=totally disagree to 4=totally agree

Readiness to stay at work: 6-item Readiness to Stay at Work Scale Items were scored on a 5-point Likert scale, ranging from 1=totally disagree to 5=totally agree

Secondary outcomes:

Hospital Anxiety and Depression Scale was used to assess depression and anxiety

Four-Dimensional Symptom Questionnaire was used to assess symptoms of distress, depression, anxiety and somatisation

Work functioning was assessed with the Work Role Functioning Questionnaire</td>
<td>Limitations identified by the author:
low number of recruited participants according to the sample size calculation
Possible residual confounding due to differences in baseline characteristics
Diagnosis of CMD undertaken by OP’s not trained to do this
Could not differentiate between different reasons for recurrent sickness absence

Limitations identified by the review team

None

Other comments

25 OPs per group were needed, each providing five</td>
</tr>
</table>

<table>
<tr>
<td>3 months, 6 months and 12 months

Source of funding

‘Stichting Instituut GAK’, a Dutch funding organisation (grant number 2007636). The authors were independent of the funder, and the funder had no role in the study design, data collection, analysis and interpretation of results or the writing of the report.

Linked study

Arends et al 2010. Study design paper.</td>
<td>10) at the start of the sickness absence period; an episode of sickness absence of at least 2 weeks; a planned RTW within 2 weeks (i.e. the intervention could begin directly when a worker started RTW).

Exclusion criteria:
a sickness absence episode >12 months; a prior sickness absence episode due to a CMD in the past 3 months; severe mental disorders, such as psychotic disorder or bipolar disorder; somatic complaints/disorders that would affect RTW; pregnancy, an upcoming retirement /resignation / lay-off; not able to read, write and understand Dutch</td>
<td>4. Discuss solutions and make an action plan with the supervisor
5. Evaluate the action plan/implementation of solutions
OP’s received 2-day intervention training provided by experienced trainers in occupational health intervention Three feedback moments of 2 h were organised to jointly discuss the negative and positive aspects of conducting the intervention.
Comparator:
Care as usual according to the guideline on ‘Management of mental health problems of workers by OP’s’ - this guideline does not contain a structured approach for preventing recurrent sickness absence. No specific attempts were made to ensure that the OPs followed the guideline and they received no information about the content of the SHARP-at work intervention.</td>
<td>Coping behaviour was assessed with the 14-item version of the Utrecht Coping List

Analysis:

Recurrent sickness absence days: not analysed because of the skewed distribution; at each follow-up measurement, more than 50% of the study population had no recurrent sickness absence days

SHARP
<table>
<tr><th></th><th>3m</th><th>6m</th><th>12m</th></tr>
<tr><td>Recurrence n (%)</td><td>8 (11)</td><td>15 (21)</td><td>24 (34)</td></tr>
<tr><td>Recurrent sickness absence days (median IQR 25th-75th percentile)</td><td>0 (0-0)</td><td>0 (0-0)</td><td>0 (0-5)</td></tr>
</table>
CAU
<table>
<tr><th></th><th>3m</th><th>6m</th><th>12m</th></tr>
<tr><td>Recurrence n (%)</td><td>17 (22)</td><td>29 (39)</td><td>35 (47)</td></tr>
<tr><td>Recurrent sickness absence days (median IQR 25th-75th percentile)</td><td>0 (0-0)</td><td>0 (0-4)</td><td>0 (0-8)</td></tr>
</table>
Incidence of recurrent sickness absence: multilevel longitudinal regression analysis differences between treatment groups and between groups at different follow periods.

Adjusted OR 0.40 (95% CI 0.20 to 0.81) for SHARP vs. CAU (no p-value stated)
<table>
<tr><th>Incidence of recurrent</th><th>3m</th><th>6m</th><th>12m</th></tr>
</table></td>
<td>participants, in order to have 80% power to show a mean difference in decrease of 12.7 recurrent sickness absence days during 1 year, assuming an α of 0.05 and an intra-class correlation coefficient of 0.05 - Recruitment fell short according to the sample size calculation (n=212)</td>
</tr>
</table>

			<table><tr><td>**sickness absence**</td><td></td><td></td><td></td></tr><tr><td></td><td>**OR: 0.32 95%CI 0.06-1.83**</td><td>**OR: 0.28 95% CI 0.09-0.85 (p<0.05)**</td><td>**OR: 0.45 95%CI 0.17-1.23**</td></tr></table> **Time to first episode of recurrent sickness absence**: Kaplan-Meier survival analyses were conducted to compare time to recurrent sickness absence in the two treatment groups; The Cox proportional hazard model was used to estimate HR The event was defined as first recurrent sickness absence, ***longer survival indicated a favourable outcome***. The SHARP group had a **median of 365 days (IQR 174–365)** to recurrent sickness absence and the **CAU group had a median of 253 days (IQR 117–365) (logrank test; p=0.003).** When adjusted for confounders, time to recurrent sickness absence was significantly longer in the SHARP group compared with the CAU group **(adjusted HR=0.53, 95% CI 0.33 to 0.86).** **Secondary outcomes**: linear mixed models with unstructured covariance matrices were used No clear differences were found between the two groups on mental health complaints at the follow-up measurements No significant group x time interaction was found for mental health complaints, work functioning and coping behaviour Significant changes @3m for **UCL – distraction**: mean difference: 0.78 95%CI 0.07-1.49 (P<0.05) Significant changes @6M **4DSQ – Depression** mean difference: 1.08 95%CI 0.30-1.86 (p<0.05); **HADS-Anxiety** 1.06 95%CI 0.08-2.04 (p<0.05) No significant change @12m for any secondary outcome	

Workplace health: support for employees with disabilities and long-term conditions

Eklund et al 2011

Study details	Population	Intervention/comparator	Results	Notes
Study Eklund et al 2011 **Quality score** - **Study type** Quasi-experimental controlled trial **Location and setting** Health-care centres in two districts in South Sweden **Study aims** Investigate the effectiveness of the 16-week Redesigning Daily Occupations (ReDO) program as a work rehabilitation method for Swedish women with stress-related disorders, in comparison to a care as usual (CAU) control. **Length of follow up** 12 months	**Number of participants:** Total n = 84 Intervention n = 42 Control n = 42 **Participant characteristics** Mean age(SD) in the intervention group was 45 (19.0) and 46(9) in the control; Occupations, 50% in the intervention and 36% in the control were managers and professionals, 14% (intervention) and 31% (control) were Technicians and associate professionals, 35% (intervention) and 31% (control) worked in clerical support or service and sales, 0% (intervention) and 2% (control) were plant and machine operators. Participants were comparable on proportional diagnosis of depression (intervention 45%; control 54%), stress/exhaustion (intervention 48%; control 41%) and physical main diagnosis (intervention 7%; control 5%). Degree of sick leave was estimated as the percentage of the employee's regular working hours taken up by sick leave.	**Intervention:** The 16 week ReDO programme involved reflecting on one's occupational history, identifying interests, stresses and rewards, mapping how time is used and becoming aware of the value and meaning that may be found in everyday occupations. Group-based programme consists of 3 parts: Part 1 (5 weeks, 10 group sessions): Group meets to identify problems related to everyday chores, set personal goals and develop strategies for changing routines to ensure that a balanced and satisfying pattern of daily occupations can be achieved. Home tasks are set for individuals to carry out on their own between the sessions. Educational methodology is used, challenging participants to re-evaluate their previous routines and priorities and develop and test new ones. Part 2 (5 weeks, 10 group sessions): has same structure as part 1 but with more of a focus on the work situation. Part 3 (6 weeks work placement with 3 group sessions): group sessions on work practice, where support is provided to participants to problem-solve their new situations. **Comparator:** Care as usual. Participants have regular follow-ups with the SIO officer and the employer, and received relevant medical treatment. Interventions already offered by the SIO could involve some variation of work	**Outcomes:** measured at 4 time-points (baseline, post 16 week intervention, 6 and 12 months) - Return to work - Degree of sick leave (estimated as the percentage of the employee's regular working hours taken up by sick leave) - Perceived stress (validated questionnaire, 14 item self-report) - Self-esteem (validated questionnaire, 10 item self-report) Further work outcomes reported in Eklund et al 2013: - % Engaged in paid work (categorical variable – those who worked from 25-100% were categorised as 'engaged in paid work' - Worker Role Self-assessment (WRS) – 14 item, validated. - The Work Environment Impact Scale (WEIS-SR) – 15-item, validated. **Results** Return to work significantly increased in both groups over time (F = 12.29; p<0.001). When controlling for previous sick leave and baseline self-esteem, progression of RTW over the time points was significantly different for control and intervention groups (F = 4.55, p = 0.005). A linear contrast (F = 5.11, p = 0.027) showed an increasing trend over time, but a quadratic contrast (F = 4.27, p = 0.042) and a cubic contrast (F = 9.85, p = 0.002) indicated that the trend was not stable. Degree of sick leave significantly decreased over time for both groups (F = 29.55, p<0001), with the	**Limitations identified by the author** - Not an RCT - 50% of those in the comparator group reported receiving some kind of focussed work rehabilitation during the 16-week study period – such as physio therapy, CBT, mindfulness training, pain rehabilitation or work training in the ordinary workplace. This makes the comparison with intervention group less reliable and the findings subject to bias. - Research group had no insight into the number of women assessed as not eligible for the intervention - RTW categorisation meant that people who were only working 25% were classed as 'working'. But degree of sick leave

<table>
<tr>
<td>Source of funding
Swedish Council for Working Life and Social Research

Linked Study(ies)
Eklund et al 2013. Long-term follow-up.</td>
<td>The mean (SD) degree of sick leave was 92 % (18) for the intervention group, compared to 83% (26) for the control (p = 0.086).

The mean (SD) sick leave duration before baseline was 13 (20) months in the intervention and 10 (10) in the control group.

12% of the intervention group had previously been involved in work rehabilitation, compared to 36% of the control group. This difference was significant (p = 0.10).

Participants were comparable on mean number of children values (intervention mean (SD, 2.4(1.4); control 2(1).

Inclusion criteria
On sick-leave for stress-related diagnosis (as measured by ICD-10, WHO)

Employed and been on sick leave for 2 months or more

Exclusion criteria
Women who did not understand written or verbal Swedish</td>
<td>rehabilitation as well as a graduated return to work with modified hours, tasks and productivity demands.</td>
<td>decrease being significantly greater in the intervention group (F = 9.34, p<001).
The linear contrast did not indicate a group difference (F = 3.28, p = 0.074), whereas a quadratic contrast (F = 22.29, p <0.001) and a cubic contrast (F = 6.27, p = 0.014) did. This indicates that the initial reduction in sick leave was greater in the control group than the intervention. The reduction then levelled out in the control group for the 6 and 12 month follow-up but continued to decrease in the intervention group.

<u>Perceived stress</u> significantly decreased over time for both groups (F = 4.15, p<0.01) but there was no significant differences between the intervention and control (F = 3.11, p = 0.083).

<u>Self-esteem</u> significantly increased over time for both groups (F = 6.99, p<0.001)

Only the linear contrast was identified as statistically significant (F = 6.81, p = 0.011), indicating a gradual increase in both groups but a greater one in the intervention.

Further results from Eklund et al 2013

Intervention group
<table>
<tr><th></th><th>baseline</th><th>12 month</th><th>p-value</th><th>Effect size (Cohen’s d)</th></tr>
<tr><td>Work engagement (%)</td><td>12</td><td>70</td><td><0.001</td><td>1.9</td></tr>
<tr><td>Sick leave degree (%)</td><td>88</td><td>28</td><td><0.001</td><td>2</td></tr>
<tr><td>WRS mean(SD)</td><td>4.2 (0.3)</td><td>4.1 (0.5)</td><td>0.394</td><td>-0.22</td></tr>
<tr><td>WEIS-SR mean(SD)</td><td>3.6 (0.7)</td><td>4 (0.6)</td><td>0.001</td><td>0.54</td></tr>
</table>
Control group</td>
<td>was aimed to supplement any info lost in this categorisation.

Limitations identified by the review team
Small sample size

Reliable power calculation not possible

Results only applicable to women with stress-related symptoms

Participants had to be on sick leave to be eligible for the study, but results indicate that 43% of the control group and 24% of the intervention group were working at baseline before the intervention began.

Other comments
All participants were screened and chosen by an employee of the Social Insurance Office. For the comparison group, participants were identified from a neighbouring district and matched for</td>
</tr>
</table>

				specific diagnosis, age (+-5 years), family situation (marital status and number of children), profession and duration of sick leave.

	baseline	12 month	p-value	Effect size (Cohen's d)
Work engagement (%)	21	71	<0.001	1.5
Sick leave degree (%)	79	30	<0.001	1.5
WRS mean(SD)	4.2 (0.4)	4.2 (0.5)	0.394	0
WEIS-SR mean(SD)	3.8 (0.7)	4.2 (0.6)	0.001	0.75

For the intervention group, more months on sick leave prior to starting the intervention was the only predictor of being less engaged in paid work (r_s = -0.42; p=0.006) and being on greater proportion of sick leave (r_s = 0.38; p=0.012) after 12 months.
Having a college education had a positive influence on WRS (p=0.049) and WEIS-SR scores (p=0.031). Older age was also associated with a more positive WEIS-SR score (r_s = 0.52; 0=0.002).

For the control group, having previous work rehabilitation was identified as a predictor for both engagement in paid work and being on sick leave. For those who had previously had work rehabilitation, work engagement has higher and sick leave was lower at 12 month follow-up than those who had no work rehabilitation experience (work engagement: 89% vs 61%, p=0.037; sick leave 34% vs 66%, p = 0.037).
None of the baseline variables could predict WRS but higher anxiety and depression score could predict more negative WEIS-SR scores (r_s = -0.41; 0=0.025).

Analysis:

Repeated measures MANCOVA was used, with RTW as categorical variable and length of previous sick leave and self-esteem scores as covariates. Polynomial contrasts used to identify any differing trends between the measurement points. T-tests for

			dependant samples were used to investigate further changes in RTW and sick leave over time in the two groups.	

Detaille et al 2013

Study details	Population	Intervention/comparator	Results	Notes
Study Detaille et al 2013 **Quality score** **+** **Study type** RCT **Location and setting** The Netherlands **Study aims** To investigate the effect of a Self-Management Program for workers with a chronic disease. **Length of follow up** 8 months **Source of funding**	**Number of participants** 104 participants were randomly placed in one of both groups. Of the participants 11 refused to participate in the program and dropped out of the study before the intervention started. The final study population consisted of 79 participants. **Intervention:** n=57 (44 available for final analysis) **Control:** n=47 (35 available for final analysis) **Participant characteristics** Participants recruited through departments of Human Resource Management from companies and practices of general practitioners and occupational health services in regions of Arnhem and Nijmegen in the Netherlands. Also through several advertisements placed in regional newspapers. 8 % were women, the mean age was 48 years and 25 % of the total population had more than one chronic disease. No significant differences were found between the 2 groups on demographic or baseline outcome measures. **Dominant chronic disease** | **N (%)**	**Intervention:** Self-Management Program Course **Comparator:** Usual care. Not further described. The course consists of six weekly sessions, each two and a half hours. Week: 1 Introduction: Importance of physical exercise; Inventory of problems encountered at work by the chronic disease; Introduction to coping with symptoms by using guided imagery and the importance of physical exercise ;How to make an action plan. Week 2: Coping with pain, fatigue and stress at work When do stress, pain and fatigue interfere with the ability to work? How can one deal with stress, pain or fatigue (at work)? Breathing exercises and cognitive symptom management. Week 3 Importance of healthy nutrition: Problems encountered at work; Introduction to healthy nutrition; Introduction to the model of work load and work capacity; Solutions at the workplace. Week 4 Communication techniques at the workplace: Communication with supervisor and colleagues about the problems encountered at work; Communication with family and	**Outcomes** Self-efficacy at work Attitude towards self-management at work (importance and enjoyment) Job satisfaction and intention to change job Mental and physical health **Results** *Unadjusted analyses:* On the scale self-efficacy at work, both groups improved after 8-months, the intervention group slightly more but this was not significant. No significant difference was found between the intervention group and the control group after 8 months on the scale attitude towards self-management at work (importance). Both groups deteriorated on the physical health scale but improved at 8 months. There was no significant difference. *Adjusted analyses:* Attitude towards self-management at work (enjoyment) improved significantly (p = 0.030) for the intervention group compared to the control group.	**Limitations identified by the author** Large number of outcome variables were tested in a small group. Not powered on all the predictor outcomes and the effect sizes could not be calculated for all the primary outcome measures, but were estimated based on similar studies using the same primary outcome. The limited number of participants in the experiment may have led to a type 2 error (false negative) for the outcome physical health quality. Short term follow-up (8 months). A longer follow-up period may have resulted in a clearer evaluation of the program effectiveness. **Limitations identified by the review team** Issues of applicability arise due to the following author's statement, that the intervention: "is intended for (lay) trainers who have

	<table><tr><td>Neoplasms</td><td>9 (11%)</td></tr><tr><td>Endocrine, nutritional and metabolic</td><td>13 (6%)</td></tr><tr><td>Respiratory system</td><td>19 (24%)</td></tr><tr><td>Digestive system</td><td>6 (8%)</td></tr><tr><td>MSK and connective tissue</td><td>25 (32%)</td></tr><tr><td>Other (infectious diseases, diseases, of the nervous system, the ear, the circulatory system, the skin)</td><td>7 (9%)</td></tr><tr><td>**Total**</td><td>**79 (100%)**</td></tr></table> **Inclusion criteria** A diagnosed chronic somatic disease like rheumatoid arthritis or diabetes mellitus, having a paid job at the moment of the course, encountering problems at work because of the disease and motivation to follow the course. **Exclusion criteria** Predominantly psychiatric conditions, being more than 3 months totally absent from work or fully work-disabled.	friends about the problems encountered at work Week 5 Working with occupational health professionals Working together with occupational health professionals and HRM advisors at work. Week 6 Plans for the future: What has been learned and accomplished the past 6 weeks? Formulating long-term plans.	Intervention group: *estimated marginal mean:* 17.4; Standard Error (SE): 2.5; CI: 12.5–22.3 Control group*: estimated marginal means:* 10.3; SE: 2.4; CI: 5.4–15.1 No other direct intervention effect on the primary outcomes was found after adjusting for the same variables. Physical health improved for the intervention group but the results were not significant (p = 0.052). No other significant results were found for other outcomes. **Analysis** A multivariate analysis was carried out to compare the estimated marginal means of the intervention and control group after 8 months adjusted for age, gender, education and baseline score.	completed the Master trainers program at Stanford University. The original CDSMP design is a high feasible, low-cost program which can be implemented in almost every setting. The only boundary limits for the program are: two trainers (one must be a master trainer educated at Stanford University and the other must have received a leaders training by the master trainer), inset time approximately 5 h per trainer per session (training plus preparation time.)” **Other comments** N/A .

Largerveld et al 2012

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Lagerveld et al 2012

Quality score
+
Study type
Quasi-experimental trial

Location and setting
Mental health centres in the Netherlands.

Study aims
Evaluate the effectiveness and cost effectiveness of work-focussed CBT (W-CBT) on return to work for employees on sick leave with common mental disorders, compared with regular CBT.

Length of follow up
12 months

Source of funding</td>
<td>Number of participants:
Total n = 168
W-CBT = 89
CBT = 79

Participant characteristics:
The W-CBT group had a mean (SD) age of 40.2 (9.6), 54% female. The CBT group had a mean (SD) age of 41.3 (10.4), 67% female.

Participants in each group were comparable on the following disorder and treatment characteristics: adjustment disorder (CBT, 62%; W-CBT, 72%); anxiety (CBT, 15%; W-CBT, 12%), depression (CBT, 18%, W-CBT, 16%); other mental disorders (CBT, 5%; W-CBT, 0%), as well as mean scores on the following scales: DASS stress, SCL90 depression, SCL90 anxiety, MBI emotional exhaustion.

In terms of work characteristics, participants were comparable for mean weekly contracted working hours, mean weeks of sick leave (CBT, 9.4 (8.2); W-CBT, 8.8 (5.0)) and mean work resumption.</td>
<td>Intervention:
W-CBT – up to 12 sessions of standard CBT with an added module of focussing on work and RTW. Specific work-related homework exercises/interventions were set (e.g. RTW plan). Regular CBT exercises were framed in the work context.

1st session: work-related explanation of and perspective on the symptoms was given
2nd session: job characteristics were inventoried and a problem analysis of the work situation was made.
3rd session: an elaborate, graduate RTW plan was drafted by therapist and employee.
4th and following sessions: RTW was evaluated with encouragement for employees to resume work. Relapse prevention was discussed. Employees encouraged to discuss plans with occupational physician and employer

Psychologists received training on a group course (2 x 1.5 hour sessions)</td>
<td>Outcomes:
Return to work (RTW) outcomes: <u>duration of full RTW</u> (length of time in calendar days from the start of treatment until full RTW), <u>partial RTW</u> (length of time between the start of treatment and the first partial increase in working hours), <u>number of return to work steps</u> (changes in hours worked from start of treatment to full RTW), <u>RTW relapses</u> (decrease in weekly work hours owing to mental health problems), <u>percentage of work resumption</u> (as a percentage of contracted hours)
Secondary outcomes: <u>Stress</u> (DASS-21 scale), <u>emotional exhaustion</u> (Maslach Burnout Inventory); both measured at baseline, 3+6+12 month's follow-up. <u>Depression and anxiety</u> (SCL-90) measured at baseline and 3+6 months.

<u>Cost effectiveness</u>: average costs of each intervention to the employer were estimated based on wages paid during the treatment period until full RTW (direct cost). In Western European countries, 1 day of sickness absence costs an employer approx. 160 Euro in wages. Authors calculated the difference in working days (not calendar days) until full RTW between treatment conditions based on contract hours. Per intervention group these working days were multiplied by 160 Euro, and divided by the number of participants per group to estimate the average costs per employee in each group.

Results

RTW outcomes
<table>
<tr><td></td><td>CBT</td><td>W-CBT</td></tr>
<tr><td></td><td>Mean (SD), median, (95% CI)</td><td>Mean (SD),median, (95% CI)</td></tr>
<tr><td>% full RTW at 3 months*</td><td>21%</td><td>36%</td></tr>
<tr><td>% full RTW at 6 months*</td><td>55%</td><td>73%</td></tr>
<tr><td>% full RTW</td><td>91%</td><td>96%</td></tr>
</table>
</td>
<td>Limitations identified by the author:
Not randomised, although group allocation was not based on individuals, but by health centre. Participants were assigned to health centres based on the proximity to their home address.

Substantial drop-out for the mental health measures (52% with missing questionnaires) linked to a few specific variable that were controlled for – but could still cause bias.

No info gathered on psychological wellbeing beyond 1 year so cannot draw conclusions on treatment of these conditions.

Limited info on treatment integrity. But data that was collected indicates</td>
</tr>
</table>

Not stated	Employees in the CBT group spent statistically significant less time on a waiting list before the start of treatment (4.4 weeks vs. 5.9; F(1, 157) 11.53, p < .01) than those in the W-CBT condition. The control condition had statistically significantly fewer married or cohabiting clients (67% vs. 86%; _x^2 = 8.27, p _ .01). Both variables were adjusted for in the analysis. **Inclusion criteria** Employees on sick leave (100% absent at the onset of their absenteeism and not fully returned to work at start of treatment) due to common mental disorder (as defined by DSM-IV). **Exclusion criteria** Employees with severe mental health disorders	consisting of a lecture and an interactive discussion, as well as a meeting with a clinical psychologist from the research team every 6 weeks. **Comparator** Standard CBT consisting of up to 12 sessions. CBT performed by therapists according to validated protocol – focusses on identification of the problem and on the reduction of symptoms. 6 disorder-specific sessions followed by optional modules that are chosen in dialogue with the employee – these could be related to work issues.	<table><tr><td>at 12 months</td><td></td><td></td></tr><tr><td>No of steps to full RTW*</td><td>2.94(1.53), 3, (2.58-3.31)</td><td>4.26 (2.29), 4, (3.75-4.78)</td></tr><tr><td>Days until partial RTW*</td><td>59.46(64.34), 38, (43.8-75)</td><td>38.06(45.03), 26, (28.1-48.0)</td></tr><tr><td>Days until full RTW*</td><td>175.18(109.14), 165, (149.5-200.8)</td><td>136.55(93.34), 100, (115.4-157.7)</td></tr></table>*Significant difference p<0.05 level W-CBT group had a greater chance of full (HR 1.56, p < .05, SE .19) and partial RTW (HR 1.59, p < .05, SE .20), indicating a shorter duration until both full and partial RTW in the W-CBT group. <u>RTW steps</u>: W-CBT group used significantly more steps to full RTW (2.94 vs 4.26; *F* (1, 147) = 16.72, p<.01), indicating a more gradual RTW process. <u>RTW relapses</u>: W-CBT group experienced relapses more often after full RTW, but this difference not significant (χ^2=2.64, p = 0.1) <u>Secondary outcomes:</u> All mental health problems revealed a decrease over time (but still higher than the general healthy population) indicated by a negative linear time component in each outcome (p<.05, z scores varied between 4.87 and 10.5) but there was no difference between groups for any measure. (no p values provided) <u>Cost effectiveness</u>: For companies that pay a wage to absent and non-productive employees, W-CBT had financial advantages. Employers of CBT group individuals paid an average of €16,727 (£13148.85) in wages per employee during entire the sick leave period from the start of the intervention until full RTW, whereas employers in the W-CBT group paid €13,085 (£10285.92) (€3,642 or £2862.93 difference). This implies a 20% cost reduction for employers whose employees receive W-CBT. **Analysis** For RTW data, Cox regression was used for the survival analysis. For the mental health measures, multilevel analysis was used for the nested data (levels were repeated measures, individuals and therapists).	W-CBT group had more work elements than the CBT group. **Limitations identified by the review team** No power calculation Those in the CBT group could request that they had a work focus to some of their sessions – no data on how often this occurred. **Other comments** none

Workplace health: support for employees with disabilities and long-term conditions

Lexis et al 2011

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/ comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Lexis et al 2011

Quality score
+

Study type
RCT

Location and setting
Employees of a large banking company in the Netherlands

Study aims
To test the effectiveness of a CBT/PST intervention for employees at risk of sickness absence and with mild to severe depressive complaints on the prevention of future long-term sickness absence and major depression.

Length of follow up</td>
<td>Number of participants:
Total n = 139
Intervention (I) = 69
Control (C) = 70

Participant characteristics:
Participants were comparable on age and gender (I, 42% male, mean(SD) age 48.41 (8.68); C, 43% male, mean(SD) age 47.07 (9.49)); proportion with presence of long-term illness (I, 59.1%; C, 51.5%); depressive complaints in the HAD-D score (I, mean(SD) 10.45(2.67); C, 9.97(2.34)); risk of sickness absence measured by Balansmeter (I, mean(SD) 40.79(27.85); C (35.34(25.47)).

Participants in the intervention group had higher BDI scores than the control group (I, mean (SD) 17.03(9.56); C, 14.84(8.11)) and higher BSI scores (I, mean (SD) 40.79(27.85); C, 35.34 (25.47)). P values on these differences not provided.</td>
<td>Intervention:
Psychological treatment based on principles of problem solving therapy (PST) and cognitive behavioural therapy (CBT). Carried out by 10 psychologists who received 2 days training before the study started along with a 1-day booster session during the study.
Consisted of 7 sessions, 45 minutes each based on the major steps of PST with CBT principles applied throughout. The seventh session consisted of an evaluation session, where the psychologist and employee decided whether the participant had recovered or whether they were ready to move onto the next stage of the intervention known as the ‘specific stage’ – the intervention could be extended for a maximum of 5 sessions. In the specific stage, the employee could</td>
<td>Outcomes:
<u>Sickness absence duration (in calendar days)</u> – data from registers from 2 months after employees received the screening questionnaire until 18-months follow-up. <u>Long-term sickness absence</u> defined as longer than 28 consecutive days off.
<u>Depressive complaints</u> – measured at baseline by the HAD-D scale and at 6 and 12 months follow-up by the Beck Depression Inventory-II (BDI-II).
<u>Self-rated health</u> – Short form health survey (SF-36), Brief symptom Inventory (BSI), short version of the symptom checklist 90 (SCL-90) for a measurement of psychological distress, and scores of the HAD-D at 6 and 12 month follow-up.
<u>Work characteristics –</u> Job content questionnaire used to measure psychological job demands, decision latitude, and social support at work. Additional data on job insecurity and commitment were gathered with questions adapted from the questionnaire on experience and evaluation of work (VBBA)

<u>Results –</u> ITT analysis, unless otherwise stated

<u>Sickness absence duration</u>:

Participants in the intervention group had a statistically significantly shorter duration of sickness absence at 12 months follow up when compared to the control group. Whilst duration of sickness absence at 18 months was still shorter in the intervention group, the difference was no longer statistically significant.
There were no other statistically significant differences in sickness absence outcomes between the two groups.
<table>
<tr><th></th><th>Intervention</th><th>Control</th><th>β, unless stated RR or HR (95% CI)</th><th>P value</th></tr>
<tr><td colspan="5">12 month follow-up</td></tr>
<tr><td>At least one time on sick leave (% yes)</td><td>81.2</td><td>48 (68.6)</td><td>RR 1.18 (0.97 to 1.44)</td><td>0.118</td></tr>
<tr><td>Total duration (calendar days) mean(SD)/median</td><td>27.48 (44.74) /11.00</td><td>50.83 (75.75) /15.00</td><td>-0.62 (-1.12 to -0.11)</td><td>0.017</td></tr>
<tr><td>Frequency, mean (SD)/median</td><td>2.34 (1.61) /2.00</td><td>2.35 (1.78) /2.00</td><td>-0.01 (-0.28 to 0.26)</td><td>0.963</td></tr>
<tr><td>Time to onset of 1st Sick leave (calendar days), mean(SD)</td><td>151.38 (136.99)</td><td>187.37 (146.42)</td><td>HR 1.35 (0.92 to 1.99)</td><td>0.129</td></tr>
<tr><td colspan="5">18 month follow-up</td></tr>
<tr><td>At least one time on sick leave (% yes)</td><td>62 (89.9)</td><td>56 (80.0)</td><td>RR 1.12 (0.98 to 1.29)</td><td>0.154</td></tr>
<tr><td>Total duration (calendar days) mean(SD)/median</td><td>45.03 (76.59) /20.50</td><td>62.57 (81.89) /25.50</td><td>-0.33 (-0.78 to 0.12)</td><td>0.15</td></tr>
</table>
</td>
<td>Limitations identified by the author:
- Cut-off point of the Balansmeter screening tool was adapted to a cut-off point with greater overlap with concepts for risk of future sickness absence. Therefore not based on validated cut-off. Indicates risk of selection bias.
- Different scales used for depressive complaints (HAD-D and BDI-II) show differing results, suggesting one is unreliable.
- Participants not blinded
- Only 38 out of 69 employees completed the intervention which could have affected questionnaire results. Sickness absence data was complete as taken from register.</td>
</tr>
</table>

Follow-up questionnaires on depression and secondary outcomes were sent at 6 and 12 months. Sick leave absence data taken at 12 and 18 months follow-up.

Source of funding

The Netherlands Organisation for Health Research and Development, Capri School of Public Health and Primary Care, The Occupational Health Services 'Beter'

Some patients were receiving 'co-interventions' for depressive complaints alongside the study (e.g. GP guidance, psychiatrist). No significant or clinically relevant differences were found between I and C at baseline, 6 months and 12 month follow-up.

Inclusion criteria
Screening measures:
- Risk of sickness absence as measured using the Balansmeter (validated). Cut off points were as follows: women, 87.9% specificity and 52% sensitivity; for men 87.8% specificity and 65.1% sensitivity.
- Depressive complaints as measured by the depression sub-scale on the Hospital Anxiety and Depression Scale (HAD-D). Participants were included if they had a score of 8 or higher on the HAD-D (indicated mild to severe depressive complaints).

No other inclusion criteria given.

Exclusion criteria
Being (fully or partially) absent from work, pregnant or on

indicate the subject to focus on during the sessions, such as training of social skills or cognitive restructuring. Homework assignments were given at the end of each session.

Comparator:
Care as usual (CAU) from the occupational health services. When the employee asks for help, CAU includes consultation with an occupational physician, and referral to other services if needed. If employee is on sickness absence, CAU includes social medical counselling.

Frequency, mean (SD)/median	2.97 (2.09) /2.00	2.93 (2.17) /2.00	0.01 (-0.24 to 0.67)	0.918
Time to onset of 1st Sick leave (calendar days), mean(SD)	177.87 (184.21)	231.19 (206.57)	HR 1.34 (0.93 to 1.93)	0.117
Participants with sickness absence spell(s) >28 calendar days (% yes)				
12 month follow-up	13%	17%	RR 0.54 (0.26 to 1.12)	0.127
18 month follow-up	20.3%	31.4%	RR 0.65 (0.36 to 1.16)	0.175

RR, relative risk ratio for dichotomous variables; HR, hazard ratio for time to onset of first sickness spell

Depressive complaints and psychological distress

At 6 and 12 month follow up the intervention group experienced statistically significant improvements in depression scores as measured by the BDI-II and HAD –D. They also experienced statistically significant improvements in psychological distress scores as measured by the BSI.

	Intervention	Control	β, (95% CI)	P value
BDI-II, mean (SD)				
Change after 6 months	-4.41 (7.00)	0.92 (7.06)	-5.08 (-7.91 to -2.25)	0.001
Change after 12 months	-3.79 (8.45)	2.09 (9.51)	-5.40 (-9.12 to -1.68)	0.005
HAD-D, mean (SD)				
Change after 6 months	-2.91 (3.67)	-1.45 (3.06)	-1.38 (-2.74 to -0.02)	0.046
Change after12 months	-3.24 (4.50)	-0.38 (3.91)	-2.62 (-4.41 to -0.83)	0.005
BSI, mean (SD)				
Change after 6 months	-9.71 (18.12)	4.55 (17.33)	-13.88 (-21.72 to -6.04)	0.001
Change after12 months	-9.32 (25.39)	6.51 (15.69)	-15.69 (-25.11 to -6.26)	0.001

Secondary outcomes: No differences were found over time for both groups on self-rated health and work characteristics (results not reported)

Analysis:
ITT analysis used (per protocol analysis also performed and any differences in significance are highlighted above). For sickness absence outcomes and frequency, Poisson regression analysis was used to estimate the efficacy of the intervention. Risk

Limitations identified by the review team

Other comments
Intervention was specifically developed for the target population by four experts in the field of psychology.

Intervention was delivered by 10 psychologists from a company that regularly provided psychological healthcare for the banking company in this study.

Power calculation based on the main outcome measure of sickness absence duration – using data from the Maastricht Cohort Study which showed that 60% of employees with psychological complaints were absent for at least 2 weeks in 12 months – assumption was the intervention would reduce this to 35%. With power of 80% and taking into account 15%

	pregnancy/maternity leave or receiving treatment by a psychologist/ psychiatrist, at the time of completing the screening questionnaire.		ratios were calculated for dichotomous outcomes. Linear regression analysis was used for continuous outcomes, adjusted for baseline differences. Multivariate Cox regression analysis was used to test differences in time to onset of the1st sickness absence. Clinically meaningful changes on the BDI-II were determined by calculating the Reliable Change Index as developed by Jacobson and Truax. Chi-square tests were used to test frequency differences in reliable and clinically significant change. For the per-protocol analyses, outcomes were compared between those employees who received at least one treatment session and the control group. All analyses were performed using SPSS version 15.0, Stata statistical software package 8.0 and SAS.	attrition, final sample size was 136.

Wolever et al 2012 #2

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Wolever et al 2012#2
Quality score
+
Study type
RCT

Location and setting
Workplace, USA
Study aims
1) Evaluate the viability and proof of concept for two mind-body workplace stress reduction programmes (1 x therapeutic yoga-based; 1 x mindfulness-based interventions);
2) Evaluate 2 delivery venues of the mindfulness-based interventions (online vs. in-persons)
Length of follow up
Approx. 12 weeks (within 2 weeks of the end</td>
<td>Number of participants:
Total n = 239
Control = 53
Mindfulness = 96
Yoga = 90

Participant characteristics:
<table>
<tr><th></th><th>control</th><th>Mindful</th><th>yoga</th></tr>
<tr><td>Gender (%male)</td><td>18.9</td><td>22.9</td><td>26.7</td></tr>
<tr><td>Race (% white)</td><td>71.7</td><td>85.4</td><td>74.4</td></tr>
<tr><td>Age (M/SD)</td><td>42.7 (9.7)</td><td>44.3 (9.4)</td><td>41.6 (10.1)</td></tr>
<tr><td>PSS (M/SD)</td><td>23.6 (3.7)</td><td>24.7 (3.5)</td><td>24.9 (4.0)</td></tr>
<tr><td>WLQ Productivity loss</td><td>5.7 (4.6)</td><td>5.5 (4.3)</td><td>4.9 (3.6)</td></tr>
<tr><td>Current pain</td><td>1.5 (1.8)</td><td>1.8 (2.2)</td><td>2.2 (2.4)</td></tr>
<tr><td>Average pain</td><td>2.2 (2.1)</td><td>2.5 (2.2)</td><td>2.6 (2.1)</td></tr>
<tr><td>Worst pain</td><td>3.6 (3.3)</td><td>4.1 (3.0)</td><td>4.5 (3.0)</td></tr>
</table>
Inclusion criteria:
A score of ≥16 on Perceived stress scale questionnaire

Exclusion criteria:
Arrhythmia require medication or pace maker; pregnancy; heavy smoking (one + pack a day) or nicotine use (1 stick of 2mg nicotine gum); medications/illicit drugs that impacts heart rate; any major medical</td>
<td>All participants were screened using PSS
Intervention:
1) Viniyoga stress reduction programme therapeutic yoga worksite stress reduction programme; Lasting 12 wks with 1 x 1hr sessions/week: progressively introduction of ‘tools’ to manage stress (postures ‘asanas’; breathing techniques, guided relaxation, mental techniques, education on home practice). Taught by AVI-trained instructor – offered in worksites + instructional handouts (home practices and yoga work breaks).
2)* Mindfulness delivered face-to-face in classrooms: Lasting 12wks – 1hr sessions (+2hr mindfulness practice intensive at wk 10) - based on principles/practices of mindfulness meditation – mindfulness practices that target work-related stress, work-life balance and self-care (relatively brief 5-15min) designed to be delivered at work +</td>
<td>Outcomes:
<u>Primary:</u>
Perceived stress (10 item perceived stress scale)
<u>Secondary:</u>
Sleep quality (PSQI – Pittsburgh Sleep Quality Index)
Mood (CES-D: Centre for Epidemiological Studies Depression Scale)
pain levels (0-10 current, average and worse – pain numerical rating scales)
work productivity (WLQ – Work Limitations Questionnaire)
mindfulness (CAMS-R: Cognitive and Affective Mindfulness Scale-Revised)
Biological indicators (blood pressure; breathing rate; heart rate variability)
Analysis
Only ITT analysis results reported here for the purposes of this review.
ANCOVA - Observed significant Group x time interaction between the control, mindfulness and yoga groups for :

Perceived stress: F (2, 233) = 8.89, p<0.01, η^2 = 0.07;
Sleep quality: F (2, 233) = 3.03, p<0.05, η^2 = 0.03
CAMS-R: F (2, 233) = 2.51, p=0.08, η^2 = 0.2
Current pain: F (2, 233) = 3.56, p<0.05, η^2 =0.03
Breathing rate: F (2, 233) = 3.02, p<0.05, η^2 =0.03
HRV Coherence ratio: F (2, 233) = 15.86, p<0.001, η^2 =0.12

But not for workplace productivity index or depressive symptoms
ANCOVA – group differences for outcomes for observed significant omnibus F test (post-hoc):
Mindfulness vs. control:

Decrease in perceived stress: F (1, 144) = 21.31, P<0.01, η^2 =0.13

</td>
<td>Limitations identified by the author:
Lack of power to detect differences in productivity
No power calculation
Study undertaken during restructure and job eliminations
Seven different measures of HRV utilised
Limitations identified by the review team
Due to attrition in the mindfulness online vs face to face comparison they were combined – essentially 2 different intervention formats – this increased findings for CAMS-R mindfulness form non-significant (p=0.08) to significance (p<0.01)

Other comments</td>
</tr>
</table>

of the 12-week intervention period) **Source of funding** Aetna Inc and eMindful Inc. Lead authors have an investment in eMindful and Aetna Inc.	condition or psychological disorder; any significant current/previous yoga/meditation experience (several times per week or more than 2 days in last 5 years)	handouts for home and office use **3)*** Mindfulness delivered remotely (online virtual classroom) Lasting 12 wks with 1 x 1hr sessions/week + 2hr mindfulness practice intensive at wk 10 ****due to differences in baseline demographics and outcome measures the 'mindfulness intervention' (2 and 3) were combined in the analysis*** **Comparator** (n=53)**:** Assessment only with no stress management intervention. Provided list of resources available to all employers of the national insurance carrier (fitness programmes; EAP; behavioural health services for depressions, chair massage; wellness coach opportunities)	• Decreases in sleep difficulty: F (1, 144) = 5.17, $p<0.05$, $\eta^2 = 0.04$ • CAMS-R: F(1, 144) = 5.75, $p<0.05$, $\eta^2 = 0.04$ • Greater increases in HRV: F(1, 144) = 4.25, $p<0.05$, $\eta^2 = 0.03$ Yoga vs control • Decreases in perceived stress: F (1, 137) = 8.79, $p<0.1$, $\eta^2 = 0.06$ • Decreases in sleep difficulties: F (1, 137) = 5.94, $p<0.05$, $\eta^2 = 0.04$ • Greater increases in HRV (*from pre-intervention baseline*): F (1, 137) = 29.77, $p<0.001$, $\eta^2 = 0.18$ • Less current pain: F (1, 137) = 6.51, $p<0.01$, $\eta^2 = 0.05$ Mindfulness vs. yoga groups: • No observed significant differences across outcomes Repeated-measures MANCOVAs to measure group differences over time for pain and heart rate variability: • Group x time interaction for HRV: Wilks's $\lambda = 0.85$, $F(6, 462) = 6.70$, $p<0.001$, $\eta 2 = 0.08$ Repeated measures ANCOVA: mindfulness online vs mindfulness in-person (controlling for ethnicity, race, income level): • HRV: F (1, 91) = 3.91, $p<0.05$, $\eta^2 = 0.04$ • Online showed greater increases in HRV coherence	Participants received $75 + $75 gift care to massage therapy studio Half participants in the yoga group (2/4 classes) received a DVD to support home practice – no difference between groups with and without DVD so groups combined for further analysis. - Wolever et al #1 refers to the yoga intervention - Wolever et al #2 refers to the mindfulness intervention

Workplace health: support for employees with disabilities and long-term conditions

Phillips et al 2012

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation:
Phillips et al 2012

Quality score
+
Study type
Cohort

Location and setting
UK, NHS physiotherapy

Study aims
Cost and feasibility evaluation of the programme pilot addressing sickness absence due to MSD

Length of follow up
3 months

Source of funding

The academic institutions received an educational grant from the Welsh Assembly Government to</td>
<td>Number of participants:
@baseline n=486
@3m =199

Participant characteristics:
<table>
<tr><td>Sex m/f (%)</td><td>175/306 (36/63)</td></tr>
<tr><td colspan="2">Work situation</td></tr>
<tr><td>Usual hours and duties</td><td>n=344 (72.3%)</td></tr>
<tr><td>Usual hours but not usual duties</td><td>n=44 (9.2%)</td></tr>
<tr><td>Usual duties not usual hours</td><td>n=11 (2.3%)</td></tr>
<tr><td>Usual hours but help needed</td><td>69 (14.5%)</td></tr>
<tr><td>Not worked during treatment</td><td>8 (1.7%)</td></tr>
<tr><td>Missing</td><td>10 (2.1)</td></tr>
<tr><td>Age (M/SD)</td><td>43.10 (10.45)</td></tr>
<tr><td>Pain duration (Months)</td><td>56.12 (91.1)</td></tr>
</table>
</td>
<td>Intervention:
Three tiered self-referral Occupational Health Physiotherapy Pilot Project (OHPPP) comprising: 1.) telephone advice and triage, 2.) face-to-face physiotherapy assessment and treatment if required, and 3.) workplace assessment and a return-to-work facilitation package as appropriate

Comparator: n/a</td>
<td>Outcomes:
Days sickness absence – authors do not state whether this is self-report or from a register
Self-reported work performance – authors do not state how this is assessed

Pain Catastrophising Scale
Fear Avoidance Beliefs Questionnaire (including work and physical activity subscales) [16]
Location specific pain measures (Roland Morris; DASH [arm, shoulder and hand]; Neck Disability; Lower extremity)
Health related quality of life measures: EQ-5D [quality of life]; SF-12 [including mental and physical health subscales]; GHQ [psychological distress]
Analysis:
<table>
<tr><td>Variable</td><td>Baseline</td><td>End of treatment</td><td>Follow-up</td></tr>
<tr><td>Pain intensity VAS</td><td>10.54 (9.4)</td><td>7.42 (8.5)***</td><td>6.91 (9.4)***</td></tr>
<tr><td>GHQ</td><td>12.95 (6.1)</td><td>9.76 (4.6)***</td><td>10.11 (5.7)***</td></tr>
<tr><td>SF-12 mental health</td><td>52.32 (11.2)</td><td>55.52 (8.5)***</td><td>55.81 (8.5)***</td></tr>
<tr><td>SF-12 physical health</td><td>42.18 (8.5)</td><td>48.86 (7.2)***</td><td>50.97 (7.5)***</td></tr>
<tr><td>EQ-5D</td><td>0.66 (0.2)</td><td>0.82 (0.2)***</td><td>0.82 (0.2)***</td></tr>
<tr><td colspan="4">Yellow flags (Measures of psychosocial risk factors)</td></tr>
<tr><td>Pain Catastrophizing</td><td>10.54 (9.41)</td><td>7.42 (8.54)***</td><td>6.91 (9.4)***</td></tr>
<tr><td>Fear and avoidance - work</td><td>9.79 (9.5)</td><td>7.92 (8.3)***</td><td>8.18 (8.6)***</td></tr>
<tr><td>Fear and avoidance - physical activity</td><td>11.81 (6.4)</td><td>8.31 (6.5)***</td><td>7.63 (6.0)***</td></tr>
<tr><td colspan="4">Work-related</td></tr>
<tr><td>Sickness absence</td><td>4.6 (12.6)</td><td>2.82 (11.4)*</td><td>1.45 (9.7)*</td></tr>
<tr><td>Work performance</td><td>75.9 (19.6)</td><td>82.1 (16.2)***</td><td>87.8 (13.2)***</td></tr>
</table>
</td>
<td>Limitations identified by the author:
Study design limitation – statistical effects could be due to something other than the intervention
Low level of employer and service user engagement
Low level of follow-up compliance
Limitations identified by the review team
no comparator group

- risk of selection bias as sample was self-selecting

Other comments

Due to the small number of participants receiving telephone advice only, analysis on pre- to post-change in outcome variables was restricted to those</td>
</tr>
</table>

conduct this pilot study	**Inclusion criteria:** **Exclusion criteria:** Not reported		Observed Statistical difference from baseline scores *p<0.05; **p<0.01;***p<0.001 **<u>Multivariate regression for associations with sickness absence and work performance at end of treatment and follow up</u>**: Days sickness absence: At end of treatment (F = 3.06, df 17, 222, p < 0.001, Adjusted R^2 = 12.6%) and at 3 month follow up (F = 3.31, df 17, 151, p < 0.001, Adjusted R^2 = 18.9%), Work performance: At end of treatment (F = 7.40, df 17, 220, p < 0.001, Adjusted R^2 = 31.5%) and 3 month follow up (F = 4.43, df 17, 154, p < 0.001, Adjusted R2 = 25.4%) **Statistical significant differences at end of treatment observed for**: <u>Days sickness absence in the last 6m</u>: Baseline • Age: B = -0.12 (95%CI -0.24 to -0.01; p<0.05) • SF-12PCS (Physical): B = -0.27 (95%CI -0.44 to -0.10; p<0.01) • OREBRO: B = 0.08 (95%CI 0.001 to 0.15; p<0.05) <u>Work performance (last 30 days):</u> Baseline: • SF-12PCS (Physical): B = 0.32 (95%CI 0.06 to 0.58; p<0.05) Current status: • SF-12PCS (Physical): B = 0.85 (95%CI 0.55 to 1.15; p<0.001) **Statistically significant differences at 3m follow-up:** <u>Days sickness absence in the last 6m:</u> Baseline • Pain VAS: B = -0.21 (95%CI -0.41 to -0.01; p<0.05) Current status • SF-12PCS (Physical): B = -0.35 (95%CI -0.58 to -0.11; p<0.01) <u>Work performance (last 30 days)</u> Current status: • SF-12PCS (Physical): B = 0.53 (95%CI 0.22 to 0.84; p<0.01)	who had received face to face treatment (n = 486). 264 (54.3%) were retained at end of treatment and 199 (40.9%) and 3 month follow up - how the researchers assessed work-related outcomes is unclear

Workplace health: support for employees with disabilities and long-term conditions

McCluskey et al 2006

Study details	Population	Intervention/comparator	Results	Notes

Full citation
McCluskey et al 2006
Quality score
-
Study type
nRCT

Location and setting
Five manufacturing sites of a large pharmaceutical company; United Kingdom
Study aims:
To investigate the implementation of a guidelines-based intervention (early contact of absentees; addressing psychosocial obstacles; offering temporary modified work; communicating among the players), and to determine whether this is effective for reducing return-to-work times and duration of future absence
Length of follow up
12m

Source of funding

Number of participants: n = 304
5 sites (3 control [n= 214] – geographically close to each other, 2 experimental [n=192])
Participant characteristics:
The 5 sites were selected because these workers had similar job type (mostly manual workers) and had similar absence rates due to MSD (~12%). No differences in age and gender of workers. Authors do not report any further details on participant characteristics.

Inclusion criteria:
At assessment: MSDs (back/neck pain with/without referred limb symptoms; shoulder/ elbow/ wrist/hand symptoms)

Exclusion criteria: serious underlying pathology

Intervention: occupational health nurses (OHNs) to identify and contact workers at the start of absence, and invite them to come into the occupational health department to discuss their condition; the OHNs were trained to deliver 'interventions' using a case-management approach over a period of 4 weeks (included education about pain and pain mechanisms, tackling negative beliefs and attitudes, and reinforcing evidence-based messages and advice (e.g. importance of keeping active and early RTW), and they were provided with a manual and checklists to facilitate delivery of the protocol);
Intervention comprised: 1) Psychosocial assessment [series of 'stem questions', asked in order to elicit responses that were indicative of psychosocial risk -technique broadly based on cognitive-behavioural principles + educational booklets targeting unhelpful beliefs were also provided to the workers] ;
2) Modified work in order to facilitate early work-return - only to be offered if deemed essential, and

Outcomes:
1) RTW time (duration of the index spell of absence)
2) work retention (duration of subsequent absences due to MSD during 12m follow up)
Analysis: Split into 2 experimental groups E1 and E2:

	E1	**E2**
Total n	486	949
n on sick leave	81	223
n who received the intervention as intended (whilst absent)	46	8
n who received the intervention after RTW	14	31

As stated by authors, the analysis included all workers who took sick leave due to MSDs during the recruitment period, irrespective of whether they were contacted for, or participated in, the experimental intervention.
When comparing the two experimental sites in terms of RTW, the analysis involved all workers who were 'offered' the intervention whilst absent at both sites, irrespective of take-up.

For work retention: 17% of each of E1 and the control group, and 22% of E2, took initial absence and then went on to take future absence after the intervention period.
Results:
RTW times for workers on sick leave during the intervention period:

	n	Mean RTW time (SD) in days	Difference in means (compared to control)
E1	81	6.5 (9.4)	-4.3 (95% CI 1.1 to 7.4) p=0.009
E2	223	9.3 (14.4)	-1.5 (95% CI -4.5 to1.6) p = ns
Control	214	10.8 (17.8)	

Work retention: No observed significant difference:

	n	Mean future absence (SD) in days	Difference in means (compared to control)
E1	14	13 (18.2)	-12.1 days (95% CI -2.7 to 26.9);

Limitations identified by the author:
Post hoc analysis revealed protocol wasn't being followed in E2 (second experimental site) – significant delay in contact time ($p<0.001$)
Differential application of the eligibility criteria at E2
Lack of blinding and randomisation

Limitations identified by the review team
The observed effect in E1 (per protocol) cannot be attributed to any specific aspect of the multicomponent intervention

The participant flow through the study was difficult to follow – there appears to be a risk of selection bias due the methodological issues in recruitment and efforts to try and rectify this.

funded by the Health & Safety Executive (contract No. 3970/R55.084)		restricted to a max. 2 weeks – if full work not resumed participant referred to physio or GP; 3) liaison between OHN and other players – GP's regrading 'unnecessary sickness certification and OHN management of participants in the workplace; Team leaders to discuss RTW/ work-retention plans + identified participant issues with job demands and possible work modification needs **Comparator:** management as usual continued; workers absent due to MSDs would be seen by the OHN only on RTW, or were contacted after being absent for a considerable period of time, meaning there were no attempts at an early RTW - modified work was a possible component of usual management at the control sites, it was without clear criteria for implementation or temporal restriction	E2	47	20.4 (27.5)	-4.7 (95% CI -20.6 to 11.3),	**Other comments** Inconsistences in the narrative and the tables for example total numbers in each sample arm, some issues with total sample in E1; the breakdown of participants (fig 1) is very difficult to understand; unclear if there were 2 or 3 control sites? Where protocol was followed (E1) there appears to be an effect on RTW No power calculation but the reviewers assume that due to the protocol not being carried out as planned and also to low numbers on sick leave, this study may not be powered sufficiently to detect any meaningful effect of the intervention.
			Control	37	25.1 (33.4)		

Lander et al 2009

Study details	Population	Intervention/comparator	Results	Notes
Full citation Lander et al 2009 **Quality score** - **Study type** Controlled before and after **Location and setting** Denmark **Study aims** Evaluate the effectiveness of a psycho-educative intervention (with social worker advice and support) on return to work for employees on sick leave with stress related disorders. **Length of follow up** 68 weeks **Source of funding**	**Number of participants**: Intervention = 72 Control = 89 **Participant characteristics:** The intervention and control group showed no differences in sociodemographic characteristics (although no formal statistical comparison was reported). Mean age (SD) ([I] 42.9 (8.6); [C] 43.1 (8.4)), percentage female ([I] 80.6%; [C] 83.2), percentage unskilled or skilled workers ([I] 59.3; [C] 41.7), percentage middle or high educated workers ([I] 41.7. [C] 47.2), percentage with partner ([I] 59.7; [C] 97.2), Danish Nationality ([I] 97.2, [C] 94.4). Sick leave for both groups was around 3-7% in the preceding 3 years before study. **Inclusion criteria** **-** employees on sick leave with self-reported emotional distress **Exclusion criteria** - those with severe mental health disorders - drug or alcohol abuse	**Intervention:** 2 components: - Individual consultations with one of 5 trained psychologists. Focus was on activating and supporting the employees efforts to adopt a problem-solving approach to problems - Social worker from the Department of Occupational Medicine was available to provide advice and support e.g. on legal matters, ways to resume work. The also provided support to families, facilitated contacts with work places and participated in meetings with employers. Number of sessions varied between each participant and was dependent on how fast the employee returned to work. **Comparator** Care as usual.	**Outcomes** Time to RTW: calculated from the day where the Department of Occupational Medicine received the referral (for control group, first day of sick leave). RTW was classed as full return to work or transfer from public health-related benefits to labour-market-related benefits. **Results** For the intervention group, the median number of consultations with the psychologist and social worker was 5.3 times (range 1-11). The median duration of treatment lasted 156 days (range 4-347). There was no significant difference between groups for time to RTW outcome in the 68 week follow-up period (HR = 0.84, 95% CI = 0.60 to 1.19). **Analysis** Survival analysis with RTW data used Kaplan-Meier and Cox regression.	**Limitations identified by the author:** No baseline information taken from the control group about condition or any medical history. Only indicator of stress is a self-report reason for sick-leave. Group differences in symptom severity could affect the results. **Limitations identified by the review team** - No randomisation - No allocation concealment and it is unclear whether the researchers were blind to allocation at analysis phase - No knowledge of the control group receiving treatment elsewhere - No information on drop-out rate for the intervention - No power calculation reported so it is not clear whether the sample size was large enough to see an effect of the intervention – this could be why the researchers found no effect (rather than the intervention being ineffective). Conclusion may be misleading **Other comments**

	- long-term sick leave defined as absence from work for longer than 4 weeks during the previous 6 months			none

Workplace health: support for employees with disabilities and long-term conditions

Appendix 3c: Evidence Tables review 3 section 4.3 of report

Allaire et al 2005

Study details	Population	Intervention/comparator	Results	Notes
Study Allaire et al 2005 **Quality score** ++ **Study type** RCT **Location and setting** Massachusetts, USA. **Study aims** To test the hypothesis that individuals with arthritis or another chronic rheumatic disease receiving a vocational rehabilitation interventions group would experience less job loss than those in the control group. Also to test the hypothesis that satisfaction with the intervention would be high. **Length of follow up** 48 months	**Number of participants:** 242 participants. Intervention group n=122 Comparison group n=120 **Participant characteristics** The mean age of participants was 49.49 years (SD = 9.19, range = 24-66); 197 (81%) were women, and 224 (93%) were White. One hundred fifty, seven (65%) had more than a high school education, while 80 (33%) had professional or managerial occupations. The mean functional limitation score of participants was 0.54 (SD = 0.43) which is in the mild limitation range for persons with rheumatoid arthritis (range was 0-1.70). The experimental and control groups did not differ on these characteristics, **Inclusion criteria** Employed persons with rheumatoid arthritis, knee osteoarthritis, systemic lupus erythematosus, ankylosing spondylitis, or psoriatic arthritis who were at risk for job loss.	**Intervention:** Vocational rehabilitation (VR) job retention intervention. **Comparator:** Written materials delivered by mail. The intervention had three components: (a) identification of work barriers and solutions, (b) vocational counselling and guidance, and (c) education and self-advocacy. Barriers in the workplace, in commuting, and in the individual's home were identified and prioritized. The counsellor then suggested potential solutions and discussed their feasibility with participants, and an action plan drawn up. Where the participant desired, a job evaluation of barriers was conducted in the workplace and, counsellors could contact an employer on a participant's behalf. Counsellor and participant also evaluated the individual's long' term job person match in light of the impact of his or her rheumatic disease. If problems were foreseen, possible job alternatives, requirements, and relevant resources were identified so the individual could begin the process of changing job or career , In the education and self, advocacy component, the counsellors provided participants with information about their disability, related employment legal rights and responsibilities, such as the employee's responsibility to request accommodation when needed and	**Outcomes:** Time to job loss: permanent Time to job loss: temporary Overall satisfaction with intervention, including helpfulness of intervention, and whether participants would pay for this intervention themselves. **Results** There were 73 permanent or temporary job loss events in the full sample over 48 months of follow-up: Intervention group n =25, control group n =48 - 49% (CI 17-69%) reduction in the number of permanent and temporary job losses when compared to the control group This difference was significant (p=0.007). , Permanent job losses : Intervention group n =12, control group n=22 Temporary job losses: Intervention group n=13, control group n=26. These differences were not significant. Satisfaction data were available for 116 experimental group participants and 114 in the control group. The majority of experimental group responses were concentrated at the high end of the 1 to 10 scales, indicating high satisfaction and helpfulness, whereas control group responses are more spread out, indicating greater variability in satisfaction and helpfulness. The median scores of the intervention group were 10.0 (interquartile range 1.0) for satisfaction and the control group was 8.0. The median scores of the	**Limitations identified by the author** Limitations on the, generalizability of the results due to USA location. Although the study location was economically diverse, the effect of economic conditions was not tested, since randomization was stratified by locale within the area. **Limitations identified by the review team** Sample was predominantly white and female. There may be issues regarding generalisation of findings beyond this group. **Other comments** N/A .

Source of funding Not outlined	**Exclusion criteria** Plans to retire or move from the area within the following 2 years.	guidance regarding disclosure issues. They also conducted a skill training exercise with participants to increase their ability to request a job accommodation in an appropriate manner. Finally, counsellors gave participants copies of pamphlets and flyers about how to manage health-related employment problems and available resources and discussed the information with them. This intervention was delivered by one of two rehabilitation counsellors employed by the study. The two meetings lasted approximately 1.5 hours. Additional time was available if desired. For most participants the intervention was completed within 5 months the longest being 9 months. Control Group Intervention. Participants assigned to the control group received copies of the same pamphlets and flyers about how to manage health, related employment problems and available resources that the intervention group received. These were mailed to control participants' home addresses within 1 month after randomization, and these mailed materials were the only intervention the control group received.	intervention group were 9.0 (interquartile range 1.0) for helpfulness and the control group was 8.0. (Interquartile range 2.0) for helpfulness. Both these outcomes significantly favoured the interventions group ($p<0.001$) 81% of the intervention group were willing to pay for the intervention compared to 52% of the control group.	

Workplace health: support for employees with disabilities and long-term conditions

Bevis et al 2014

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Study
Bevis et al 2014
Quality score
-
Study type
BA

Location and setting
Major employer, Orlando, Florida. USA

Study aims
To evaluate a 12-month wellness program for employees with type 2 diabetes or pre-diabetes.

For the purposes of this evidence review, only data on the participants' with confirmed diagnosis of diabetes type 2 are included here. The 2 groups received substantially different interventions and authors presented data separately.

Length of follow up
12 months</td>
<td>Number of participants
N=155,
Participant characteristics
For participants with T2 diabetes: The average was 53, 56% were male. Their mean BMI was 34.1.
For participants with pre-diabetes: The average age was 50, 74% were male. Their mean BMI 38.2.
Inclusion criteria
For employees with diabetes: 12 months' continuous employment before entry; age 18 years or more; fasting serum glucose 126 mg/dL or more, and a score of 10 or greater on an American Diabetes Association Health Risk Assessment questionnaire.
For employees with prediabetes: 12 months' continuous employment before entry; age 18 years or more; fasting serum glucose 100 to 125 mg/dL; and a score of 10 or greater on an American Diabetes Association Health Risk questionnaire.

Exclusion criteria
For both groups criteria for exclusion at the time of entry were: pregnant or lactating</td>
<td>Intervention
Welcome meeting:

Participants were made aware of existing employer-supported health programs, including: on-campus network of walking trails and biking paths; a non-campus fitness centre; a program for healthy daily eating at the employee cafeterias; two weight loss programmes; and a variety of smoking cessation programmes.

Free glucometers and glucometer test strips were made available for participants with diabetes.

12 month programme:
During the first quarter of the programme a series of required four 2-hour educational sessions were given by a certified diabetes nurse educator; attendance at two sessions was required for retention in the program. These were (1) about diabetes: introduction ;(2) about diabetes: lifestyle changes for good health; (3) diabetes: nutrition; and (4) diabetes: a healthy daily management program.

Quarterly: biometric measurements, fasting blood testing, and urine testing. Attendance at all quarterly "draws" was required for retention in the</td>
<td>This was a before and after study, so participants were their own control group.

Outcomes
Blood and BMI measures
Presenteeism

Results
Significant improvements for HBA1C, BMI and presenteeism at 12 months were found.

1.Employees with diabetes (n=151) Changes in laboratory indices and biometrics, 0-12 months
<table>
<tr><th>Index</th><th>Descriptor</th><th>0 mo</th><th>6 mos</th><th>12 mos</th><th colspan="2">Paired t test</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>6 mos</td><td>12 mos</td></tr>
<tr><td>HbA1c, %</td><td>Median</td><td>7.50</td><td>6.70</td><td>7.15</td><td></td><td></td></tr>
<tr><td></td><td>Mean ± SD</td><td>8.02 ± 1.90</td><td>7.13 ± 1.43</td><td>7.48 ± 1.52</td><td></td><td></td></tr>
<tr><td></td><td>Paired difference*</td><td></td><td>-0.87 ± 1.75</td><td>-0.57 ± 1.41</td><td></td><td></td></tr>
<tr><td></td><td>95% CI</td><td></td><td>-1.15 to -0.59</td><td>-0.80 to -0.33</td><td><0.0001</td><td><0.0001</td></tr>
<tr><td>LDL cholesterol, mg/dL</td><td>Median</td><td>81.00</td><td>73.50</td><td>81.00</td><td></td><td></td></tr>
<tr><td></td><td>Mean ± SD</td><td>89.7 ± 33.3</td><td>84.8 ± 39.0</td><td>86.0 ± 31.7</td><td></td><td></td></tr>
</table>
</td>
<td>Limitations identified by the author
In accordance with the employer's intent, this workplace well- ness program was not designed or intended as a clinical trial, and so does not have a comparison group of employees with diabetes who were not offered participation in this program or were randomized to "nonparticipation." Although we cannot claim that the statistically significant reductions in blood HbA1c levels for employees with diabetes and in body mass index for employees with diabetes were causally related to our 12-month intervention, these favourable effects were coincident with the program</td>
</tr>
</table>

Source of funding
Unrestricted grants were provided to the Florida Health Care Coalition, which in turn executed contracts to the University of Florida, Florida Hospital Diabetes Institute, and Cognoscenti Health Institute as contracted Research Organizations. The unrestricted grants were obtained from the following entities: AstraZeneca, Merck, Daichi Sankyo, Novo Nordisk, Sanofi Aventis US, and Abbott Laboratories. These entities had no input in program design, execution, or evaluation. Their identity was unknown to the Contracted Research Organizations until completion of the program.

women (*n* = 0); a diagnosis of type 1 diabetes (*n* = 0); or any medical condition or hypercritical laboratory test than the clinical judgment of the University of Florida Division of Endocrinology, would make it unsuitable for inclusion into the study.

program. All laboratory and biometric testing results were communicated to the participating employee and their primary care physician. A critical part of this program, which was affirmed by participants at the end, was the telephonic and mailing notices, scheduling, and reminders of education sessions and quarterly laboratory draw events.

	Paired difference*		-3.2 ± 27.1	-3.5 ± 32.1		
	95% CI		-8.08 to 1.76	-8.73 to 1.72	0.2062	0.1877
Body mass index, kg/m²	Median	33.40	32.50	32.70		
	Mean ± SD	34.06 ± 6.82	33.53 ± 6.94	33.45 ± 7.10		
	Paired difference*		-0.62 ± 4.70	-0.62 ± 2.44		
	95% CI		-1.37 to 0.16	-1.02 to -0.22	0.1186	<0.005

*Paired difference compared with 0month; 95% confidence intervals apply to the paired difference; LDL, low-density lipoprotein; SD, standard deviation

2. Stanford presenteeism survey (SPS-6)[a]

	Diabetics
Total SPS score[b]	
Baseline, 0 mo	18.5 ± 3.9
Program end, 12 mos	24.8 ± 4.7
Change from 0 to 12 mos	6.3 ± 6.8*****
Change in scores, ordinal	
No change or decrease	24 (22%)
Increase of one to four points	18 (17%)
Increase of five to nine points	25 (23%)
Increase of ≥ 10 points	41 (38%)

Limitations identified by the review team
Non-randomised or controlled study.
With all the limitations of a single group pre-post test study.
Unclear whether improvements due to intervention effect or impact of access to employer supported health programs.
.

Other comments
N/A
.

			*p<0.0001	

Coole et al 2013

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Coole et al 2013

Quality score
-
Study type
RCT

Location and setting
Clinic, home or workplace.
UK

Study aims:
Feasibility and effectiveness of individual work support alongside group rehabilitation for employed patients with LBP
Length of follow up
6 months

Source of funding

Not outlined</td>
<td>Number of participants:
Allocated n= 59 (Control n=29, Intervention n=30)
Retained n=51
Available for analysis at 6m follow up n=38 (control n=19, intervention n=19)

Participant characteristics:
<table>
<tr><th></th><th>Con (n=23)</th><th>Int (n=28)</th></tr>
<tr><td>Gender (%male)</td><td>43% (n=10)</td><td>50% (n=14)</td></tr>
<tr><td>Age (m/SD)</td><td>48.3 (10.14)</td><td>41.46 (11.93)</td></tr>
<tr><td>Back pain history (Months) m/(SD)</td><td>88.43 (84.53)</td><td>88.04 (103.78)</td></tr>
<tr><td>Employment status due to LBP (n)</td><td></td><td></td></tr>
<tr><td>normal</td><td>13</td><td>11</td></tr>
<tr><td>adjusted</td><td>5</td><td>13</td></tr>
<tr><td>On sick leave</td><td>5</td><td>4</td></tr>
<tr><td>Days on leave for LBP in last 6m</td><td></td><td></td></tr>
<tr><td>None</td><td>13</td><td>13</td></tr>
<tr><td>1-29</td><td>5</td><td>8</td></tr>
<tr><td>30+</td><td>5</td><td>7</td></tr>
</table>
Inclusion criteria:</td>
<td>Intervention: 8 individually targeted and tailored vocational sessions: delivered by Occupational therapist. Consultations took place in an agreed location (e.g. workplace); 8 face-to-face contacts up 90mins (identification barriers to pain LBP management; work focused interventions; communication with employers and healthcare practitioners) + group rehabilitation for LBP (see comparator)
Comparator: Group rehabilitation only: multidisciplinary rehab focused on self-management of back pain – education and physical conditioning using cognitive behavioural approach. Delivered 2-3hrs/wk for 10 wks – participants could be referred for CBT/psychology</td>
<td>Outcomes:
Feasibility: recruitment, drop-out and loss to follow-up, content and delivery of intervention – reported descriptively
<u>Primary outcomes</u>:
Perceived workability (One scaled question from Work Ability Index; Graded Reduced Work Ability Scale)
Mood: Hospital Anxiety and Depression Scale
Disability: Roland and Morris Disability Questionnaire
Fear avoidance related to work (Fear-Avoidance Beliefs Questionnaire – work items)
Self-efficacy (Pain self-efficacy questionnaire)
Pain (Visual analogue scale)
Analysis –
Underpowered to show significant differences, significance of between group differences not reported.
At 6 month follow up:
“Better” outcomes for the intervention for the: One scaled question from work Ability Index
“Better” outcomes for the control for all other outcomes
<u>Feasibility outcomes:</u>
• Presence of alternative LBP services impacted recruitment and retention
• Some participants less concerned about their ability to work than others (altruistic motivation/oblige the clinician)
• Retention was 75%
• Individual work support provided a greater opportunity to apply treatment components to the work setting – allowing concerns about work to be address asap rather than waiting
• Flexibility in the delivery of individual support is required (location, time of day, duration)
• Where multidisciplinary group rehabilitation is provided – individual work support should be integrated within it</td>
<td>Limitations identified by the author:
Selection bias – patients only willing to participate (at work and take time out of work for treatment)
Limitations identified by the review team

Other comments:
Estimated sample recruitment requirements of 70 to get 50 (25 in each arm)

Only 8 participants received workplace visits.

High lost to follow up, missing outcome data not accounted for in the analysis</td>
</tr>
</table>

	Employed, expressed concern about ability to work due to LBP; offered group treatment by referring rehab team; read and write English **Exclusion criteria** None specified			

Workplace health: support for employees with disabilities and long-term conditions

van Oostrom et al 2010

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Van Oostrom 2010
Quality score
+

Study type
RCT

Location and setting
Amsterdam, Netherlands

Study aims
To evaluate the effectiveness of a participatory workplace intervention compared with usual care for sick-listed employees with distress for return to work (RTW) at 12 month follow-up.

Length of follow up
3, 6, 12 months

Source of funding
Linked studies</td>
<td>Number of participants:
Intervention group = 73
Control group = 72

Participant characteristics:
Table 1.
<table>
<tr><th>measure</th><th>I</th><th>C</th></tr>
<tr><td>Age</td><td>48.6 (7.7)</td><td>49.2 (8.6)</td></tr>
<tr><td>% male</td><td>76.7</td><td>80.6</td></tr>
<tr><td colspan="3">Sick leave characteristics</td></tr>
<tr><td>n (%) with <10 days</td><td>31 (42.5)</td><td>37 (51.4)</td></tr>
<tr><td>n (%) 11-30 days</td><td>23 (31.5)</td><td>21 (29.2)</td></tr>
<tr><td>n (%) >31 days</td><td>19 (26)</td><td>14 (19.4)</td></tr>
<tr><td colspan="3">RTW expectations</td></tr>
<tr><td>Within 1 month, n (%)</td><td>18 (25.4)</td><td>20 (27.8)</td></tr>
<tr><td>> 1 month, n (%)</td><td>53 (74.6)</td><td>52 (72.2)</td></tr>
<tr><td>Emotional exhaustion (0-6)</td><td>2.9 (1.7)</td><td>2.8 (1.6)</td></tr>
<tr><td>Deperson-alisation (0-6)</td><td>2.0 (1.3)</td><td>2.0 (1.2)</td></tr>
<tr><td>Personal accomplish-ment (0-6)</td><td>3.7 (1.0)</td><td>3.8 (1.0)</td></tr>
<tr><td>Distress (0-32)</td><td>20.7 (7.7)</td><td>19.8 (7.7)</td></tr>
<tr><td>Depression (0-12)</td><td>3.3 (3.7)</td><td>3.5 (3.6)</td></tr>
</table></td>
<td>Intervention:
Participatory workplace intervention 7 steps lasting approximately 6 weeks.

(1 week after randomisation and after consultation with the occupational physician)

Step 1: Employees referred to a RTW coordinator (company social worker or labour expert who had been trained in the intervention). (steps 2-4 happen 2 weeks after step 1)

Step 2: Meeting with RTW coordinator and employee where an inventory of RTW barriers are drawn up

Step 3: Meeting with RTW coordinator and employer where an inventory of RTW barriers are drawn up

Step 4: meeting with RTW coordinator, employee and employer where solutions are discussed and implementation preparation takes place.</td>
<td>Outcomes
Lasting RTW: duration of sick leave from distress (calendar days) from day randomised until full RTW for at least 4 weeks
Stress-related symptoms: measured by 4DSQ at baseline, 3, 6, 12 months
Results

<u>Lasting RTW:</u>
Table 2. cox proportional hazard models with the results of the crude and adjusted regression analyses
<table>
<tr><th></th><th>Intervention median days (IQR)</th><th>Control median days (IQR)</th><th>β coefficient (SE)</th><th>p, HR, (95% CI)</th></tr>
<tr><td>Crude</td><td>96 (52-193)</td><td>104 (52-195)</td><td>-0.01 (0.17)</td><td>0.95, 0.99 (0.70-1.39)</td></tr>
<tr><td>Adjusted regression analysis for RTW intentions*</td><td>55 (27-89)</td><td>120 (47-198)</td><td>0.72 (0.27)</td><td>0.01, 2.05 (1.22-3.45)</td></tr>
</table>
*employees who at baseline intended to RTW despite symptoms
Total number of days of sick leave in 12 month follow-up was 141 days in both groups, no significant difference between groups (p=0.88).
<u>Stress-related symptoms:</u>
Measures of distress, depression, anxiety and somatisation all improved over the 12 month follow-up period for both groups (p<0.001), but there was no significant difference between groups for any of these measures.
Analysis
For lasting RTW, cumulative incidence function and Cox proportional hazard model were applied. Shared-frailty procedure</td>
<td>Limitations identified by the author:
- main finding of intervention effect on those who had intention to return to work despite symptoms: this is based on post-hoc exploratory analysis so should be interpreted with caution.

- Behavioural determinants were measured by questions that were deduced from health promotion studies – therefore not validated for return to work context (did not incorporate timeframe of RTW)

- Usual care already involved making workplace accommodations and employers are legally obliged to make a RTW plan for employees

Limitations identified by the review team
- There are some slight differences in sick leave data at baseline but the authors do not state whether these were statistically significant.</td>
</tr>
</table>

van Oostrom 2008 van Oostrom 2009	<table><tr><td>Anxiety (0-24)</td><td>6.5 (6.0)</td><td>5.2 (5.1)</td></tr><tr><td>Somatisation (0-32)</td><td>12.8 (6.8)</td><td>12.9 (6.4)</td></tr></table> **Inclusion criteria** - employees on sick leave for 2-8 weeks - met distress criteria, measured by the 4DSQ questionnaire **Exclusion criteria** - conflict between employee and employer (legal) - working less than 12 hour week - pregnancy - any other episode of sick leave within 1 month before current episode - inability to complete questionnaire in Dutch	Step 5: Employee implements solutions. If required, the RTW coordinator plans a meeting in the workplace to advise the employee at work *(steps 6+7 happen 4 weeks after steps 2-4)* Step 6: RTW coordinator contacts the employer and employee to find out if solutions have been implemented. Final report drawn up by the RTW coordinator and assigns to occupational physician for further guidance. Step 7: follow-up with occupational physician **Comparator** Care as usual in Netherlands. Employer is obliged to start rehabilitation asap. Employee should visit the occupational physician who facilitates RTW via set guidelines	was used to account for clustering of employees within occupational physicians. An adjusted Cox regression analysis was performed with the following potential confounders: personal characteristics, job characteristics, sick-leave related characteristics and determinants of RTW. Differences in total days off sick during the follow-up period were analysed using Mann-Whitney U tests. For stress-related measures, linear mixed models were used to assess differences between groups. Baseline differences accounted for in the analysis.	Differences are accounted for in the analysis. - predominantly male sample, limits generalisability - ITT analysis used. However, 20 out of 73 employees did not receive the intervention for various reasons, whereas the control group only had 2 drop outs (out of 72). This loss to follow-up reduces the sample size to below the 144 required from the power calculation (even after 10% loss allowance). So it is possible this affects the reliability of results. Employees, occupational health physician and the researcher were not blind to allocation due to the nature of the intervention. But analysis was done blindly and primary outcomes were measured objectively. **Other comments** None

Karjalainen et al 2014

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/ comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Karjalainen et al 2004

Quality score
++
Study type
RCT

Location and setting
Finland
Study aims
To investigate the effectiveness of a physician/physiotherapist led intervention (with or without an added worksite visit) for employees with low back pain, on sickness absence and other clinical outcomes.
Length of follow up
3, 6, 12 and 24 months

Source of funding

Finnish Institute of Occupational Health.</td>
<td>Number of participants:
Mini intervention = 56 (data from this group not reported as no workplace element)
Worksite visit + mini intervention (I) = 51
Control (C) = 57

Participant characteristics:
<table>
<tr><th>measure</th><th>I</th><th>C</th></tr>
<tr><td>Age</td><td>44 (25-60)</td><td>43 (25-59)</td></tr>
<tr><td>% female</td><td>57</td><td>60</td></tr>
<tr><td>BMI</td><td>27 (18-45)</td><td>25 (20-53)</td></tr>
<tr><td>Health status good (%)</td><td>96</td><td>95</td></tr>
<tr><td>Pain intensity (0-10)</td><td>5.4 (1-10)</td><td>5.7 (1-10)</td></tr>
<tr><td>Sick leave days in past 3 months</td><td>14.7 (0-50)</td><td>15.0 (0-69)</td></tr>
<tr><td>Oswestry disability index (ODI)</td><td>33 (7-71)</td><td>34 (13-67)</td></tr>
<tr><td>HRQL</td><td>0.86 (0.7-0.99)</td><td>0.86 (0.7-0.98)</td></tr>
<tr><td>Risk of not recovering (0-10)</td><td>5.2 (0-10)</td><td>4.8 (0-10)</td></tr>
</table>
BMI = body mass index (kg/m^2); Health status was self-rated (%</td>
<td>Intervention:
- Initial interview and examination by physician (45 mins), where working conditions were discussed and results of examination explained to the employee. Then introduction to physiatrist and physiotherapist that confirmed the diagnosis and gave the employee further advice on staying active (15mins).

- session with physiotherapist (1.5 hours). Back-straining activities assessed and exercises advised.

- feedback from the sessions sent by the physician to the GP who then coordinated treatment

- worksite visit (75 mins) by the physiotherapist. This session was also attended by the</td>
<td>Relevant outcomes
- Back-pain related sick leave
- Self-rated pain intensity (scale 0-10)
- Frequency and bothersomeness of pain
- Interference of pain with daily life
- Oswestry disability index (ODI)
- Health related quality of life (HRQL)

Results
Loss to follow-up
Intervention: 3 months – 1 unreachable, 2 unresponsive; 6 months – 1 pregnant; 12 months – 1 deceased and 1 lost; 24 months n=49 (96%)
Control: 3 months – 1 withdrew; 6 months – 2 unresponsive; 24 months – 1 withdrew, 1 unreachable, 1 unresponsive. n=53 (93%)
<table>
<tr><th></th><th>Follow-up (mos)</th><th>I</th><th>C</th><th>W-I vs C*</th></tr>
<tr><td>Sick leave (mean (range)</td><td>24</td><td>45 (0-610)</td><td>62 (0-630)</td><td>p=0.133</td></tr>
<tr><td rowspan="4">Pain intensity</td><td>3</td><td>3.5 (0-10)</td><td>4.1 (0-9)</td><td rowspan="4">0.10 (-0.84-0.64), p=0.781</td></tr>
<tr><td>6</td><td>3.6 (0-8)</td><td>3.7 (0-10)</td></tr>
<tr><td>12</td><td>3.2 (0-9)</td><td>3.7 (0-10)</td></tr>
<tr><td>24</td><td>3.2 (0-9)</td><td>3.4 (0-9)</td></tr>
<tr><td rowspan="4">% w/ very or extremely bothersome pain in last week</td><td>3</td><td>35%</td><td>48%</td><td rowspan="4">0.71 (0.38-1.32) P=0.284</td></tr>
<tr><td>6</td><td>26%</td><td>34%</td></tr>
<tr><td>12</td><td>27%</td><td>29%</td></tr>
<tr><td>24</td><td>20%</td><td>29%</td></tr>
<tr><td rowspan="4">% experiencing daily symptoms</td><td>3</td><td>19%</td><td>38%</td><td rowspan="4">0.52 (0.26-1.02) P=0.059</td></tr>
<tr><td>6</td><td>18%</td><td>25%</td></tr>
<tr><td>12</td><td>8%</td><td>13%</td></tr>
<tr><td>24</td><td>16%</td><td>17%</td></tr>
<tr><td rowspan="4">% who have pain interference with daily life in last week</td><td>3</td><td>35%</td><td>48%</td><td rowspan="4">0.71 (0.38-1.32) P=0.284</td></tr>
<tr><td>6</td><td>26%</td><td>34%</td></tr>
<tr><td>12</td><td>27%</td><td>29%</td></tr>
<tr><td>24</td><td>20%</td><td>29%</td></tr>
</table></td>
<td>Limitations identified by the author:
None identified by the author
Limitations identified by the review team
- Due to the nature of the intervention, it was not possible to prevent knowledge of the intervention in for participants or physicians. Many outcomes were self-report questionnaires. The most relevant outcome for the purposes of this review is sick-leave data however, which is an objective measure.

Other comments</td>
</tr>
</table>

	rating 'very or quite good' for age); ODI expressed as means as percentage of maximum score; HRQL = health-related quality of life (scale of 0.00-1.00 where 1 is best possible quality of life); risk of not recovering (0 = best chance of recovering, 10 = highest risk of not recovering). **Inclusion criteria** - 25-60 year old employees with current daily low back pain (with or without sciatica) which had made working difficult for more than 4 weeks but less than 3 months. **Exclusion criteria** - employees with low back pain lasting longer than 3 months.	employer, employee, company nurse, and occupational physician. Additional advice was given if needed. Feedback was sent to GP and info on worksite visit was sent to company physician and GP. Employer was encouraged to continue liaising with company physicians. If employee was still on sick leave after 3 months, company physician was advised to refer the employee to the ORTON rehabilitation centre in Helsinki. **Control:** Care as usual. No examination or work visit but all participants (in all groups) given a leaflet on low back pain. Employees were free to seek their own treatment.	<table><tr><td rowspan="4">ODI</td><td>3</td><td>22 (0-78)</td><td>25 (0-76)</td><td rowspan="4">-0.42 (5.02-4.18) P=0.857</td></tr><tr><td>6</td><td>19 (0-53)</td><td>21 (0-51)</td></tr><tr><td>12</td><td>18 (0-62)</td><td>19 (0-51)</td></tr><tr><td>24</td><td>18 (0-60)</td><td>18 (0-58)</td></tr><tr><td rowspan="4">HRQL</td><td>3</td><td>0.888 (0.6-1.0)</td><td>0.870 (0.6-1)</td><td rowspan="4">0.003 (0.019-0.024) P=0.802</td></tr><tr><td>6</td><td>0.891 (0.6-1.0)</td><td>0.888 (0.7-1)</td></tr><tr><td>12</td><td>0.888 (0.6-1.0)</td><td>0.892 (0.7-1)</td></tr><tr><td>24</td><td>0.891 (0.49-1.0)</td><td>0.885 (0.6-1)</td></tr></table> **Reviewers assume that this is an F statistic though authors do not make clear.* **Analysis** ITT analysis used. Group comparisons analysed with time and baseline information in a mixed model. For binary responses, Generalised Estimating Equation method was used to analyse repeated measures data – mean response is modelled as a logistic regression model with the odds ratio as the effective measure.	

Workplace health: support for employees with disabilities and long-term conditions

Karlson et al 2010

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Karlson et al 2010
Quality score
+
Study type
Prospective controlled study

Location and setting
Employees in 2 Southern Counties of Sweden

Study aims
To evaluate the effect on return to work (RTW) of a work-place orientated intervention for employees on sick-leave for work-related burnout.

Length of follow up
1.5 years</td>
<td>Number of participants:
Intervention n = 74
Control n = 74

Participant characteristics:
Table 1. Intervention group only:
<table>
<tr><th>Measure</th><th>n(%)/ mean (SD)</th></tr>
<tr><td colspan="2">Diagnosis (n (%))</td></tr>
<tr><td>Exhaustion disorder only</td><td>28 (38)</td></tr>
<tr><td>Exhaustion + depression or anxiety</td><td>36 (49)</td></tr>
<tr><td>Exhaustion + somatic disease</td><td>2 (3)</td></tr>
<tr><td>No exhaustion disorder</td><td>8 (11)</td></tr>
<tr><td>Treatment</td><td></td></tr>
<tr><td>Antidepressants</td><td>19 (26)</td></tr>
<tr><td>Anxiolytics/sleeping pill</td><td>9 (12)</td></tr>
<tr><td>Somatic disorder medication</td><td>21 (28)</td></tr>
<tr><td>No medication</td><td>35 (47)</td></tr>
<tr><td>Psychotherapy</td><td>41 (56)</td></tr>
<tr><td>Physiotherapy</td><td>8 (11)</td></tr>
<tr><td>No treatment</td><td>21 (28)</td></tr>
<tr><td colspan="2">MBI-GS – mean (SD)</td></tr>
<tr><td>Exhaustion score</td><td>4.6 (1.2)</td></tr>
<tr><td>Cynicism score</td><td>2.7 (1.4)</td></tr>
</table>
</td>
<td>Intervention:
Screening (intervention group only):

- Questionnaire about work situation (QPSNordic), an interview about reasons why the employee is on sick-leave (work-related). (assuming the researchers carry out interview, not stated).

- 1 day examination: consenting employees took part in a 1-day examination at the Occupational and Environmental Medicine Clinic, Lund University Hospital. Carried out by senior physician, a psychologist and a social worker. Medical workup, lab tests and a structured interview in order to diagnose “exhaustion disorder”.

- Interview focussing on the course of events leading up to exhaustion and recorded employees perspective about what changes are needed for RTW.

- 2nd questionnaire on mental distress, depression and burnout.

1. An outline of the patient’s perspective was compiled using questionnaire and interview data from the screening.</td>
<td>Outcomes:
Sickness absence:

Sick leave post CDM: Sick leave data was then collected for 80 weeks after the CDM (i.e. week of CDM = “week 0”).

Degree of sick leave: categorised as 0, 25, 50, 75, or 100% of ordinary working time.

Results:
The development of sickness absence over time was different between groups (χ^2 (8) = 21.52, p = 0.006). Although RTW increased for both groups during 18 month follow-up, RTW patterns appeared more stable in the intervention group (linear contrast: χ^2 (1) = 26.07, p <0.0001) compared to the control (quadratic contrast: χ^2 (1) = 7.48, p = 0.006) which showed an increase and then a decrease in RTW.
Table 2. percentage (n) on sick leave by week and sick leave category (0, 25, 50, 75, 100%).
<table>
<tr><th>Group</th><th>0%</th><th>25%</th><th>50%</th><th>75%</th><th>100%</th><th>χ^2, P</th></tr>
<tr><td>W0

Control

IG</td><td>20.3 (15)

9.5 (7)</td><td>10.8 (8)

12.2 (9)</td><td>21.6 (16)

24.3 (18)</td><td>2.7 (2)

9.5 (7)</td><td>44.6 (33)

44.6 (33)</td><td>5.83, 0.22</td></tr>
<tr><td>W10

Control

IG</td><td>41.9 (31)

14.9 (11)</td><td>13.5 (10)

12.2 (9)</td><td>10.8 (8)

28.4 (21)</td><td>1.4 (1)

2.7 (2)</td><td>32.4 (24)

41.9 (31)</td><td>16.62, 0.001</td></tr>
<tr><td>W20

Control

IG</td><td>55.4 (41)</td><td>6.8 (5)</td><td>8.1 (6)</td><td>0 (0)</td><td>29.7 (22)</td><td>22.45, <0.001</td></tr>
</table>
</td>
<td>Limitations identified by the author:
- no baseline characteristics of the control group taken
Limitations identified by the review team
- No randomisation
- No power calculation reported
- Strong risk of selection bias as those in the control group were people who were uninterested in taking part in the study (whereas intervention group wanted the intervention) – possible intervention effects could therefore be due to self-selection.

Other comments

The control group consisted of those employees on sick-leave that had been identified by the Social Insurance office as eligible and approached by the researchers, but had</td>
</tr>
</table>

<table>
<tr>
<td>Source of funding

Swedish Council for for Working Life and Social Research and the Medical Faculty of Lund University, and the County Councils of Southern Sweden.</td>
<td>
<table>
<tr><td>Professional efficacy score</td><td>4.4 (1.1)</td></tr>
<tr><td colspan="2">SCL-90 – mean(SD)</td></tr>
<tr><td>Anxiety</td><td>1.7 (0.8)</td></tr>
<tr><td>Somatisation</td><td>1.3 (0.8)</td></tr>
<tr><td>Depression</td><td>2.0 (0.9)</td></tr>
<tr><td>BDI mean (SD)</td><td>19.3 (9.1)</td></tr>
<tr><td>Subscale (n(%))</td><td></td></tr>
<tr><td>Severe depression</td><td>10 (14)</td></tr>
<tr><td>Moderate depression</td><td>36 (49)</td></tr>
<tr><td>Slight depression</td><td>16 (22)</td></tr>
<tr><td>Minimal depression</td><td>12 (16)</td></tr>
</table>
Exhaustion disorder defined by the Swedish National Board of Health and Welfare Psychiatric diagnosis; MBI-GS = Maslach Burnout Inventory—general survey; SCL-90 = symptom Checklist 90; BDI = Beck Depression Inventory

Inclusion criteria
- employees on sick-leave at least half-time for 2-6 months from a previously healthy state
- ICD-10 diagnosis within the F43 category (reaction to severe stress, adjustment disorders) due to predominantly work-related stressors.

Exclusion criteria
</td>
<td>2. Employer (employee's nearest supervisor) was interviewed at the workplace by the research team about main causes of the employee's sick-leave and what changes might be necessary for RTW.

3. A 1.5 hour convergence dialogue meeting (CDM) with 2 research team members, employee and employer. Focus was on: agreements and disagreements between employer and employee, causes for sick-leave, changes for facilitating RTW, solutions and converging perspectives. At the end of the meeting, short- and long-term solutions were agreed and a summary of the results were sent to social insurance office, the employee and their doctor.

4. Half day seminar for employees. Lectures and group sessions (4-6 people) on the topic of work-related stress. Similar seminars held separately for employers. Authors do not report who ran these seminars or the location.
Comparator
TAU</td>
<td>
<table>
<tr><td></td><td>23.0 (17)</td><td>13.5 (10)</td><td>25.7 (19)</td><td>5.4 (4)</td><td>32.4 (24)</td><td></td></tr>
<tr><td>W30

Control

IG</td><td>51.4 (38)

28.4 (21)</td><td>6.8 (5)

14.9 (11)</td><td>10.8 (8)

24.3 (18)</td><td>0 (0)

6.8 (5)</td><td>31.1 (23)

25.7 (19)</td><td>16.38, 0.002</td></tr>
<tr><td>W40

Control

IG</td><td>56.8 (42)

41.9 (31)</td><td>6.8 (5)

10.8 (8)</td><td>6.8 (5)

20.3 (15)</td><td>1.4 (1)

4.1 (3)</td><td>28.4 (21)

23.0 (17)</td><td>8.77, 0.061</td></tr>
<tr><td>W50

Control

IG</td><td>56.8 (42)

44.6 (33)</td><td>5.4 (4)

13.5 (10)</td><td>8.1 (6)

16.2 (12)</td><td>1.4 (1)

5.4 (4)</td><td>28.4 (21)

20.3 (15)</td><td>8.45, 0.074</td></tr>
<tr><td>W60

Control

IG</td><td>64.9 (48)

54.1 (40)</td><td>8.1 (6)

10.8 (8)</td><td>5.4 (4)

10.8 (8)</td><td>1.4 (1)

6.8 (5)</td><td>20.3 (15)

17.6 (13)</td><td>5.16, 0.275</td></tr>
<tr><td>W70

Control

IG</td><td>62.2 (46)

56.8 (42)</td><td>4.1 (3)

8.1 (6)</td><td>6.8 (5)

16.2 (12)</td><td>0 (0)

2.7 (2)</td><td>27.0 (20)

16.2 (12)</td><td>8.06, 0.078</td></tr>
<tr><td>W80

Control

IG</td><td>63.5 (47)

63.5 (47)</td><td>4.1 (3)

6.8 (5)</td><td>5.4 (4)

16.2 (12)</td><td>0 (0)

2.7 (2)</td><td>27.0 (20)

10.8 (8)</td><td>11.64, 0.013</td></tr>
</table>
</td>
<td>declined participation in the study. Their sickness absence data was recorded over the duration of the study – they had the opportunity to decline sharing their data.

Controls were matched to the intervention group in terms of sick leave amounts prior to CDM as well as the amount of time the participant waited before CDM.</td>
</tr>
</table>

	- Employees on sick-leave related to private life stress - post-traumatic stress - sick-leave from conflicts or bullying at work		**Analysis:** RTW was dichotomised to 'yes' (at work for 25% or more) or 'no'. 80 week follow-up period divided into 9 levels (weeks 0-8). Omnibus test with RTW as dependant variable, group as between subjects' factor, and weeks (0-9) as repeated factor. Logit link function and auto regressive correlation matrix were used. For the repeated factor, polynomial contrasts were analysed.	

Workplace health: support for employees with disabilities and long-term conditions

Workplace health: support for employees with disabilities and long-term conditions

Bernaards et al 2007

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Bernaards et al 2007

Quality score
++

Study type
RCT

Location and setting
Computer workers from seven Dutch companies
Study aims:
RSI@Work: Assess work style intervention to reduce neck and upper limb symptoms in computer workers vs usual care

The study also assessed the added value of a lifestyle physical activity intervention in addition to a work style intervention.

Length of follow up
6m and 12m</td>
<td>Number of participants:
n=466
Intervention a: n=152
Control: n=158

Participant characteristics:
<table>
<tr><th></th><th>WS</th><th>UC</th></tr>
<tr><td>Gender (Male)</td><td>83/ 152</td><td>92/ 158</td></tr>
<tr><td>Age (M/SD)</td><td>43.8 (8.5)</td><td>44.4 (8.5)</td></tr>
<tr><td>Months since 1st symptom (med/IQR)</td><td>36 (18-60)</td><td>36 (17-60)</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>
Inclusion criteria:
Frequent or long-term neck and upper limb symptoms in the preceding six months and/or the last two weeks (chronic, recurrent and recent symptoms); computer work at least 3days/week for at least 3hrs/day; working contract until final follow-up; not under treatment for neck, shoulder, arms, wrists and/or hands; No non-work related or clear somatic diseases (RA, Carpal TS etc.); Sickness absence <50%</td>
<td>2 Intervention groups:
a) Work style (WS) group - six group meetings in a six month period that take place at the workplace, during work time, and under the supervision of a specially trained counsellor; standardised piloted protocols are used; 4/6 meetings are large group (1hrs duration) with 10 participants max – providing general information, raise awareness about work style and/or physical activity (PA); discuss and find solutions to general barriers RE behaviour change. 2/6 are small group meetings – provide tailored advice based on stages of change regarding work style and/or PA; solutions for individual barriers RE behaviour change are discussed.

Comparator:
Control: Usual care (UC) - Dutch guidelines for the occupational health management of workers with complaints in arm, shoulder and neck –</td>
<td>Outcomes:
<u>Primary:</u>
Degree of recovery via a 7-point scale (much worse to completely recovered)
Pain intensity via, (current pain, average pain and worst pain in the past four weeks), assessed using an 11-point numerical rating scale ranging from 0 "no pain" to 10 "worst pain ever"
Disability via 11-point rating: change in ability to work, Interference of pain on daily activities in the past 4 weeks via Von Korff scales
Number of days with neck and upper limb symptoms via Dutch musculoskeletal questionnaire
Number of months without neck and upper limb symptoms
<u>Secondary:</u>
Physical activity via Short Questionnaire to Access health enhancing physical activity
Body posture and workplace ergonomics during computer works (self-reported and observed)
Use of breaks and exercise reminder software (questionnaire)
Extrinsic effort and reward and need for control via short version of the Effort-Reward imbalance questionnaire
Phase of behavioural change with regard to physical activity and work style assessed with a questionnaire based on the Trans Theoretical model and the Precaution Adoption Process Model
Cardio respiratory fitness, estimated using the validated UKK walk test
Maximum grip strength, measured using the Jamar hand dynamometer
Health care use

Analysis:
<u>Recovery</u>: No significant difference from both interventions over UC
• WS vs. UC@6m:OR 1.99 (95%CI 0.93-4.29); @12m: OR 1.73 (95%CI 0.75-3.99)

<u>Disability at work</u>: No significant difference from both interventions over UC</td>
<td>Limitations identified by the author:
Participants allowed to visit doctor/physical therapist during the study
Limitations identified by the review team
None

Other comments

RSI@Work Based on theoretical models of behaviour change (TTM/PAPM)

RSI@Work is based on the control (Dutch guidelines) – differs by 3 aspects

Based on a ‘staged match approach’ given the variations between physical activity readiness and work style and the added differences in workplace difficult to apply – so the</td>
</tr>
</table>

Source of funding Not outlined **Linked studies:** Bernaards et al 2006 (protocol) Bernaards et al 2011 (cost effectiveness)	**Exclusion criteria**: Pregnant at start of the study;	continue to work but discontinue tasks that cause intense pain also includes: Therapies that activate work over physiotherapy; improvement in workplace + personalised interventions [ergonomics]; change work organisation and situations [stress];	• WS vs. UC @6M OR 0.70 (95%CI 0.33; 1.50); @12m OR 0.64 (95%CI 0.28; 1.47) <u>Current pain</u>: • WS vs. UC No significant difference@6m; @12m OR -0.645 (CI95% -1.24 to -0.05) p<0.05 <u>Worst pain</u>: • WS vs. UC No significant difference@6m; @12m OR -0.807 (CI95% -1.50 to -0.12) p<0.05 <u>Average pain:</u> • WS vs. UC No significant difference @6m; @12m OR -0.607 (95%CI -1.17 to -0.04) p<0.05 <u>Number of days with pain symptoms</u>: • Past 6m: no significant difference for WS vs. UC @6m or 12m • Past week: no significant difference for WS vs. UC @6m or 12m • Months without symptoms: no significant difference for WS vs. UC @6m or 12m <u>Analysis stratified by body region: mean difference (MD)</u> Neck/Shoulder: Current pain (MD), worst pain (MD), average pain (MD) and recovery (OR) • WS vs. UC: no significant difference @6m (current, worst, average pain); @6m OR 3.10 (95%CI 1.53 -6.29) p<0.05 [recovery]; @12m MD -0.66 (-1.26 to -0.06) p<0.05[current]; MD-1.02 (CI95% -1.76 to -0.29) p<0.05 [worst]; MD-0.86(95%CI -1.44 to -0.26) p<0.05 [average]; OR 2.94 (95% CI 1.31-6.58) p<0.05 Arm/wrist/hand WS vs. UC: no significant differences across all items <u>Secondary outcomes:</u> Self-report PA: no significant differences observed but an increase in total PA across all study groups Use of health care system: 38% (UC), 18% (WS) – The difference was significantly different (p<0.01) Individual actions to reduce neck and upper limb symptoms - Post 6m (*significant difference but significance not outlined*): • Ergonomic changes: WS 72.2%; UC 25.6% • Body posture and workplace adjustment: WS 57.9%; UC 24.1%	identification of 'stage of readiness' rather than a staged matched approach has been undertaken

			• Increase in PA at work: WS 23.3%; UC 12% • Increase in leisure time PA: WS 34.6%; UC 22.6% • Search information on work stress/work demands: WS 9.8%; UC 5.3%	

Baldwin et al 2011

Study	**Number of participants**	**Intervention / Comparison**	**Primary outcomes**	**Limitations identified by review team**
Baldwin et al 2012 **Quality score** + **Location and setting** USA **Study type** RCT **Study aims** Evaluate the long-term effects of a workplace ergonomic intervention for persons with rheumatoid arthritis or osteoarthritis vs. usual care (provision of only	89 total at baseline; 48 intervention and 41 control at baseline (n=89); 45 intervention and 35 at 12m (n=80); 42 intervention and 33 control at 24 m (n=75) **Participant characteristics** study sample (n=89) intervention group (40 female; 8 male); age: mean 49.54 +/- 7.63 (30-60); 93.8% white; 43.8% RA; 56.2% OA control group (37 female; 4 male); age: mean 51.7 +/- 6.4 (29-61); 95.1% white; 31.7% RA; 68.3% OA **Inclusion criteria**	Intervention: workplace ergonomic intervention. Individual workplace assessment resulting in an individual work plan to improve arthritis-related vocational difficulties. Two workplace-based sessions (2.5 hours) by occupation therapist with a background in arthritis care and ergonomics. Typical recommendations included methods to establish routines and workflow (body mechanics, exercises, workstation and equipment modification; person-specific recommendations). Follow-up call within a month regarding 'work plan' suitability and any additional required assistance. Also a Resource manual regarding arthritis self-management and work place ergonomics was provided Control: written educational materials - contacted by phone by the occupational therapist and provided the same resource manual regarding arthritis self-management and work place ergonomics	Employment satisfaction (job satisfaction survey); impact on arthritis on work performance, role score, pain, physical functioning (Arthritis Impact Measurement Scales [AIMS2]); psychological wellbeing (Brief Symptoms Inventory) **Secondary outcomes** Not outlined **Results** 75 (although only 73 have been tallied *see table 2*)/89 provided follow up data at 12m and 24m; Between group comparisons at 12m: no significant differences between intervention and control groups for Employment satisfaction (job satisfaction survey); impact on arthritis on work performance, role score, pain, physical functioning (Arthritis Impact Measurement Scales [AIMS2]);	- Two participants unaccounted for; - statistical difference in the intervention and control population at baseline for pain and physical symptoms of arthritis - not adjusted for in the analysis; - study outlines data collected at 3m and 6m but not outlined in the study **Limitations identified by author** - Drop out at follow up took participation in each arm below the 42 participants per group outlined by the power analysis - results should be treated with caution; - Sample mainly middle-aged women with high levels of education employed in mainly 'sedentary office roles -

written educational intervention) **Length of follow up** 12m and 24m - study outlines but does not report data collected at 3m and 6m **Source of funding** unclear - "supported by the National Institute on Disability and Rehabilitation Research of the US Department of Education"	Diagnosis of RA or OA confirmed by a physician; competitive full-time or part-time employment, aged between 18-61; no other significant medical or psychiatric histories **Exclusion criteria** not outlined specifically but assume not meeting the inclusion criteria		psychological wellbeing (Brief Symptoms Inventory) Between group difference comparisons at 24m: significant differences for role score ($p<0.03$) - intervention group reported less arthritis-related impact on vocational functioning - no other differences across other primary outcomes Within group differences: Intervention - significant improvement in physical symptoms at 12m ($P<0.04$) and 24m ($P<0.01$), pain at 12m ($P<0.01$) and 24m ($P<0.01$), Job satisfaction at 12m ($P<0.01$); Control - job satisfaction declines at 12m and 24m ($P<0.01$) and no other changes for other measures **Analysis** For baseline differences in continuous variables, Wilcoxon's rank sum test was used. For categorical variable, chi-square test was used. Non-parametric ANCOVA was performed for the between-group comparison of 12 and 24 month data, with baseline AIMS2 physical and symptom components used as covariates. The AIMS2 scores were normalised for this analysis.	impacts the external validity of the study's findings; - Relatively mild degree of work-place related disability in the 10 of the control and 10 of the intervention sample thus making it difficult to detect meaningful improvements - AIMS2 scores demonstrate statistical significance but the clinical significance is questionable; - sample had a median duration of arthritis of 5 years. Sample was self-selecting and indicating that the sample had a belief that employers would be supportive of workplace initiatives. - Control group had significantly better functioning at baseline **Other information** n/a

Anema et al 2007

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Anema et al 2007
Quality score
++
Study type
RCT

Location and setting
Occupational therapists practice and workplace.

Study aims
Workplace and graded activity interventions effect on time to RTW
Length of follow up
12, 26 and 52 weeks

Source of funding

Not outlined

Linked Studies:

Anema et al 2003 – Pilot study [Participant Ergonomics] – process, barriers and facilitators</td>
<td>Number of participants:
a) <8 weeks Ergonomics (96 vs. 100)
b)>8 weeks graded activity (55 vs. 57)

Participant characteristics:
Patient characteristics >2wks sick leave
<table>
<tr><td>Age</td><td>44 (8.6)*</td><td>41.2 (10.7)*</td></tr>
<tr><td>Gen. m/f</td><td>51/45*</td><td>33/67*</td></tr>
<tr><td>Pain</td><td>6.5 (1.7)</td><td>6.3 (1.7)</td></tr>
<tr><td>Func. status</td><td>14.9 (4.2)</td><td>13.8 (4.6)</td></tr>
<tr><td>Sick leave prior</td><td>20/76</td><td>35/65</td></tr>
</table>
*p<0.05

Patient characteristics >8wks sick leave
<table>
<tr><td>Age</td><td>41.3 (9.2)</td><td>43.4 (8.3)</td></tr>
<tr><td>Gen. m/f</td><td>19/36</td><td>26/31</td></tr>
<tr><td>Pain</td><td>6.6 (1.4)</td><td>6.7 (1.5)</td></tr>
<tr><td>Func. status</td><td>14.4 (4.5)</td><td>15.8 (1.5)</td></tr>
<tr><td>Sick leave prior</td><td>17/36</td><td>12/44</td></tr>
</table>
</td>
<td>Intervention:
a) <8weeks workplace intervention (ergonomics: assessment and modifications, case management) + usual care [average duration of 24 days (SD, 22 days) and started at 26 days (median; IRQ, 19–36 days) after the start of sick leave].
b) >8 weeks: graded activity : bi weekly 1 hr exercise sessions based on operant-conditioning principles +usual care [average frequency of 14.1 sessions (SD, 6.8) starting at 69 days (median; IRQ, 56–84 days) after the start of sick leave]
Comparator: Usual care as per Dutch occupational guideline on LBP:
a) worker visits OP's office at week 2 of sick leave due to LBP – patient history is made on pain, current and previous pain episodes etc.
b) possibly followed up by physical examination: function and restrictions test – OP judges obstacles for RTW e.g. inadequate sickness behaviour</td>
<td>Outcomes
Anema et al 2007:
Sick leave duration due to LBP (calendar days) from 1st day of sick leave to full RTW or equivalent for 4 weeks without partial or full dropout
Pain intensity (10-pt visual analogue scale (0 [no pain] -10 [very severe pain])
Functional status (Roland-Morris Disability questionnaire)
Anema et al 2003 (n=35): process and outcomes via questionnaire:
• Advised ergonomic solutions implemented@3m post sick leave (within or after 3m)
• Participant programme compliance (deviant/not deviant)
• Participant Programme satisfaction
• Ergonomist: factors that influenced application and implementation of programme

Analysis:
Anema et al 2007
<u>Workplace intervention (ergonomics) [WIE] :</u>
<u>RTW:</u>
Univariate analysis: time until RTW – WIE 77 days (median; IRQ, 56–126 days) vs. Usual care 104 days (median; IRQ, 56–166 days); log-rank test; p=0.02).
Cox regression analyses : WIE vs. usual care: HR [adjusted for graded activity, worker's functional status, and job control 1.7 (95% CI, 1.2–2.3, p=0.003)
Functional status and pain@12m: No statistically significant difference
<u>Graded activity [GA]:</u>
<u>RTW</u>
@26wks GA vs. UC: median number of days (IQR) 139 (69.0) vs. 111.0 (76.0) [Steenstra et al 2006]
ITT analysis: GA vs. UC: HR@12wks 0.52 (95%CI 0.32-0.86) p=0.01; HR@26wks 0.66 (0.40-1.10) p=0.11 [Steenstra et al 2006]
Univariate analysis: time until RTW – GA 144 days (median; IQR, 113–233 days) vs. Usual care 111 days (IQR, 74-153 days); log-rank test; p=0.030
Cox regression analysis: GA vs. Usual care: HR [adjusted for WIE, worker's functional status, and job control] 0.4 (95% CI, 0.3– 0.6, p<0.001),
Prior workplace intervention in the [8 wks prior to 'second' randomisation into graded activity]:</td>
<td>Limitations identified by the author:
Lack of blinding (patients and providers)
Difference at which the level of randomisation was undertaken at the two intervention points differed (WIE at the worker level GA at the OP level)
One intervention delivered before the other so comparison of WIE vs. GA not possible
Limitations identified by the review team
none

Other comments

Sample = 196 (just under 200 required to satisfy the power calculation to detect 20/30% difference in RTW rate (full return)

Interventions occur at different time points – analysis</td>
</tr>
</table>

Steenstra et al 2003 – controlled trial and cost effectiveness: design Steenstra et al 2006 – graded activity only Steenstra et al 2006a – economic evaluation	**Inclusion criteria:** nonspecific LBP; 8 full or partial sick leave due to nonspecific LBP lasting 2 to 6 weeks; age between 18 and 65 years; and able to give written informed consent and to complete written questionnaires in Dutch **Exclusion criteria** Low back pain due to specific causes, co-existing cardiovascular, psychiatric contraindications, juridical complications, pregnancy, and sick leave because of LBP less than 1month before the current episode of sick leave	c) Following interventions are promoted in case of LBP: • Education by OP • Advise by OP • GP etc. consulted RE curative treatment In the guideline a workplace visit by OT/ergonomist is optional – all guidelines outline 'stimulating physical activity' and 'counselling on good prognosis in low back pain in the 1st 6 wks; post 6wks exercise or manipulation is considered useful within an active approach	• Yes (n=53): UC vs GA - HR 0.39 (95%CI 0.19-0.81) p=0.01; in favour of UC • No (n=57): UC vs GA - HR 0.86 (0.40-1.84) p=0.69; in favour of UC Functional status: No statistically significant differen@12wks [**Steenstra et al 2006**]; @26wks; @12m Pain @26wks Pain HR 1.03 (95%CI 0.05-2.01) @12wks [**Steenstra et al 2006**] and @12m: No statistically significant difference **Combined intervention (WIE + GA)** RTW: Univariate analysis: no significant difference for time to RTW – WIE+GA 143 days (median; IQR, 108–250 days) vs. usual care 126 days (IQR, 83–171 days) (log-rank test; p=0.49). Cox regression analysis: no significant difference for WIE+GA vs. usual care: WIE+GA vs. usual care: HR [adjusted] 0.7 (95% CI, 0.3–1.2, p>0.05) Functional status and pain@12m: No statistically significant difference **Anema et al 2003**: 166 prioritised problems/risk classified into a) physical workload b) workstation/equipment design c) work design and organisation d) work stress c) other 270 ergonomic solutions proposed to employers (mean 7.9 solutions/case) categorised as: a) work design and organisation:58.9% b)hours adaption c) job design d) training e) supervision f) human support g) workplace/equipment design (35.9%) h) workplace design i) equipment design j) other Implementation of ergonomic solutions: 172 <3m and 58 > 3m; solutions work design and organisation were significantly (p<0.02) associated with planned short-term implementation; Implementation was significantly lower (p<0.001) in the industrial sector with significantly fewer solutions planned (60.5%) compared to the health care (78.8%) and service sector (76.2%); Planning a proposed solution in the short term and actual solution implementation were significantly associated (p<0.001) Significant relationship between ergonomists' satisfaction about the effectiveness of the intervention and compliance to the protocol (p<0.05) Ergonomist implementation barriers: technical/organisation difficulties (50%), workers physical disabilities (44.8%), high physical workload (34.5%), worker financial situation (26.7%); Ergonomists satisfaction median score – 7/10;	seeks to account for this. Single blinding (assessors) Findings from a post-hoc sub group analysis, have not been reported.

			Ergonomist 'motivating' elements of the process of participatory intervention: • making inventory of problems with worker (80%) with supervisor (60%), • making inventory of solutions with worker (73.3%) with supervisor (56.7%), • commitment to the prioritisation of ergonomic solutions of the worker (73.3%) and of the supervisor (56.7%) **Steenstra et al 2009**: sub-group analysis to detect possible moderators of treatment – focused on WIE. This was a post-hoc analysis and as such the findings of this sub-group analysis should be interpreted with caution. Effect of WIE with GA, Functional status, age and previous sick leave are introduced to the model: WIE vs. Usual care: WIE was significantly more effective in workers aged 44 years or more (p=0.02). Age <44 (N=101): HR: 1.2 95%CI 0.8-1.8; ge ≥44 (N=91): HR 2.5 95%CI 1.6-4.1 No sick leave in previous year (n=123) HR 1.3 95%CI 0.9-2.0 Sick leave in previous year (n=68) HR 2.8 95%CI 1.7-4.9 No modifying effect from gender, pain score at baseline, functional status at baseline and heavy work Adding both 'age' and 'sick leave' (both significant interaction terms) to the model resulted in significant associations for both interaction terms: • Age*workplace intervention (p=0.02) • Earlier sick leave*workplace intervention (p=0.04)	

Esmaeilzadeh et al 2014

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Esmaeilzadeh et al 2014

Quality score
+
Study type
RCT

Location and setting
Employees of the Istanbul Faculty of Medicine
Study aims
To determine the effects of an ergonomic intervention on work-related upper extremity musculoskeletal disorders (WUEMSDs) among computer workers.

Length of follow up
6 months

Source of funding</td>
<td>Number of participants:
Intervention = 35
Control = 34

Participant characteristics:
<table>
<tr><th></th><th>I (mean, SD)</th><th>C (mean, SD)</th></tr>
<tr><td>Female (n, %)</td><td>26, 74.3%</td><td>23, 67.6%</td></tr>
<tr><td>Age (yr)</td><td>35.8 (6.5)</td><td>35 (7.8)</td></tr>
<tr><td>Job tenure (yr),</td><td>7.5 (0.8)</td><td>8 (1.4)</td></tr>
<tr><td>Weekly computer use (hr)</td><td>29.3 (6.1)</td><td>29.5 (6.5)</td></tr>
<tr><td>Weekly computer use at home (hr)</td><td>2.8 (6.8)</td><td>4.7 (7.8)</td></tr>
<tr><td>BMI (kg/m^2)</td><td>24.2 (3.8)</td><td>35.0 (7.8)</td></tr>
<tr><td colspan="3">Job type</td></tr>
<tr><td>Secretary</td><td>3, 8.6%</td><td>7, 17.6%</td></tr>
<tr><td>Other admin</td><td>32, 91.4%</td><td>28, 82.4%</td></tr>
</table>
Participants in both groups were comparable across all baseline demographic characteristics and labour factors. Other variables measured included: marital status, education level,</td>
<td>Intervention: 3-part ergonomic intervention programme consisting of:
1. comprehensive ergonomic training: 2 interactive theoretical and practical sessions (90 mins) conducted by the study investigators (qualified in ergonomic training). Group size was 20 participants per group.
2. An ergonomics training brochure: contained information on office ergonomics such as risk factors for WUEMSD, importance of prevention, workstation adjustments and workplace exercises.
3. A work station evaluation: completed by the investigator, based on the Occupational Safety and Health Administration's Video Display Terminal Checklist. Investigator taught participants how to make adjustments to their workstations, visiting monthly to re-evaluate the workstation and to encourage participants to keep the adjustments.
Comparator: Care as usual. No intervention</td>
<td>Outcomes:
Ergonomic exposure (measures 1+2 in table): self-report 'ergonomic questionnaire' assessing improper body postures and equipment locations. (scale 0 = min, 3=max).

Musculoskeletal symptoms (measures 3-5): Modified version of self-report NMQ (Nordic musculoskeletal questionnaire) – intensity and duration of symptoms measured.
Medical care seeking, medication use and absenteeism: participants asked about number of days needed for these 3 measures in the previous 3 months. Results were categorised: never, 1-7 days, 8-14 days, 15-28 days, more than one month.
Functional status: Upper extremity function scale (UEFS), self-report. (scale 8 = min, 80 = max)
Health related quality of life: 2 subscales of the SF-36, Physical component summary (PCS) and the Mental component summary (MCS)
Results
<table>
<tr><th>Measures</th><th>Group</th><th>Change mean (SD)</th><th>Change median (range)</th><th>Within difference (p)</th><th>Between difference (p)</th></tr>
<tr><td rowspan="2">1. Postural abnormality (0-4)</td><td>IG</td><td>-0.5 (0.5)</td><td>-0.6 (-1.0-1.0)</td><td><0.001</td><td rowspan="2"><0.001</td></tr>
<tr><td>CG</td><td>0.2 (0.9)</td><td>0.0 (-1.0-3.0)</td><td>0.224</td></tr>
<tr><td rowspan="2">2. Improper location (0-3)</td><td>IG</td><td>-0.4 (0.6)</td><td>-1.0 (-1.0-1.0)</td><td>0.003</td><td rowspan="2">0.002</td></tr>
<tr><td>CG</td><td>0.2 (0.9)</td><td>0.0 (-1.0-2.0)</td><td>0.081</td></tr>
<tr><td rowspan="2">3. Intensity of symptoms (0-10)</td><td>IG</td><td>-0.3 (0.5)</td><td>-0.3 (-1.0-1.4)</td><td><0.001</td><td rowspan="2"><0.001</td></tr>
<tr><td>CG</td><td>0.1 (0.4)</td><td>0.0 (-1.0-1.6)</td><td>0.035</td></tr>
<tr><td rowspan="2">4. Duration of symptoms (0-5)</td><td>IG</td><td>-0.1 (0.4)</td><td>-0.2 (-0.8-1.0)</td><td>0.002</td><td rowspan="2"><0.001</td></tr>
<tr><td>CG</td><td>0.1 (0.5)</td><td>0.0 (-0.3-3.0)</td><td>0.131</td></tr>
</table></td>
<td>Limitations identified by the author:
- all outcome measures were self-reported

- small sample size
- ITT analysis not possible
- research conducted in place of work of investigators (Istanbul Faculty of Medicine) - results and participant rate may be affected by this factor
- no data collected on what workplace adjustments that were needed on the monthly visits
- follow-up period may not have been long enough to capture important effects of the intervention
Limitations identified by the review team
- missing outcome data not</td>
</tr>
</table>

<table>
<tr>
<td>No details of funding</td>
<td>computer use in current job (yrs, daily hrs, daily mouse use). There was no significant difference between the two groups for any of these measures (Chi square and Mann-Whitney test).

Inclusion criteria
Full-time working employees with WUEMSS, as defined by the National Institute for Occupational Safety and Health case definition criteria; aged between 18-60; been in the job for at least 1 year; minimum of 3 hours computer work daily or more than 40 hours weekly; presence of musculoskeletal symptoms in the neck and upper extremities within past 12 months.

Exclusion criteria

History of traumatic injury or surgery in the head, neck, upper back, and upper extremities; presence of neuromuscular, rheumatic, or spinal disease; malignancy</td>
<td>programme throughout the study, but they had access to the same intervention program once the study had ended.</td>
<td>
<table>
<tr><td rowspan="2">5. Freq of symptoms (0-6)</td><td>IG</td><td>-0.1 (0.4)</td><td>-0.2 (-0.8-2.0)</td><td>0.001</td><td rowspan="2">0.009</td></tr>
<tr><td>CG</td><td>0.1 (0.7)</td><td>0.0 (-0.8-4.0)</td><td>0.918</td></tr>
<tr><td rowspan="2">Need for medication (0-5)</td><td>IG</td><td>-0.0 (0.4)</td><td>0.0 (-0.8-1.0)</td><td>0.062</td><td rowspan="2">0.098</td></tr>
<tr><td>CG</td><td>0.2 (0.6)</td><td>-0.5-3.0)</td><td>0.161</td></tr>
<tr><td rowspan="2">Seeking medical care (0-5)</td><td>IG</td><td>0.0 (0.5)</td><td>0.0 (-0.6-2.0)</td><td>0.415</td><td rowspan="2">0.123</td></tr>
<tr><td>CG</td><td>0.1 (0.3)</td><td>0.0 (-0.5-1.0)</td><td>0.096</td></tr>
<tr><td rowspan="2">Absenteeism (0-5)</td><td>IG</td><td>0.0 (0.2)</td><td>0.0 (-0.5-1.0)</td><td>0.655</td><td rowspan="2">0.483</td></tr>
<tr><td>CG</td><td>0.0 (0.2)</td><td>0.0 (-0.5-1.0)</td><td>0.564</td></tr>
<tr><td rowspan="2">UEFS (8-80)</td><td>IG</td><td>-0.0 (0.5)</td><td>-0.2 (-0.7-2.0)</td><td>0.011</td><td rowspan="2">0.001</td></tr>
<tr><td>CG</td><td>0.3 (1.1)</td><td>0.1 (0.5-6.2)</td><td>0.06</td></tr>
<tr><td rowspan="2">PCS (0-100)</td><td>IG</td><td>0.1 (0.2)</td><td>0.1 (-0.1-0.9)</td><td><0.0001</td><td rowspan="2"><0.001</td></tr>
<tr><td>CG</td><td>-0.0 (0.2)</td><td>-0.0 (-0.3-0.7)</td><td>0.075</td></tr>
<tr><td rowspan="2">MCS (0-100)</td><td>IG</td><td>0.1 (0.3)</td><td>0.0 (-0.5-1.1)</td><td>0.096</td><td rowspan="2">0.035</td></tr>
<tr><td>CG</td><td>-0.0 (0.1)</td><td>-0.0 (-0.2-0.3)</td><td>0.235</td></tr>
</table>
Analysis
Non-parametric tests used. Wilcoxon signed-rank test used to compare post-test-pre-test changes within groups. Improvement percent [post-test group mean – pre-test group mean/ (pre-test group mean) x 100] was calculated for each group and compared with the Mann-Whitney U test.

Per protocol analysis used.
</td>
<td>accounted for in the per-protocol analysis

- Knowledge of allocated intervention was not concealed and all outcome measures were self-report.
- risk of contamination as all participants in the same building and part of the same Faculty
- no power calculation

Other comments</td>
</tr>
</table>

Shiri et al 2011

Study details	Population	Intervention/comparator	Results	Notes
Full citation Shiri et al 2011. **Quality score** **+** **Study type** RCT **Location and setting** Helsinki metropolitan area; Finnish Institute of Occupational Health **Study aims** Effect of the intervention (ergonomics) on pain intensity, pain interference with work, and sickness absence Martimo et al Effect of intervention (ergonomics and adapt workplace conditions) on productivity loss at work during recovery than the more traditional disease and disability management **Length of follow up**	**Number of participants**: 177; 173 respondents (22 men, 151 women) – 89 (intervention); 84 (control) **Participant characteristics:** Mean age was 45.2 years and the majority were female (87.3%) Occupations: nurses and other healthcare workers (64%), secretaries and other clerical workers (25%), and warehouse workers (8%) **Inclusion criteria:** Subjects aged 18–60 years seeking medical advice due to upper-extremity symptoms (lateral or medial epicondylitis, rotator cuff tendinitis, impingement syndrome, de Quervain's or other	**Intervention:** Best current practice treatment as per Finnish occupational health service + Workplace ergonomic improvements – physician contacting the worker's supervisor (by phone) to discuss accommodations at work and an occupational physiotherapist conducting an ergonomic assessment at the worksite considering the physical work environment, available tools or instruments, working postures, force requirements, work pace, and breaks during work, as well as the employee's possibilities to continue working. Suggestions discussed together with the employee and the supervisor, the latter of whom then made the final decision on the technical and administrative changes and their financing **Comparator** Best current practice treatment only (not specified – but reference to 'medical treatment')	**Outcomes:** **Shiri et al 2011:** pain intensity on the specific body area (via interview [baseline] and internet questionnaire at 2-, 8-, 12- and 52-week follow-up) Sickness absence data from the occupational health services and employment data from the personnel administration of each workplace were reviewed 12 months after the recruitment Covariates: Physical load factors (via interview: main tasks were identified with their proportional duration of the workday: e.g. frequency of lifting loads weighing 5-10, 10-15 and >15 kg; duration of time spent working with hand above shoulder level; whether their work required frequent shoulder elevations *see study for further detail*) Job strain (via job content questionnaire) **Martimo et al 2010:** Self-assessed Musculoskeletal Upper Extremity Disorders (UED) -related productivity loss at work (i.e. decreased quality and quantity of the daily work output) at 8 wks and 12wks: proportion of productivity loss, magnitude of productivity loss and change in magnitude of productivity loss from baseline **Analysis:** Chi-square and t-test; **Shiri et al 2011:** **Pain intensity:** Pain interference with work at 2 wks: Control group mean 3.89 (SD 2.27) compared to intervention 3.15 (SD 2.62) (p=0.05); No significant difference in change at 8wks, 12wks or 52wks,although mean scores decreased in both groups (more so in the intervention) at 8wk, 12wks and 52wks [3.4 (95% CI 2.7–4.1) versus 2.3 (95% CI 1.5–3.1), p=0.037 – *but repeated measures analysis showed no significant difference between intervention and control* No significant change in other pain intensity measures: Pain intensity declined by 2.2 (95% CI 1.3–3.2) units in the control group and 2.9 (95% CI 2.2–3.5) units in the intervention group (P=0.24) during the follow-up **Sickness absence:** At 3m no significant differences between the two groups – generally total number of sickness absence days due to upper-extremity or other MSD lower	**Limitations identified by the author:** Two part intervention (physician telephone contact and physio workplace visit) what was crucial to the effect identified Small sample Increased exposure to physical load more common in control than intervention so could underestimate Low power to detect the true effect of the intervention Lack of participant and physician blinding - It is possible that physicians treated the intervention and control subjects differently during the follow-up when prescribing medication or sick leave Differences at baseline may have diluted intervention effects Figures carriers forward for some participants (n=8)

8wks, 12wks (Martimo et al) 3m, 1 year follow-up (Shiri et al 2011) **Linked study:** Martimo et al 2010 Effectiveness of an ergonomic intervention on the productivity of workers with upper-extremity disorders – a randomized controlled trialScand J Work Environ Health.; 36(1):25–33. **Source of funding** Work Environment Fund and Academy of Finland	wrist tenosynovitis, carpal tunnel syndrome, or entrapment of the ulnar nerve and 'nonspecific upper-extremity pain') – included if symptoms, or the exacerbation of symptoms, had started <30 days prior to the medical consultation and immediate sick leave was not required **Exclusion criteria:** If immediate sick leave was required; earlier or planned surgery due to upper extremity disorder; active auto-immune disease; malignancy that was being actively treated or had been diagnosed within a year; fibromyalgia; congenital or traumatic deformity of upper extremity; pregnancy; or planned retirement during follow-up.		in intervention group (mean 6.0 vs. 11.5 days among those with sickness absence) At 4-12m: no significant difference for sick leave due to extremity MSD symptoms only or other MSD symptoms Any musculoskeletal disorder diagnosed by a nurse: Subjects with sickness absence 8.3% vs. 1.1% (p=0.02); Total number of days in all subjects: mean 0.32 (SD1.2) vs. 0.03 (SD0.3); p=0.02. Any musculoskeletal disorder diagnosed by physician or nurse: Subjects with sickness absence 32.1% vs. 20.2% (p=0.07) **sub group analysis: sickness absence** : At 4-12m: Occurrence of sickness absence due to upper-extremity and other MSD combined was significantly lower in the intervention than the control group for forceful or pinch grip (p=<0.001; p=0.02); Sickness absence due to MSK was lower in the intervention than the control for older participants (aged 47-64 p=0.02); **Martimo et al 2010** Differences in productivity loss: @8wks: proportion and magnitude of productivity loss were lower in the intervention over control but the difference was not significant @12wks: At 12 weeks, the proportion and magnitude of productivity loss were statistically significantly lower in the intervention than the control group for: • Subjects with no productivity loss at baseline (proportion: 37.5 % vs. 10.8%, p=0.009; Magnitude of productivity loss: 12.8 [SD 24.3] vs. 1.6 [SD 4.9]) • Subjects with 10-20% productivity loss at baseline:(proportion 52.9% vs. 21.7%, p=0.04; change in magnitude from baseline -3.8 (SD 26.4) vs. 12.8 (SD 8.1), p=0.007; • all subjects: (proportion: 51.3% vs. 25%, p=0.001; magnitude 18.4 (SD 25.7) vs. 6.8 (SD 17.4), p = 0.001. <u>Generalized estimating equation (GEE):</u> Analysis of repeated measures using GEE showed statistically significant differences in the proportion (p=0.006; p=0.021) and magnitude of productivity loss (p=0.010; p=0.013) between the intervention and control groups after adjustment for age, gender, physical workload factors, fear-avoidance beliefs and follow-up time – for subjects with no productivity at baseline and all subjects respectively; A statistically significant difference for intervention over control was seen for change in magnitude from baseline only (p=0.007) in Subjects with 10%-20% productivity loss at baseline	from 8wks to 12wks may have overestimated productivity loss No information regarding initial selection of sample for the study – possible selection bias **Limitations identified by the review team** Control (8%) at 8wks appears to document receiving a workplace visit by occupational physio (contamination?) **Other comments:** All physiotherapists working in the Finnish occupational health services have advanced training in occupational health and ergonomics. In addition, the physiotherapists in this study received special courses and web-based training on the intervention Sickness absence used to estimate sample size: 10% difference between control and sample; power 80% at 0.05 significance n=205/arm – to

				account for drop out n = 250/arm Ergonomic measures (n =412) suggested or implemented improvements: purchasing new tools, changes to the keyboard and monitors, adjustment of chairs and tables and modifications to work or its environment. 60% improvements were related to guiding the employee in self-care, working posture, use of tools and instruments, using both hands in work tasks, and reorganizing work.

Larsson et al 2008 #1

Study details	Population	Intervention/comparator	Results	Notes
Full citation Larsson et al 2008 #1 **Quality score** **-** **Study type** Prospective single group pre – post-test studies. **Location and setting** Sweden; Public sector workplace **Study aims** Describing the effects an ergonomic education intervention for women with MSK symptoms employed in the public sector **Length of follow up** Baseline, @10wks and 9-months **Source of funding** Department of Health Sciences at Luleå University of Technology	**Number of participants**: N=21 **Participant characteristics:** Women with musculoskeletal symptoms **Inclusion criteria** Female, employed within the public sector, experiencing musculoskeletal symptoms and working at least part-time at the time of baseline measurement; had to submit follow-up data **Exclusion criteria** not reported	**Intervention:** Ergonomic education intervention (n = 21) – lasted 2 weeks – to promote health and work ability by improving self-management skills, coping with pain at work, ergonomic and preventive knowledge about work environment factors and how to perform necessary changes. Conducted by a physical therapist in the occupational health service; approx.4/groups with similar MSK problems. Two monthly three-hour sessions and received education about ergonomic and psychosocial work issues in relation to work and health and the practice of stretch-and-flex breaks, physical activity and relaxation **Comparator** N/A single group pre-post-test.	**Outcomes:** Health related factors (Self-report questionnaire) Work ability was assessed by ten questions forming seven items of the Work Ability Index (WAI) Coping strategies in working life assessed on three scales taken from the Copenhagen Psychosocial Questionnaire Coping abilities for pain were assessed by a single item from each of the eight subscales in the Coping Strategies Questionnaire (CSQ) **Analysis:** Median (Md), min-max values and prevalence (%) were used for descriptive statistics; Mann-Whitney U test and Wilcoxon signed-rank test post intervention changes at ten weeks and nine months compared with baseline. **Ergonomic education intervention:** <u>Changes in workability</u> : Significant change in belief of workability from baseline to 9m. Median (range) at baseline: 7 (1-7), to 10 weeks: 4 (1-5), to 9m: 7 (1-7) (p=0.046); Significant change in physical strain at work from baseline to 9m: Median (range) at baseline: 12 (6-15), to 10 weeks: 12 (6-16), to 9m: 12 (6-16) (p=0.044) No changes in coping in relation to work <u>Changes in health-related factors:</u> General health: no significant changes in symptom severity (p=0.924), state of health (p=0.782), and mental strain (p=0.169). Coping in relation to work scales no change (problem-focussed coping, p=0.714; selective coping, p=0.109; resigning coping, p=0.542). Coping in relation to pain: positive distraction baseline median score (range): 2.5 (0-4.5); 9 months 3.5 (2.5-4.5)p=0.002) and ignoring pain@ baseline median score (range): 3.5 (0-5); 9 months 4.2 (1.5-5.5) (p=0.048) Self-efficacy in relation to pain: control pain@10wks baseline median score (range): 3 (2-6); 10 weeks 4 (3-6)(p=0.040) – *not significant at 9m (0.071)*	**Limitations identified by the author:** Significantly differing baseline values of outcome measures **Limitations identified by the review team** **-** no control group (within group comparison only) - no blinding - small sample size with no power calculation, it is unlikely that the study is powered to test the true effect of the intervention - sample of women was self-selecting - all female sample limits generalisability - 25% drop out rate with no reasons for drop out reported and no adjustment in the analysis **Other comments** none

Workplace health: support for employees with disabilities and long-term conditions

Appendix 3d: Evidence Tables review 4 section 4.4 of report

Arnetz et al 2003

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Arnetz et al 2003
Quality score
+
Study type
Prospective controlled trial

Location and setting
Skogas and Handen, Sweden

Study aims
To investigate the effect of early workplace interventions for employees with musculoskeletal disorders (MSD) (focussing on ergonomic improvement and adjustment) on disability days and return to work, compared to a treatment as usual control.

Length of follow up
6 and 12 months</td>
<td>Number of participants:
Intervention group = 65
Control group = 72

Participant characteristics:
<table>
<tr><th>Measure</th><th>I</th><th>C</th></tr>
<tr><td>Mean age (SD)</td><td>42.7 (10.1)</td><td>42.1 (10.4)</td></tr>
<tr><td>% female</td><td>60%</td><td>56.9%</td></tr>
<tr><td colspan="3">Profession (%)</td></tr>
<tr><td>Blue collar, little education</td><td>83.1</td><td>66.5</td></tr>
<tr><td>Blue collar, skilled</td><td>9.2</td><td>12.5</td></tr>
<tr><td>White collar <12 yrs education</td><td>3.1</td><td>15.3</td></tr>
<tr><td>White collar, mid-level</td><td>4.6</td><td>2.8</td></tr>
<tr><td>White collar, skilled</td><td>0</td><td>2.8</td></tr>
<tr><td>Mean working hours (SD)</td><td>37.0 (6.8)</td><td>37.5 (11.3)</td></tr>
<tr><td>Sick leave pay/day (SD) $</td><td>59.2 (13.7)</td><td>61.8 (19.3)</td></tr>
</table></td>
<td>Intervention:
1. Interview at local branch of Swedish National Insurance Agency Forsakringskassen (FK) between employee, FK case manager and an occupational therapist or ergonomist. Interview focussed on a range of social and occupational themes in relation to the MSD. Possible adaptions at work and the possibility of vocational training were discussed.

2. Workplace visit 1 week later. Attended by: employee, FK case manager, occupational therapist/ergonomist, and employer. Visit consisted of a, ergonomic assessment of the workplace (as well as physical and psychosocial stress assessment by ergonomist whilst the employee performed regular work tasks). Ergonomic improvements were introduced as needed. Psychosocial issues were also</td>
<td>Outcomes
- MSD symptoms (revised version of the Standardised Nordic Questionnaire)
- Days to rehab investigation (days from first sick day until rehabilitation investigation arrived at FK from employer)
- Days to rehab plan (days from first sick day until FK's rehab plan)
- Days to rehabilitation
- Rehabilitation costs
- Vocation service costs
- sick days (In 6 months and 12 months)
- Self-rated health
- 6 month follow up questions for employees: asked to rate the role and commitments of each of the following in the rehabilitation process: employer, FK, health care system. Self-rated health ranking was obtained at 6 months using 5-graded response scale (details not reported).

Results
<table>
<tr><th>Measure</th><th>Intervention</th><th>Control</th><th>p</th></tr>
<tr><td>Employer submitted rehab investigations to FK</td><td>84.6%</td><td>27.8%</td><td><0.05</td></tr>
<tr><td>Days to rehab investigation submitted (mean, SEM)</td><td>59.4 (5.2)</td><td>126.8 (19.2)</td><td><0.01</td></tr>
<tr><td>Days to FK rehab plan (mean, SEM)</td><td>49.4 (2.5)</td><td>183.5 (19.1)</td><td><0.0001</td></tr>
<tr><td>Sickness absence likelihood at 6 months (odds ratio, I vs C)</td><td colspan="2">1.9, 95% CI = 1.0-3.6</td><td>0.06</td></tr>
<tr><td>Sickness absence likelihood at 12 months (odds ratio, I vs C)</td><td colspan="2">2.5 (95% CI not reported)</td><td><0.01</td></tr>
<tr><td>Mean sick days 0-6 months (SEM)</td><td>110 (6.5)</td><td>131.1 (5.9)</td><td><0.05</td></tr>
<tr><td>Mean sick days 6-12 months (SEM)</td><td>95.8 (13.1)</td><td>150.3 (8.8)</td><td><0.01</td></tr>
<tr><td>Mean sick days 0-12 months (SEM)</td><td>144.9 (11.8)</td><td>197.9 (14.0)</td><td><0.01</td></tr>
</table></td>
<td>Limitations identified by the author:
- no limitations reported by the author

Limitations identified by the review team

- no randomisation during treatment group allocation

- One of the authors is an owner of the ergonomic firm that was used for the intervention.

- Lack of blinding at allocation and no details reported for blinding information during analysis.

- Authors do not report on missing outcome measures, nor do they give any details on loss to follow-up.</td>
</tr>
</table>

Source of funding

Research unit of the Stockholm branch of the Swedish National Health Insurance Plan.

MSD diagnosis (on sick leave certificate) %		
Neck + shoulder	27.7	20.8
Back	44.6	33.3
Joint disorder	6.2	5.6
Other MSD symptom	21.5	40.3

All baseline demographic characteristics were similar between groups.

Inclusion criteria

- employees diagnosed with a first or recurrent MSD (those with prior MSDs could be included as long as they had recovered sufficiently to return to work)

Exclusion criteria

- not reported

commonly addressed, where the FK case manager and ergonomist might act as conflict resolution coaches. The employer was encouraged to complete a rehabilitation investigation for the employee, this is a standard practice for employers in Sweden and the rehab investigation itself was not part of the intervention. Support was offered by FK case manager if necessary. For employees receiving vocational training: Ergonomist instructed the employee, as often as needed, directly at work. A training schedule was given, consisting of information on type of training, adapted work tasks, timetables, and schedule for successive increase in workload. Participants were expected to fill out a semi-structured diary during the training.

Comparator

Treatment as usual. The group received the same information and questionnaires as the intervention group. But did not participate in interviews or worksite visits.

Total reimbursement from health insurance system (converted to GBP for the year 2003, approx. values)	6011 (472)	7637 (607)	<0.05

Other measures: Significantly more employees in the intervention group were referred to the work-oriented vocational rehabilitation programme, compared to the control group (27 vs 15, p <0.05). The time between initial sickness episode and the initiation of the vocational rehab programme was significantly lower in the intervention group compared to control (88.1 (SEM11.7) vs 190.7 (22.7); p<0.001).

Questionnaires:

- At baseline, participants in the intervention group to a larger degree believed that they could influence things so that they would be able to return to work (p<0.001)
- Participants in the intervention group found the role of the FK to be significantly more important than did the control group (88% vs 62% rated the FK's role as favourable; p<0.05). There were no differences in opinion between groups for the role of the employer and healthcare sector.
- There were no significant differences between groups for the self-rated health ranking at 6 month follow-up.

Analysis

Groups were compared using unpaired Student's t test for continuous variables and X^2 for categorical variables. Logistic regression analyses were used for more complex modelling but the authors do not state where this was used.

Other comments

- power calculation indicated that a sample size of 60 in each group was needed to achieve a beta of 0.05 and a power of 0.95, with two-tailed p value of <0.05 to detect a 20% difference on the primary outcomes (days off sick at 6 and 12 months)

Workplace health: support for employees with disabilities and long-term conditions

Grossi et al 2009

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Grossi et al 2009
Quality score
+
Study type
Controlled before and after (outlined as a 'quasi-experimental study')

Location and setting
Sweden, public sector employees
Study aims
evaluate the effects of a stress management intervention among 24 female patients on sick leave due to work-related psychological complaints
Length of follow up
6m, 12m

Further sick leave data collected at 3 and 5 year follow-up.</td>
<td>Number of participants: n = 24

Participant characteristics:
All female; Mean age 52 years (+/- 5); duration of illness ranged from 1 to 3 years, with a mean of 1.8 years.
<table>
<tr><td></td><td>Int</td><td>Con</td></tr>
<tr><td>Sick leave n (%)</td><td></td><td></td></tr>
<tr><td>100</td><td>10 (83%)</td><td>9 (75%)</td></tr>
<tr><td>75</td><td>1 (8%)</td><td>0</td></tr>
<tr><td>50</td><td>1 (8%)</td><td>3 (25%)</td></tr>
<tr><td>25</td><td>0</td><td>0</td></tr>
</table>
Inclusion criteria:
Fulfilled the diagnostic criteria for Reaction to Severe Stress according to the International Classification of Diseases Sick-listed

Exclusion criteria</td>
<td>Intervention:
Standard individual treatments programme (see comparator) + Complementary therapy based on a group treatment programme – lasting 3m during which they stopped receiving the comparator – course intended to teach how to identify, understand and handle physical and psychological signs of stress – at the end of the course participants returned to standard treatment
Course was preceded by one or 2 individual consultations with the course leader (a licensed social worker and behavioural scientist (assessment/analysis of stress) – involving assessment of stressors, coping resources, personality dispositions, symptoms and reflection on current life-situation
Intervention group met for half a day each week to share thoughts and experiences and for theory lessons: held by 3 behavioural scientists, one ergonomist and one wellness consultant - addressed questions of lifestyle, the concept of stress, coping, wellness factors, cognitive attitudes, changing behavioural responses to stress, physical and mental relaxation, Qigong, kinesiology, trust and optimism.
2 x groups of 6 participants met for half a day per week, 12 times: practice relaxation techniques and discuss themes brought up during meetings with all the participants – participants expected to formulate her own</td>
<td>Outcomes:
Sick leave
Burnout (Karolinska Exhaustion Scale)
rates of RTW
Glycated haemoglobin
Self-reported depression (Becks depression Inventory)
LDL
Total cholesterol
Triglycerides
HDL
Integrated estimate of glucose during preceding 6-12 weeks
Immunoglobin G
Results:
No significant between group differences for sick leave, sickness benefits or gainful employment – significant within group changes:
• Intervention: @1-3yrs post treatment (sick leave decreased z=-2.41, p<0.05;; gainful employment); @5yrs (degree of sick leave z=-3.20, p<0.01, % on sickness benefits [increased]; and % in gainful employment)
• Control: @1-3 years post treatment (degree of sick leave z=-2.17, p<0.01; degree of sickness benefits [increased]); @5yrs degree of sickness benefit z=-2.06, p<0.05; [increased]; degree of gainful employment;

No significant between group differences for physiological outcome measures – significant within group differences:
• Intervention - significant increases in HbA1C (before and after treatment and at 6-12m)
• Control – significant increase in HbA1C (post treatment, 6m, 12m)</td>
<td>Limitations identified by the author:

Small sample (n=24, 12 in each group)

All female sample (one male participant excluded to maintain female homogeneity)

Constancy of Intervention implementation across arms
Controlling for other influencing factors (mobility, etc.)
Limitations identified by the review team
No blinding

No randomisation

Lack of power for findings

Other comments

All participants reported having received treatment</td>
</tr>
</table>

Source of funding		life goals and a plan of action for how they were to be achieved. Action plan follow-up: Individual session with each participant toward the end of the 12-week programme Programme ended with individualized follow-up (@12wks): rehabilitation meetings with physician, course leader, immediate supervisor at work, personnel consultants and contact person at the Social Insurance Office; Additional follow-up: 2 class reunions were held in the Spring and Summer of 2003. **Comparator:** Standard individual treatment programme offered by the municipal company healthcare: (stress treatment programme involving teams that included physician, nurse, psychologist, wellness consultant and physiotherapist, as recommended by the Swedish Psychiatric Association) - treatment strategies, apart from sick-listing, were information about stress, medication for sleep disorders and depression, psychotherapy, relaxation treatment, physical exercise, and rehabilitation at the workplace in cooperation with employers, trade unions and the Social Insurance Agency.	No significant between group differences for diminishing symptoms of stress Self-reported depression: @6m int vs. Con: $F(2, 23) = 6.10$, $p < 0.05$; Cohen's D = 0.91 – effect not present at 12m Burnout: global@6m KES-index $F(2, 23) = 4.80$, $p < 0.05$; Cohen's D = 0.82 effect not present at 12m **Analysis** For sick leave results, Wilcoxon signed rank test was used to detect within group differences. For BDI, KES and physiological parameters, repeated measures ANOVA was used to detect between group differences and paired one-tailed t-test was used to detect within-group differences.	for their condition prior to the present study (***so all had comparator***)

Holopainen et al 2004

<table>
<tr><th>Study details</th><th>Population</th><th>Intervention/comparator</th><th>Results</th><th>Notes</th></tr>
<tr>
<td>Full citation
Holopainen et al 2004

Quality score
-
Study type
Uncontrolled before and after study

Location and setting
Finnish Air Force maintenance personnel, Finland
Study aims
To evaluate the effect of Vocationally Oriented Medical Rehabilitation (VOMR) on employees' physical capacity, musculoskeletal (MSD) symptoms and perceived work ability.
Length of follow up
6 months and 5 years</td>
<td>Number of participants:
20

Participant characteristics:
20 males with a mean age of 36.9 years (SD=4.5), worked an average of 14.6 years (SD= 5.1).

Inclusion criteria
- Job tenure of at least 3 years in same place
- Intention to continue in same job and motivation to work
- MSK symptoms causing sick leave of at least 60 days in previous 2 years
- voluntary participation in the course

Exclusion criteria

- other conditions preventing rehabilitation</td>
<td>Intervention:
The VOMR course was developed and organised by the Finnish Air Force and a rehabilitation centre in Finland. Two parts; phase 1 lasted 12 days and phase 2 was held 6 months later and lasted 5 days.

Features of the course included:
<table>
<tr><td>Activity</td><td>Phase 1</td><td>Phase 2</td><td>Leader</td></tr>
<tr><td>Course intro</td><td>2h</td><td>1h</td><td>All</td></tr>
<tr><td>MSK theory lecture</td><td>6h</td><td>1h</td><td rowspan="2">Physio</td></tr>
<tr><td>MSK exercises</td><td>6h</td><td>1h</td></tr>
<tr><td colspan="4">Vocational training</td></tr>
<tr><td>Evaluating work techniques</td><td>4h</td><td>2h</td><td rowspan="2">Work instructor</td></tr>
<tr><td>Exercises</td><td>7h</td><td>1h</td></tr>
<tr><td colspan="4">Group led exercise</td></tr>
<tr><td>In water</td><td>3h</td><td>1h</td><td rowspan="3">Physio</td></tr>
<tr><td>In gym</td><td>1h</td><td>1h</td></tr>
<tr><td>Outdoors</td><td>2h</td><td>3h</td></tr>
<tr><td colspan="4">Lectures</td></tr>
<tr><td>Mental strain</td><td>2h</td><td>2h</td><td>Psychologist</td></tr>
</table>
</td>
<td>Outcomes
- Self report questionnaires (visual analogue scale 0-10) on: physical strain, mental strain, neck pain, back pain
- sick leave days in previous 6 months
- Physiotherapy days in previous 6 months
- Exercise breaks during work (days per week) and general physical exercise (times per week)
Results
Days sick leave (from previous 6 months) significantly decreased during the follow-up period, with average baseline of 4.6 (SD 6.6) days dropping to 1.2 (SD 3.9) at 6 months and 0 days (SD 0) at 5 year follow-up (MANOVA p<0.05).
<table>
<tr><td>Variable</td><td>Baseline</td><td>6 months</td><td>5 years</td></tr>
<tr><td>Physical strain</td><td>4.1 (1.7)</td><td>4.0 (1.5)</td><td>4.3 (1.6)</td></tr>
<tr><td>Mental strain</td><td>5.5 (1.9)</td><td>6.1 (1.3)</td><td>6.6 (1.4)</td></tr>
<tr><td>Neck pain</td><td>2.8 (2.4)</td><td>1.7 (1.8)</td><td>2.3 (2.3)</td></tr>
<tr><td>Back pain</td><td>3.4 (1.9)</td><td>1.1 (1.0)</td><td>1.8 (2.2)**</td></tr>
<tr><td>Physiotherapy days</td><td>0.9 (3.0)</td><td>0.9 (3.0)</td><td>0.3 (0.9)</td></tr>
<tr><td>Exercise breaks during work</td><td>0.1 (0.3)</td><td>2.4 (2.1)</td><td>2.6 (2.4)**</td></tr>
<tr><td>Physical exercise</td><td>2.4 (1.4)</td><td>3.5 (1.2)</td><td>2.7 (1.9)</td></tr>
</table>
All values are mean (± SD). The significance of the change within the study group **p<0.01
Analysis
6 month and 5 year follow-up change analysed with Wilcoxon's matched-pairs signed-ranks test. Within group change tested with MANOVA (significance = p<0.05)</td>
<td>Limitations identified by the author:
- No control group
Limitations identified by the review team
- Small sample size, no power calculation – study likely to be underpowered for any statistical tests to be meaningful but authors do not report on this

- High risk of selection bias as the study was voluntary and all participants stayed in until the end

- No detailed information on baseline sociodemographic characteristics (only age, gender and job tenure)

- Specifically designed for male machinists in the air force. Applicability to</td>
</tr>
</table>

<table>
<tr>
<td>Source of funding

Social Insurance Institution, Finland</td>
<td></td>
<td>
<table>
<tr><td>Nutrition</td><td>1h</td><td>-</td><td>Nurse</td></tr>
<tr><td>Workload strain</td><td>1h</td><td>-</td><td>Physio</td></tr>
<tr><td>Fitness test results</td><td>1h</td><td>-</td><td>Physical trainer</td></tr>
<tr><td>Social security</td><td>1h</td><td>-</td><td>Social worker</td></tr>
<tr><td>Physician’s lecture</td><td>1h</td><td>-</td><td>Physician</td></tr>
<tr><td colspan="4">Individual treatment</td></tr>
<tr><td>Clinical examination</td><td>x1</td><td>x1</td><td>Physician</td></tr>
<tr><td>Cardiorespiratory capacity</td><td>x1</td><td>x1</td><td>Training physician</td></tr>
<tr><td>Physio examination</td><td>x1</td><td>x1</td><td>Physio</td></tr>
<tr><td>Muscular strength test</td><td>x1</td><td>x1</td><td>Physical trainer</td></tr>
<tr><td>Bath</td><td>x1</td><td>x1</td><td>Instructor masseur</td></tr>
<tr><td>Bath massage</td><td>x1</td><td>x1</td><td>Masseur</td></tr>
<tr><td>Summary, feedback, future plans</td><td>x1</td><td>x1</td><td>All</td></tr>
</table>

During the rehabilitation periods, the centre made contact with the participants, the employer, and the occupational health services.

Comparator: No comparator group
</td>
<td></td>
<td>other groups is limited.

Other comments
- Ergonomic assessment was performed – work postures analysed using the Ovako Working Posture Analysing System (OWAS) - only 2 employees recorded. As were detailed measures of physical movements. This outcome is not reported for the purposes of this review as it does not relate to workplace outcomes.
- no loss to follow-up (n=20 throughout entire study period)</td>
</tr>
</table>

Lambeek et al 2010

Study details	Population	Intervention/comparator	Results	Notes
Full citation: Lambeek et al 2010. **Quality score ++** **Study type:** Population based randomised controlled trial. **Location and setting** Primary care(10 physiotherapy practices, one occupational health service, one occupational therapy practice) and secondary care (five hospitals) The Netherlands **Study aims:** Compared the effectiveness of integrated care with usual care on return to work after 12 months in patients in such a setting who were sick listed because of chronic low back pain	**Number of participants**: Usual care (n=68) Integrated care (n=66) **Participant characteristics:** Adults aged 18-65 with low back pain who had visited an outpatient clinic **Inclusion criteria** 1. have LBP lasting more than 12 weeks, 2. have paid work (i.e. paid-employment or self-employed) for at least 8 hours a week and 3. be on (partially) sick leave **Exclusion criteria** Patients who had been absent from work for more than two years; had worked temporarily for an employment agency without detachment; had specific low back pain due to infection,	**Intervention:** workplace intervention - average duration of intervention 67 days (SD 32 days) - based on: The intervention was provided by a team consisting of a clinical occupational physician, a medical specialist, an occupational therapist, and a physiotherapist. 1) **participatory ergonomics,** involving a 'supervisor' - (*week 3 to week 12 - Observation of patient's workplace; obstacles on return to work ranked independently by supervisor and patient; patient, supervisor, and occupational therapist brainstorm and discuss possible solutions for obstacles until reaching consensus*), 2) **graded activity programme** (from week 2 to full sustainable RTW - Baseline (*consisting of three sessions) to test patient's functional capacity; individually graded exercise programme, teaching patients that, despite pain, moving is safe while*	**Outcomes:** Primary: duration of time off work (work disability) due to low back pain until full sustainable return to work (collected by self-report questionnaire on sick leave) Secondary: measures were intensity of pain and functional status (scored on a visual analogue scale, and functional status, assessed with the Roland disability questionnaire); Prognostic factors for the duration of sick leave were potential work related psychosocial factors, measured with the job content questionnaire, and data on workload, measured with the Dutch musculoskeletal questionnaire **Analysis**: Kaplan-Meier analysis (including the log rank test); Cox proportional hazard model; Mann-Whitney U; Longitudinal mixed models - adjusted for type of hospital and strata Median duration until sustainable return to work was 88 days (interquartile range 52-164 days) in the integrated care group compared with 208 days (99-366) in the usual care group (P=0.003). Differences between Kaplan-Meier curves for the two groups was significant (log rank test; P=0.004) Integrated care was effective on return to work (hazard ratio 1.9, 95% CI1.2 to 2.8, P=0.004). After 12 months, patients in the integrated care group improved significantly more on functional status compared with patients in the usual care group (P=0.01). @12M follow-up median number of days of sick leave in the integrated care group was 82 (51 to 164 days) compared with 175 (91 to 365) in the usual care group (Mann-Whitney U test; P=0.003); improved functional status over usual care (between group difference −2.86 [95%CI−4.9 to −0.9] p=0.01) Improvement of pain between the groups did not differ significantly at 12m	**Limitations identified by the author:** Cannot exclude a placebo or Hawthorne effect as it was not possible to blind the patients or therapists owing to the nature of the integrated care Primary outcome might be prone to information bias because sick leave was self-reported by the patients **Limitations identified by the review team** **Other comments** Power calculation based on other studies (hazard ratio 2.0, with a power of 80% and a significance level of 5%) Integrated care group received some additional treatment by care givers including

Length of follow up baseline and after 3, 6, 9, and 12 months **Source of funding** VU University Medical Center, TNO Work & Employment, Dutch Health Insurance Executive Council, Stichting Instituut GAK, and the Netherlands Organisation for Health Research and Development.	tumour, osteoporosis, rheumatoid arthritis, fracture, or inflammatory process; had undergone lumbar spine surgery in the past six weeks or had to undergo surgery or invasive examinations within three months; had a serious psychiatric or cardiovascular illness; were pregnant; or were engaged in a lawsuit against their employer	*increasing activity level*) based on cognitive behavioural principles - provided by a team consisting of a *clinical occupational physician, a medical specialist, an occupational therapist, and a physiotherapist*. **Comparator:** Usual care from their medical specialist occupational physician, GP and/or allied health professional		physiotherapy (n=23); visits to OP (n=10); GP (n=10); use of diversity of care (n=12) Cost of interventions covered by patients health insurance

Larsson et al 2008 #2

Study details	Population	Intervention/comparator	Results	Notes
Full citation Larsson et al 2008 #2 **Quality score** - **Study type** prospective study **Location and setting** Sweden; Public sector workplace **Study aims** Describing the effects of a self-efficacy intervention for women with MSK symptoms employed in the public sector **Length of follow up** Baseline, @10wks and 9-months **Source of funding** Department of Health Sciences at Luleå University of Technology	**Number of participants**: n=21 **Participant characteristics:** Women with musculoskeletal symptoms **Inclusion criteria** Female, employed within the public sector, experiencing musculoskeletal symptoms and working at least part-time at the time of baseline measurement; had to submit follow-up data **Exclusion criteria** Not reported	**Intervention:** Comprehensive self-efficacy intervention (n = 21) – lasted 10 weeks (weekly group sessions [3hr/session and undertaken by a psychologist 10/group – group discussions and self-reflection with educational sessions provided by specialists in physical activity, diet, psychological stress, strain, mental training, work environment factors, insurance factors, social insurance liability]+ physical activity [2-3hrs/week – individually tailored and supported by physio and mentors & during the 1st 3m free training sessions at a training centre] + individual practice in the life and work situation for an additional 6m + follow-up session at 6m): improve individual self-efficacy, priority-making, self-reflection, empowerment, coping skills, physical activity patterns and insight into one's own life situation	**Outcomes:** Health related factors (Self-report questionnaire) Work ability was assessed by ten questions forming seven items of the Work Ability Index (WAI) Coping strategies in working life assessed on three scales taken from the Copenhagen Psychosocial Questionnaire Coping abilities for pain were assessed by a single item from each of the eight subscales in the Coping Strategies Questionnaire (CSQ) **Analysis:** Median (Md), min-max values and prevalence (%) were used for descriptive statistics; Mann-Whitney U test (between-group comparisons at baseline) and Wilcoxon signed-rank test (within-group changes @ten weeks @ nine months compared with baseline). **<u>Comprehensive self-efficacy intervention</u>** <u>Changes in work ability:</u> Significant change in: Workability index score from baseline to 9m. Median (range) at baseline: 28 (17-47), to 10weeks: 31 (20-49), to 9m 34 (20-48) (p=0.028); Significant change in Workability physical demands baseline to 10wks (p=0.021) and @9m (p=0.012). Median (range) at baseline: 3 (1-5), to 10 weeks 3 (2-5), to 9m 3 (2-5) Significant change in work impairment baseline to 10wk. Median (range) from baseline 2 (1-6), to 10 weeks 2 (1-5) (p=0.047) No change in physical strain at work No changes in coping in relation to work <u>Changes in health-related factors:</u> General health: severity of symptoms@10wks (p=0.023) Coping in relation to pain items: no change Self-efficacy in relation to pain items: no change	**Limitations identified by the author:** Significantly differing baseline values across both interventions of outcome measures **Limitations identified by the review team** - no control group (within group comparison only) - no blinding - small sample size with no power calculation, it is unlikely that the study is powered to test the true effect of the intervention - sample of women was self-selecting - all female sample limits generalisability - 25% drop out rate with no reasons for

				drop out reported and no adjustment in the analysis **Other comments**

Appendix 4 Quality Appraisal Checklists

EPOC Checklist for RCTs, non-randomised controlled trials and controlled before-after studies

Administrative details

Study name or author and year [Type study name, or author and year (include letter if more than 1 paper with the same author and year, e.g. 'Smith 2010a')]	**STAR ID** [Type STAR ID]
Citation [Include citation details – usually authors, title of study, journal details, year]	
Linked studies (study name or author, year, STAR ID) [Include study name or author, year and STAR ID of any related studies, or state 'None']	
Final study quality score [Click to choose the final quality score. See 'Calculation of final study quality score' below for details on how to complete this.]	
Date of QA [Click to choose the date the QA was completed]	**Reviewer(s) names** [Type name of the reviewer/reviewers completing the quality assessment]

Calculation of final study quality score (from box 6.1 on page 95 of the NICE Guidelines Manual)

- **++** All or most of the checklist criteria have been fulfilled, and where they have not been fulfilled the conclusions are very unlikely to alter.
- **+** Some of the checklist criteria have been fulfilled, and where they have not been fulfilled, or are not adequately described, the conclusions are unlikely to alter.
- **-** Few or no checklist criteria have been fulfilled and the conclusions are likely or very likely to alter.

Quality Assessment

For all questions:

++	'Yes'	The study full meets the criterion.
+	'Partly'	The study largely meets the criterion but differs in some important respect.
-	'No'	The study deviates substantially from the criterion.
	'Unclear'	Report provides insufficient information to judge whether the study complies with the criterion.
	'NA (not applicable'	The criterion is not relevant in this particular instance.

Item	Decision	Comments
1. Was the allocation sequence adequately generated?	[Click here to choose a decision. ++ if a random component in the sequence generation process is described (e.g. a random number table), - if a non-random method is used (e.g. date of admission) or if study is a non-randomised controlled trial or controlled before-after study]	[State how the allocation sequence was generated.]
2. Was the allocation adequately concealed?	[Click here to choose a decision. ++ if allocation by institution, team or professional and allocation performed on all units at start of the study, or if the unit of allocation was by patient or episode of care and there was a centralised randomisation scheme (on-site computer system or sealed opaque envelopes). – if controlled before-after study.]	[State how the allocation was concealed.]
3. Were baseline outcome measurements similar?	[Click here to choose a decision.++ if performance or patient outcomes were measured prior to intervention and no important differences present across study groups. In RCTs score ++ if imbalanced but appropriate adjusted analysis was performed (e.g. analysis of covariance). Score -	[State whether the baseline outcome measurements were similar.]

	if important differences were present and not adjusted for in analysis.]	
4. Were baseline characteristics similar?	[Click here to choose a decision. ++ if baseline characteristics of the study and control providers are reported and similar. Score - if there is no report of characteristics or if there are differences between control and intervention providers.]	[State whether the baseline characteristics were similar.]
5. Were incomplete outcome data adequately addressed?	[Click here to choose a decision. ++ if missing outcome measures were unlikely to bias the results (e.g. the proportion of missing data was similar in the intervention and control groups or the proportion of missing data was less than the effect size i.e. unlikely to overturn the study result). Score - if missing outcome data was likely to bias the results.]	[State whether incomplete outcome data were adequately addressed.]
6. Was knowledge of the allocated interventions adequately prevented during the study?	[Click here to choose a decision. ++ if the authors state explicitly that primary outcome variables were assessed blindly, or outcomes are objective, e.g. length of hospital stay. Score - if primary outcomes were not assessed blindly.]	[State whether knowledge of the allocated interventions was adequately prevented during the study.]

7. Was the study adequately protected against contamination?	[Click here to choose a decision. ++ if allocation by community, institution or practice and it is unlikely that the control group received the intervention. Score - if it is likely that the control group received the intervention (e.g. if patients rather than professionals were randomised). Score “unclear” if professionals were allocated within a clinic or practice and it is possible that communication between intervention and control professionals could have occurred (e.g. physicians within practices were allocated to intervention or control).]	[State whether the study was adequately protected against contamination.]
8. Was the study free from selective outcome reporting?	[Click here to choose a decision. ++ if there is no evidence that outcomes were selectively reported (e.g. all relevant outcomes in the methods section are reported in the results section). Score - if some important outcomes are subsequently omitted from the results.]	[State whether the study was free from selective outcome reporting.]
9. Was the study free from other risks of bias?	[Click here to choose a decision. Score ++ if there is no evidence of other risk of biases.]	[State whether the study was free from other risks of bias.]

QA EPHPP Checklist for uncontrolled before and after studies (EPHPP)

Study name or author and year [Type study name, or author and year (include letter if more than 1 paper with the same author and year, e.g. 'Smith 2010a')]	**STAR ID** [Type STAR ID]
Citation [Include citation details – usually authors, title of study, journal details, year]	
Linked studies (study name or author, year, STAR ID) [Include study name or author, year and STAR ID of any related studies, or state 'None']	
Final study quality score [Click to choose the final quality score. See 'Calculation of final study quality score' below for details on how to complete this.]	
Date of QA [Click to choose the date the QA was completed]	**Reviewer(s) names** [Type name of the reviewer/reviewers completing the quality assessment]

Calculation of final study quality score (from EPHPP tool http://www.ephpp.ca/PDF/Quality%20Assessment%20Tool_2010_2.pdf)

- **++** Strong. No weak ratings.
- **+** Moderate. One weak rating.
- **-** Weak. Two or more weak ratings.

1.1. Quality Assessment

Item	Component Rating	Section Rating	Comments
Selection bias			
1. Are the individuals selected to participate in the study likely to be representative of the target population?	[Click here to choose a rating. Score 'very likely' if randomly selected from a comprehensive list of individuals in target population, 'somewhat likely' if referred from a source (e.g. clinic) in a systematic manner, 'not likely' if self-referred.]	[Click here to choose a decision. '**Strong**' if Q1 is 'very likely' **and** Q2 is 80 to 100%. '**Moderate**' if Q1 is 'very likely' **or** 'somewhat likely' **and** Q2 is 60 or 79% or 'can't tell'. '**Weak**' if Q1 is 'not likely' **or** 'can't tell' **and** Q2 is 'can't tell'.]	[Add comments if necessary.]
2. What percentage of selected individuals agreed to participate?	[Click here to choose a rating.]		
Study design			
3. What is the study design?	[Click here to choose a rating.]	[Click here to choose a decision. '**Strong**' if RCT or CCT, '**moderate**' if cohort analytic study, case control study, a cohort design, or interrupted time series, '**weak**' for any other method or did not state method used.]	[Add comments if necessary, including description of study design if 'other'.]
4. Was the study described as randomised?	[Click here to choose a rating. If 'no', mark questions 5 and 6 as 'not applicable' and go straight to 'Confounders' section.]		
5. Was the method of randomisation described?	[Click here to choose a rating.]		
6. Was the method of randomisation appropriate?	[Click here to choose a rating.]		

Confounders			
7. Were there important differences between groups prior to the intervention?	[Click here to choose a rating. Example of confounders include race, sex, marital status/family, age, socioeconomic status, education, health status, pre-intervention score on outcome measure.]	[Click here to choose a decision. '**Strong**' if Q7 is 'no' **or** Q2 is 80% or more. '**Moderate**' if Q7 is 'yes' **and** Q8 is 60 to 79%. '**Weak**' if Q7 is 'yes' **and** Q8 is less than 60%, **or** if Q7 is 'cant' tell' **and** Q8 is 'can't tell'.]	[Add comments if necessary.]
8. If yes, what percentage of relevant confounders were controlled (either in the design [e.g. stratification, matching] or analysis)?	[Click here to choose a rating.]		
Blinding			
9. Was/were the outcome assessor/s aware of the intervention or exposure status of participants?	[Click here to choose a rating.]	[Click here to choose a decision. '**Strong**' if Q9 is 'no' **and** Q10 is 'no'. '**Moderate**' if Q9 is 'no' **or** Q10 is 'no', **or** Q9 is 'can't tell' **and** Q10 is 'can't tell'. '**Weak**' if Q9 is 'yes' **and** Q10 is 'yes'.]	[Add comments if necessary.]
10. Were the study participants aware of the research question?	[Click here to choose a rating.]		
Data collection methods			
11. Were data collection tools shown to be valid?	[Click here to choose a rating.]	[Click here to choose a decision. '**Strong**' if Q11 is 'yes' **and** Q12 is 'yes'. '**Moderate**' if Q11 is 'yes' **and** Q12 is 'no' **or** Q12 is 'can't tell'. '**Weak**' if Q11 is 'no' **or** Q11 is 'can't tell' **and** Q12 is 'can't tell'.]	[Add comments if necessary.]
12. Were data collection tools shown to be reliable?	[Click here to choose a rating.]		

Workplace health: support for employees with disabilities and long-term conditions

Withdrawals and drop-outs			
13. Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?	[Click here to choose a rating.]	[Click here to choose a decision. '**Strong**' if Q14 is 80% or more. '**Moderate**' if Q14 is 60 to 79% **or** 'not applicable'. '**Weak**' if Q14 is less than 60% **or** 'can't tell'.]	[Add comments if necessary.]
14. What percentage of participants completed the survey?	[Click here to choose a rating. If percentage differs by groups, record the lowest.]		
Intervention integrity			
15. What percentage of participants received the allocated intervention or exposure of interest?	[Click here to choose a rating. If percentage differs by groups, record the lowest.]	Section rating not required.	[Add comments if necessary.]
16. Was the consistency of the intervention measured?	[Click here to choose a rating.]		
17. Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?	[Click here to choose a rating.]		
Analyses			
18. What is the unit of allocation?	[Click here to choose a rating.]	Section rating not required.	

19. What is the unit of analysis?	[Click here to choose a rating.]		[Add comments if necessary. Add details if 'other' selected for question 18 and/or 19.]
20. Are the statistical methods appropriate for the study design?	[Click here to choose a rating.]		
21. Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?	[Click here to choose a rating.]		

Appendix 5 Quality of included studies

	QA EPOC Checklist for RCTs, non-randomised controlled trials and controlled before-after studies Question number									Score
	1	2	3	4	5	6	7	8	9	
Allaire et al 2005	+	++	Unclear	++	++	++	++	++	++	++
Baldwin et al 2012	++	++	++	+	+	+	++	-	++	+
Detaille et al 2013	Unclear	Unclear	++	++	+	Unclear	++	++	+	+
Macedo et al 2009	++	++	++	++	NA	++	Unclear	++	+	++
McCraty et al 2003	+	Unclear	++	++	++	-	_	++	++	+
Tamminga et al 2013	++	-	++	++	++	-	-	++	Unclear	+

	QA EPOC Checklist for RCTs, non-randomised controlled trials and controlled before-after studies Question number									Score
	1	2	3	4	5	6	7	8	9	
Bee et al 2010	++	++	+	-	+	-	+	++	++	+
Furukawa et al 2012	++	++	++	++	++	-	++	++	Unclear	++
Geraedts et al 2014a	++	++	++	++	++	++	++	++	++	++

	QA EPOC Checklist for RCTs, non-randomised controlled trials and controlled before-after studies Question number									Score
	1	2	3	4	5	6	7	8	9	
Lerner et al 2012	++	-	++	++	++	-	++	++	++	+
Lerner et al 2015	++	+	++	++	++	-	++	++	++	++
Scheel et al 2002a	++	++	Unclear	+	+	Unclear	+	++	Unclear	+
Staal et al 2004	++	++	++	++	++	+	++	++	++	++
Sundstrup et al 2014	++	+	++	++	++	+	Unclear	++	++	++
Viikari-Juntura et al 2012	++	++	Unclear	+	++	-	Unclear	++	-	+
Viljanen et al 2003	++	++	Unclear	Unclear	++	++	++	++	++	++
Wolever et al 2012 #1/#2										
Fleten et al 2006	++	Unclear	++	++	++	++	++	++	Unclear	++

	QA EPOC Checklist for RCTs, non-randomised controlled trials and controlled before-after studies Question number									Score
	1	2	3	4	5	6	7	8	9	
Myhre et al 2014	++	++	+	+	++	-	+	++	-	+
Tamminga et al 2013	++	-	++	++	++	-	-	++	Unclear	+
Hees et al 2012	++	Unclear	++	++	++	+	++	++	-	+

	QA EPOC Checklist for RCTs, non-randomised controlled trials and controlled before-after studies Question number									Score
	1	2	3	4	5	6	7	8	9	
Macedo et al 2009	++	++	++	++	NA	+	Unclear	++	+	++
Taimela et al 2008	++	++	+	+	++	+	+	+	+	+
Arends et al 2014	++	++	Unclear	Unclear	Unclear	+	+	++	+	+
Noordik et al 2013	++	++	+	++	Unclear	++	++	Unclear	Unclear	+
Eklund et al 2011	-	-	Unclear	-	++	-	-	-	-	-
Detaille et al 2013	Unclear	Unclear	++	++	+	Unclear	++	++	+	+
Lander et al 2009	NA	-	+	Unclear	Unclear	++	+	++	Unclear	-
Lagerveld et al 2012	-	+	++	++	+	-	++	++	-	+
Lexis et al 2011	++	++	++	++	-	+	Unclear	++	-	+

Education, Advice and Support

	QA EPOC Checklist for RCTs, non-randomised controlled trials and controlled before-after studies Question number									Score
	1	2	3	4	5	6	7	8	9	
Allaire et al 2005	++	++	NA	++	++	++	++	++	++	++
Coole et al 2013	Unclear	Unclear	Unclear	Unclear	-	+	Unclear	++	Unclear	-

Workplace health: support for employees with disabilities and long-term conditions

	QA EPOC Checklist for RCTs, non-randomised controlled trials and controlled before-after studies Question number									Score
	1	2	3	4	5	6	7	8	9	
Van Oostrom et al 2010	++	++	+	+	-	+	+	++	-	+
Karjalainen et al 2004	++	++	++	++	++	+	Unclear	+	+	++
Karlson et al 2010	NA	-	Unclear	-	++	Unclear	++	++	-	+
Bernaards et al 2007	++	++	++	++	++	+	+	++	+	++

Ergonomics

	QA EPOC Checklist for RCTs, non-randomised controlled trials and controlled before-after studies Question number									Score
	1	2	3	4	5	6	7	8	9	
Baldwin et al 2012	++	++	++	+	+	+	++	-	++	++
Anema et al 2007	++	++	++	++	++	+	Unclear	++	++	++
Esmaeilzadeh et al 2014	++	++	++	++	-	-	+	++	-	+
Shiri et al 2011	++	+	Unclear	++	+	+	Unclear	++	Unclear	+

	QA EPOC Checklist for RCTs, non-randomised controlled trials and controlled before-after studies Question number									Score
	1	2	3	4	5	6	7	8	9	
Arnetz et al 2003	-	-	+	++	Unclear	+	++	++	-	+

	QA EPOC Checklist for RCTs, non-randomised controlled trials and controlled before-after studies Question number									Score
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	
Grossi et al 2009	**-**	**-**	**+**	**++**	**++**	**-**	**++**	**++**	**+**	**+**
Lambeek et al 2010	**++**	**++**	**++**	**++**	**++**	**+**	**Unclear**	**++**	**++**	**++**

	QA EPHPP Checklist for uncontrolled before and after studies (EPHPP) Component								Score
	Selection bias	**Study design**	**Confounders**	**Blinding**	**Data collection methods**	**Withdrawals and drop-outs**	**Intervention integrity**	**Analysis**	
Bevis et al 2014	Moderate	Weak	Moderate	Moderate	Moderate	Not required	Not required	Not required	Weak -

	QA EPHPP Checklist for uncontrolled before and after studies (EPHPP) Question number								
	Selection bias (Items 1/2)	**Study design (Items 3/4/5/6)**	**Confounders (Items 7/8)**	**Blinding (Items 9/10)**	**Data Collection methods (items 11/12)**	**Withdrawals and drop-outs (Items 13/14)**	**Intervention integrity (Items 15/16/17)**	**Analysis (Items 18/19/20/21)**	**Score**
Bevis et al 2014	**Moderate**	**Weak**	**Not applicable**	**Weak**	**Moderate**	**Moderate**	**No rating required**		**-**

Workplace health: support for employees with disabilities and long-term conditions

	QA EPHPP Checklist for uncontrolled before and after studies (EPHPP) Question number								
	Selection bias (Items 1/2)	**Study design (Items 3/4/5/6)**	**Confounders (Items 7/8)**	**Blinding (Items 9/10)**	**Data Collection methods (items 11/12)**	**Withdrawals and drop-outs (Items 13/14)**	**Intervention integrity (Items 15/16/17)**	**Analysis (Items 18/19/20/21)**	**Score**
Larsson et al 2007	**Weak**	**Weak**	**Not applicable**	**Weak**	**Strong**	**Moderate**	**No rating required**		**-**

	QA EPHPP Checklist for uncontrolled before and after studies (EPHPP) Question number								
	Selection bias (Items 1/2)	**Study design (Items 3/4/5/6)**	**Confounders (Items 7/8)**	**Blinding (Items 9/10)**	**Data Collection methods (items 11/12)**	**Withdrawals and drop-outs (Items 13/14)**	**Intervention integrity (Items 15/16/17)**	**Analysis (Items 18/19/20/21)**	**Score**
Holopainen et al 2004	**Weak**	**Weak**	**Weak**	**Weak**	**Moderate**	**Strong**	**No rating required**		**-**

Appendix 6 Excluded studies

Excluded studies - 0. What are the most effective targeted or organisational interventions to support employees with disabilities or long term conditions to return to or stay in work?	
Study	Reason for Exclusion
Aas, R. W., Ellingsen, K. L., Gibson, L., Workplace interventions did not improve health, but reduced sickness absence among workers with musculoskeletal disorders, Australian occupational therapy journal, 57, 442-3, 2010	Study design - appraisal of a Cochrane review. JK
Aas, R. W., Kjeken, I., Dagfinrud, H., Workplace intervention reduced the duration of sick leave in recently injured workers with subacute low-back pain, but graded activity did not, Australian occupational therapy journal, 55, 143-4, 2008	Study design - appraisal of a Cochrane review JK
Aas, Randi W., Skarpaas, Lisebet Skeie, Aas, Aas Airaksinen Anema Bultmann Loisel vanOostrom, The impact of a brief vs. multidisciplinary intervention on return to work remains unclear for employees sick-listed with low back pain, Australian occupational therapy journal, 59, 249-250, 2012	Study design - appraisal of other studies. JK
Adepoju, Omolola E., Bolin, Jane N., Ohsfeldt, Robert L., Phillips, Charles D., Zhao, Hongwei, Ory, Marcia G., Forjuoh, Samuel N., Can chronic disease management programs for patients with type 2 diabetes reduce productivity-related indirect costs of the disease? Evidence from a randomized controlled trial, Population health management, 17, 112-20, 2014	Not workplace

Ammendolia,Carlo, Cassidy,David, Steensta,Ivan, Soklaridis,Sophie, Boyle,Eleanor, Eng, Stephanie, Howard,Hamer, Bhupinder,Bains, Cote,Pierre, Designing a workplace return-to-work program for occupational low back pain: an intervention mapping approach, Bmc Musculoskeletal Disorders, 10, -, 2009	Not primary research
Andersen, Lars L., Zebis, Mette K., Pedersen, Mogens T., Roessler, Kirsten K., Andersen, Christoffer H., Pedersen, Mette M., Feveile, Helene, Mortensen, Ole S., Sjogaard, Gisela, Protocol for work place adjusted intelligent physical exercise reducing musculoskeletal pain in shoulder and neck (VIMS): a cluster randomized controlled trial, BMC musculoskeletal disorders, 11, 173, 2010	Not primary research
Andersen,Lotte Nygaard, Juul-Kristensen,Birgit, Roessler,Kirsten Kaya, Herborg,Lene Gram, Sorensen,Thomas Lund, Sogaard,Karen, Efficacy of 'Tailored Physical Activity' or 'Chronic Pain Self-Management Program' on return to work for sick-listed citizens: design of a randomised controlled trial, Bmc Public Health, 13, -, 2013	Not primary research
Barham, Kalleen, Diabetes prevention and control in the workplace: a pilot project for county employees, Journal of Public Health Management and Practice, 17, 2011	Not all have LTC
Barham, Kalleen, West, Susan, Trief, Paula, Morrow, Cynthia, Wade, Michael, Weinstock, Ruth S., Diabetes prevention and control in the workplace: a pilot project for county employees, Journal of public health management and practice : JPHMP, 17, 233-41, 2011	Not all LTC
Barlow, J. H., Wright, C. C., Wright, S., Development of job-seeking ability in people with arthritis: evaluation of a pilot program, International Journal of Rehabilitation Research, 26, 329-33, 2003	Unemployed

Bell, M., Lysaker, P., Bryson, G., A behavioral intervention to improve work performance in schizophrenia: Work behavior inventory feedback, Journal of Vocational Rehabilitation, 18, 43-50, 2003	Not a workplace intervention
Bergström, Gunnar, Björklund, Christina, Fried, I., Lisspers, Jan, Nathell, Lennart, Hermansson, Ulric, Helander, Anders, Bodin, Lennart, Jensen Irene, B., A comprehensive workplace intervention and its outcome with regard to lifestyle, health and sick leave: The AHA Study, Work: Journal of Prevention, Assessment & Rehabilitation, 31, 167 - 180, 2008	Not all have LTC. General health promotion
Bethge, M., Herbold, D., Trowitzsch, L., Jacobi, C., Work status and health-related quality of life following multimodal work hardening: a cluster randomised trial, Journal of back and musculoskeletal rehabilitation, 24, 161-72, 2011	Unemployed 20%
Blangsted, Anne Katrine, Sogaard, Karen, Hansen, Ernst A., Hannerz, Harald, Sjogaard, Gisela, One-year randomized controlled trial with different physical-activity programs to reduce musculoskeletal symptoms in the neck and shoulders among office workers, Scandinavian journal of work, environment & health, 34, 55-65, 2008	Population does not have LTC
Blasche, Gerhard, Pfeffer, Manuela, Thaler, Helga, Gollner, Erwin, Work-site health promotion of frequent computer users: comparing selected interventions, Work (Reading, Mass.), 46, 233-41, 2013	not LTC
Bogefeldt, J., Grunnesjo, Marie I., Svardsudd, K., Blomberg, S., Sick leave reductions from a comprehensive manual therapy programme for low back pain: the Gotland Low Back Pain Study, Clinical rehabilitation, 22, 529-41, 2008	Not workplace

Boot, Cecile R. L., van den Heuvel, Swenne G., Bultmann, Ute, de Boer, Angela G. E. M., Koppes, Lando L. J., van der Beek, Allard J., Work adjustments in a representative sample of employees with a chronic disease in the Netherlands, Journal of occupational rehabilitation, 23, 200-8, 2013	Not intervention study
Bourbonnais, R., Brisson, C., Vinet, A., Vezina, M., Abdous, B., Gaudet, M., Effectiveness of a participative intervention on psychosocial work factors to prevent mental health problems in a hospital setting, Occupational and environmental medicine, 63, 335-42, 2006	Not LTC
Bultmann,Ute, Sherson,David, Olsen,Jens, Hansen,Carl Lysbeck, Lund,Thomas, Kilsgaard,Jorgen, Coordinated and Tailored Work Rehabilitation: A Randomized Controlled Trial with Economic Evaluation Undertaken with Workers on Sick Leave Due to Musculoskeletal Disorders, Journal of Occupational Rehabilitation, 19, 81-93, 2009	Not workplace enough - employer could not implement this intervention
Burton, W. N., Connerty, C. M., Worksite-based diabetes disease management program, Disease Management, 5, 1-8, 2002	NO WP OUTCOMES
Burton, W. N., Conti, D. J., Disability management: corporate medical department management of employee health and productivity, Journal of occupational and environmental medicine / American College of Occupational and Environmental Medicine, 42, 1006-12, 2000	Sample not all LTC
Butterworth, Susan, Linden, Ariel, McClay, Wende, Leo, Michael C., Effect of motivational interviewing-based health coaching on employees' physical and mental health status, Journal of occupational health psychology, 11, 358-65, 2006	Not LTC - health promotion
Cantley,Linda F., Taiwo,Oyebode A., Galusha,Deron, Barbour,Russell, Slade,Martin D., Tessier-Sherman,Baylah, Cullen,Mark R., Effect of systematic ergonomic hazard identification and control implementation on musculoskeletal disorder and injury risk, Scandinavian Journal of Work Environment & Health, 40, 57-65, 2014	Not effectiveness study. Also not LTC

Carruthers,Erin C., Rogers,Pamela, Backman,Catherine L., Goldsmith,Charles H., Gignac,Monique A., Marra,Carlo, Village,Judy, Li,Linda C., Esdaile,John M., Lacaille,Diane, "Employment and arthritis: making it work" a randomized controlled trial evaluating an online program to help people with inflammatory arthritis maintain employment (study protocol), Bmc Medical Informatics and Decision Making, 14, -, 2014	Not primary research
Centre for, Reviews, Dissemination,, An update of a systematic review of controlled clinical trials on the primary prevention of back pain at the workplace (Provisional abstract), Database of Abstracts of Reviews of Effects, 2015	Not primary research
Christensen, Jeanette R., Overgaard, Kristian, Carneiro, Isabella G., Holtermann, Andreas, Sogaard, Karen, Weight loss among female health care workers--a 1-year workplace based randomized controlled trial in the FINALE-health study, BMC public health, 12, 625, 2012	Not LTC
Cimera, R. E., The costs of providing supported employment services to individuals with psychiatric disabilities, Psychiatric rehabilitation journal, 32, 110-116, 2008	Not employed - supported employment program
Cimera, R. E., The national cost-efficiency of supported employees with intellectual disabilities: The worker's perspective, Journal of Vocational Rehabilitation, 33, 123-31, 2010	Not employed - supported employment program
Cimera, Robert Evert, Halpern, Migliore Mallas Salzberg Whitehead Braddock Dreilinger Dufrense Mank Hagner Griffin Rusch Gersuny Bellamy Butterworth Kregel Nisbet Dudley Holloway Schuster Inge Block Thompson Rosen West McGaughey Hill Brickey Nelson Wehman Beare Cimera Albin Fesko Murphy Parent, Does being in sheltered workshops improve the employment outcomes of supported employees with intellectual disabilities?, Journal of Vocational Rehabilitation, 35, 21-27, 2011	Unemployed with LDs.

Cimera, Robert Evert, Super, Becker Lewis Bordin Rogers Kregel Noble Hill Wehman Cimera Cimera Worthington Conley Conley Lagomarcino, The outcomes achieved by previously placed supported employees with intellectual disabilities: Second verse same as the first?, Journal of Vocational Rehabilitation, 36, 65-71, 2012	Unemployed with LDs
Clark, Matthew M., Bradley, Karleah L., Jenkins, Sarah M., Mettler, Emily A., Larson, Brent G., Preston, Heather R., Liesinger, Juliette T., Werneburg, Brooke L., Hagen, Philip T., Harris, Ann M., Riley, Beth A., Olsen, Kerry D., Vickers Douglas, Kristin S., The effectiveness of wellness coaching for improving quality of life, Mayo Clinic proceedings, 89, 1537-44, 2014	Not LTC
Cole, Donald C., Hogg-Johnson, Sheilah, Manno, Michael, Ibrahim, Selahadin, Wells, Richard P., Ferrier, Sue E., Worksite Upper Extremity Research, Group, Reducing musculoskeletal burden through ergonomic program implementation in a large newspaper, International archives of occupational and environmental health, 80, 98-108, 2006	Not LTC.
Columbi, Alberto M., Depression management in the workplace: a case study, Journal of managed care pharmacy : JMCP, 11, S16-20, 2005	NOT EFFECTIVENESS STUDY
de Buck, Petronella D. M., le Cessie, Saskia, van den Hout, Wilbert B., Peeters, Andreas J., Ronday, Herman K., Westedt, Marie-Louise, Breedveld, Ferdinand C., Vliet Vlieland, Theodora P. M., Randomized comparison of a multidisciplinary job-retention vocational rehabilitation program with usual outpatient care in patients with chronic arthritis at risk for job loss, Arthritis and rheumatism, 53, 682-90, 2005	Not workplace
Del Pozo-Cruz, B., Adsuar, J. C., Parraca, J., Del Pozo-Cruz, J., Moreno, A., Gusi, N., A web-based intervention to improve and prevent low back pain among office workers: A randomized controlled trial, Journal of Orthopaedic and Sports Physical Therapy, 42, 831-41, 2012	NO WP OUTCOMES

del Pozo-Cruz, Borja, del Pozo-Cruz, Jesus, Adsuar, Jose C., Parraca, Jose, Gusi, Narcis, Reanalysis of a tailored web-based exercise programme for office workers with sub-acute low back pain: assessing the stage of change in behaviour, Psychology, health & medicine, 18, 687-97, 2013	NO WP OUTCOMES
del Pozo-Cruz, Borja, Gusi, Narcis, del Pozo-Cruz, Jesus, Adsuar, Jose C., Hernandez-Mocholi, Miguel, Parraca, Jose A., Alcantara-Bumbiedro, Bell Carnes Delitto Fairbank Fayad Gusi Helmhout Hill Hush Kovacs Lang Linton Santos Seidel Tavafian van Tulder Walters Westcott Wilson Zamora, Clinical effects of a nine-month web-based intervention in subacute non-specific low back pain patients: A randomized controlled trial, Clinical rehabilitation, 27, 28-39, 2013	NO WP OUTCOMES
del Pozo-Cruz, Borja, Parraca, Jose A., del Pozo-Cruz, Jesus, Adsuar, Jose C., Hill, Jonathan, Gusi, Narcis, An occupational, internet-based intervention to prevent chronicity in subacute lower back pain: a randomised controlled trial, Journal of rehabilitation medicine, 44, 581-7, 2012	NO WP OUTCOMES
Delisle, A., Durand, M. J., Imbeau, D., Lariviere, C., The effects of two interventions on persistent pain: A multiple single-case study among sign language interpreters, International Journal of Industrial Ergonomics, 37, 111-123, 2007	Not workplace, study design.
Dixon, L., Hoch, J. S., Clark, R., Bebout, R., Drake, R., McHugo, G., Becker, D., Cost-effectiveness of two vocational rehabilitation programs for persons with severe mental illness, Psychiatric Services, 53, 1118-24, 2002	Not employed
Driessen, Maurice, Bosmans, Judith, Proper, Karin, Anema, Johannes, Bongers, Paulien, van der Beek, Allard, The economic evaluation of a participatory ergonomics programme to prevent low back and neck pain, Work (Reading, Mass.), 41 Suppl 1, 2315-20, 2012	Not all LTC

Duijts, Saskia, Kant, IJmert, van den Brandt, Piet, Swaen, Gerard, Duijts, Duijts Goldberg Houtman Huibers Karasek Koeter Luz Maslach Mercer Schroer Vercoulen Ware Wilson, The compatibility between characteristics of employees at risk for sickness absence and components of a preventive coaching intervention, International Journal of Evidence Based Coaching and Mentoring, 5, 19-28, 2007	Study design
Eguchi, Hisashi, Tsuda, Yoko, Tsukahara, Teruomi, Washizuka, Shinsuke, Kawakami, Norito, Nomiyama, Tetsuo, The effects of workplace occupational mental health and related activities on psychological distress among workers: a multilevel cross-sectional analysis, Journal of occupational and environmental medicine / American College of Occupational and Environmental Medicine, 54, 939-47, 2012	Study design - non-intervention study - a correlation study
Elinson, Lynn, Frey, William D., Li, Tiandong, Palan, Martha A., Horne, Richard L., Campbell, Becker Hosmer Bond Cook Hill Wehman Colton French, Evaluation of customized employment in building the capacity of the workforce development system, Journal of Vocational Rehabilitation, 28, 141-158, 2008	Not intervention study
Ewert, Thomas, Limm, Heribert, Wessels, Tina, Rackwitz, Berid, von Garnier, Katharina, Freumuth, Robert, Stucki, Gerold, The comparative effectiveness of a multimodal program versus exercise alone for the secondary prevention of chronic low back pain and disability, PM & R : the journal of injury, function, and rehabilitation, 1, 798-808, 2009	No work outcomes
Feuerstein, Michael, Nicholas, Rena A., Huang, Grant D., Dimberg, Lennart, Ali, Danielle, Rogers, Heather, Job stress management and ergonomic intervention for work-related upper extremity symptoms, Applied ergonomics, 35, 565-74, 2004	No LTC

Fredriksson, K., Bildt, C., Hagg, G., Kilbom, A., The impact on musculoskeletal disorders of changing physical and psychosocial work environment conditions in the automobile industry, International Journal of Industrial Ergonomics, 28, 31-46, 2001	Not an LTC, not an intervention study
Gemson, Donald H., Commisso, Royanna, Fuente, Jeanette, Newman, Jane, Benson, Steve, Promoting weight loss and blood pressure control at work: impact of an education and intervention program, Journal of occupational and environmental medicine / American College of Occupational and Environmental Medicine, 50, 272-81, 2008	Not and LTC - health promotion
Gimm, Gilbert, Ireys, Henry, Gilman, Boyd, Croake, Sarah, Gimm, Weathers Nagi Parker, Impact of early intervention programs for working adults with potentially disabling conditions: Evidence from the national DMIE evaluation, Special Issue: The evaluation of the Demonstration to Maintain Independence and Employment., 34, 71-78, 2011	Not workplace
Gram, B., Andersen, C., Zebis, M. K., Bredahl, T., Pedersen, M. T., Mortensen, O. S., Jensen, R. H., Andersen, L. L., Sjogaard, G., Effect of training supervision on effectiveness of strength training for reducing neck/shoulder pain and headache in office workers: Cluster randomized controlled trial, BioMed research international, 2014, 2014	NOT all have LTC
Grime, Paul R., Computerized cognitive behavioural therapy at work: a randomized controlled trial in employees with recent stress-related absenteeism, Occupational medicine (Oxford, England), 54, 353-9, 2004	NO WP OUTCOMES
Grooten, Wilhelmus Johannes Andreas, Mulder, Marie, Wiktorin, Christina, The effect of ergonomic intervention on neck/shoulder and low back pain, Work (Reading, Mass.), 28, 313-23, 2007	Not workplace

Haldorsen, Ellen M. Haland, Grasdal, Astrid L., Skouen, Jan Sture, Risa, Alf Erling, Kronholm, Karsten, Ursin, Holger, Is there a right treatment for a particular patient group? Comparison of ordinary treatment, light multidisciplinary treatment, and extensive multidisciplinary treatment for long-term sick-listed employees with musculoskeletal pain, Pain, 95, 49-63, 2002	Not workplace
Hammond, A., Rehabilitation in musculoskeletal diseases, Best Practice and Research: Clinical Rheumatology, 22, 435-449, 2008	Not an intervention study
Hansen, B. B., Kirkeskov, L., Christensen, R., Begtrup, L. M., Pedersen, E. B., Teilya, J. F., Boesen, M., Fournier, G. L., Bliddal, H., Kryger, A. I., Retention in physically demanding jobs of individuals with low back pain: Study protocol for a randomised controlled trial, Trials, 16, 2015	Not primary research
Haugli, L., Steen, E., Laerum, E., Nygard, R., Finset, A., Ahsen, Brown Bullington Burke Chapman Claussen Dalton Depue Drake Fernandez Gamsa Goldberg Goldberg Goldberg Goldberg Haugli Haugli Hodges Hunt Hunt Kabat-Zinn Kabat-Zinn Keefe Kelly Kepner Lakoff Magni Malt Matthews McKinney Merleau-Ponty Merskey Morley Nygard Selye Shannon Smedstad Smedstad Steen Steen Steptoe Stevens Tellnes Turk Walker Wergeland, Psychological distress and employment status. Effects of a group learning programme for patients with chronic musculoskeletal pain, Psychology, health & medicine, 8, 135-148, 2003	Not workplace
Haukka, E., Martimo, K. P., Kivekas, T., Horppu, R., Lallukka, T., Solovieva, S., Shiri, R., Pehkonen, I., Takala, E. P., MacEachen, E., Viikari-Juntura, E., Efficacy of temporary work modifications on disability related to musculoskeletal pain or depressive symptoms - Study protocol for a controlled trial, BMJ open, 5, 2015	Not primary research

Hazard, R. G., Reid, S., Haugh, L. D., McFarlane, G., A controlled trial of an educational pamphlet to prevent disability after occupational low back injury, Spine, 25, 1419-23, 2000	Not all employed
Hees, Hiske L., Koeter, Maarten W. J., de Vries, Gabe, Ooteman, Wendy, Schene, Aart H., Effectiveness of adjuvant occupational therapy in employees with depression: design of a randomized controlled trial, BMC public health, 10, 558, 2010	Not workplace
Hoe, Victor C. W., Urquhart, Donna M., Kelsall, Helen L., Sim, Malcolm R., Ergonomic design and training for preventing work-related musculoskeletal disorders of the upper limb and neck in adults, The Cochrane database of systematic reviews, 8, CD008570, 2012	Not primary research
Hoffmann, H., Jackel, D., Glauser, S., Kupper, Z., A randomised controlled trial of the efficacy of supported employment, Acta psychiatrica Scandinavica, 125, 157-67, 2012	unemployed
Hoffmann, Holger, Jackel, Dorothea, Glauser, Sybille, Mueser, Kim T., Kupper, Zeno, Long-term effectiveness of supported employment: 5-year follow-up of a randomized controlled trial, The American journal of psychiatry, 171, 1183-90, 2014	unemployed
Horan, Anne Puidk, An effective workplace stress management intervention: Chicken Soup for the Soul at Work Employee Groups, Work (Reading, Mass.), 18, 3-13, 2002	no LTC
Horneij, E., Hemborg, B., Jensen, I., Ekdahl, C., No significant differences between intervention programmes on neck, shoulder and low back pain: A prospective randomized study among home-care personnel, Journal of rehabilitation medicine, 33, 170-176, 2001	No LTC

Isaksson Ro, K. E., Gude, T., Tyssen, R., Aasland, O. G., A self-referral preventive intervention for burnout among Norwegian nurses: One-year follow-up study, Patient education and counseling, 78, 191-197, 2010	population at risk of burnout - no LTC/D
Jackson, J., Kohn-Parrott, K. A., Parker, C., Levins, N., Dyer, S., Hedalen, E. J., Frank, E., Bramer, S., Brandt, D., Doyle, J. J., Blood pressure success zone: You auto know a worksite-based program to improve blood pressure control among auto workers, Population health management, 14, 257-263, 2011	NO WP OUTCOMES
Jakobsen, M. D., Sundstrup, E., Brandt, M., Jay, K., Aagaard, P., Andersen, L. L., Effect of workplace-versus home-based physical exercise on musculoskeletal pain among healthcare workers: A cluster randomized controlled trial, Scandinavian Journal of Work, Environment and Health, 41, 153-163, 2015	NOT LTC
Jaromi, Melinda, Nemeth, Andrea, Kranicz, Janos, Laczko, Tamas, Betlehem, Jozsef, Andersson, Arad Cheung Cooper Cunningham Deyo Furlan Gal Hodselmans Jansen June Kallewaard Kellow Kettler Khadilkar Malmstrom Mannion Mayl Morris Moseley Rasmussen-Barr Ribeiro Slade Smith Stubbs Takala Tavafian Tse Urquhart van den Heuvel van Middelkoop van Tulder Vieira Vogt, Treatment and ergonomics training of work-related lower back pain and body posture problems for nurses, Journal of clinical nursing, 21, 1776-1784, 2012	NO WP OUTCOMES
Jay, K., Brandt, M., Sundstrup, E., Schraefel, M. C., Jakobsen, M. D., Sjogaard, G., Andersen, L. L., Effect of individually tailored biopsychosocial workplace interventions on chronic musculoskeletal pain, stress and work ability among laboratory technicians: Randomized controlled trial protocol, BMC musculoskeletal disorders, 15, 2014	NOT RESEARCH / PROTOCOL

Jensen, Chris, Jensen, Ole Kudsk, Christiansen, David Hoyrup, Nielsen, Claus Vinther, One-year follow-up in employees sick-listed because of low back pain: randomized clinical trial comparing multidisciplinary and brief intervention, Spine, 36, 1180-9, 2011	Not a workplace intervention
Jensen, Chris, Nielsen, Claus Vinther, Jensen, Ole Kudsk, Petersen, Karin Dam, Cost-effectiveness and cost-benefit analyses of a multidisciplinary intervention compared with a brief intervention to facilitate return to work in sick-listed patients with low back pain, Spine, 38, 1059-67, 2013	Not WP
Jensen, Irene B., Bergstrom, Gunnar, Ljungquist, Therese, Bodin, Lennart, A 3-year follow-up of a multidisciplinary rehabilitation programme for back and neck pain, Pain, 115, 273-83, 2005	Not WP
Jensen,Anne Grete Claudi, A two-year follow-up on a program theory of return to work intervention, Work-A Journal of Prevention Assessment & Rehabilitation, 44, 165-175, 2013	Not WP
Ketelaar, S. M., Nieuwenhuijsen, K., Bolier, L., Smeets, O., Sluiter, J. K., Improving work functioning and mental health of health care employees using an e-mental health approach to workers' health surveillance: Pretest-posttest study, Safety and health at work, 5, 216-221, 2014	Not LTC/Disability
Kilfedder, Catherine, Power, Kevin, Karatzias, Thanos, McCafferty, Aileen, Niven, Karen, Chouliara, Zoe, Galloway, Lisa, Sharp, Stephen, A randomized trial of face-to-face counselling versus telephone counselling versus bibliotherapy for occupational stress, Psychology and psychotherapy, 83, 223-42, 2010	NO WP OUTCOMES

Kojima, Reiko, Fujisawa, Daisuke, Tajima, Miyuki, Shibaoka, Michi, Kakinuma, Mitsuru, Shima, Satoru, Tanaka, Katsutoshi, Ono, Yutaka, Efficacy of cognitive behavioral therapy training using brief e-mail sessions in the workplace: a controlled clinical trial, Industrial health, 48, 495-502, 2010	not LTC/Disability
Laing, A. C., Cole, D. C., Theberge, N., Wells, R. P., Kerr, M. S., Frazer, M. B., Effectiveness of a participatory ergonomics intervention in improving communication and psychosocial exposures, Ergonomics, 50, 1092-109, 2007	Not LTC
Larson, M. C., Renier, C. M., Konowalchuk, B. K., Reducing lost workdays after work-related injuries: The utilization of athletic trainers in a health system transitional work program, Journal of Occupational and Environmental Medicine, 53, 1199-1204, 2011	Not WP, Clinical
Levanon, Yafa, Gefen, Amit, Lerman, Yehuda, Givon, Uri, Ratzon, Navah Z., Reducing musculoskeletal disorders among computer operators: comparison between ergonomics interventions at the workplace, Ergonomics, 55, 1571-85, 2012	89% population with LTC (MSD)
Lynch, W. D., Chen, C. Y., Bender, J., Edington, D. W., Documenting participation in an employer-sponsored disease management program: Selection, exclusion, attrition, and active engagement as possible metrics, Journal of Occupational and Environmental Medicine, 48, 447-454, 2006	Process evaluation -not an intervention study per se
MacDonald-Wilson, Kim L., Rogers, E. Sally, Massaro, Joseph M., Lyass, Asya, Crean, Tim, An investigation of reasonable workplace accommodations for people with psychiatric disabilities: quantitative findings from a multi-site study, Community mental health journal, 38, 35-50, 2002	Not effectiveness study

Marangoni,Allen H., Effects of intermittent stretching exercises at work on musculoskeletal pain associated with the use of a personal computer and the influence of media on outcomes, Work-A Journal of Prevention Assessment & Rehabilitation, 36, 27-37, 2010	NO WP OUTCOMES
Marhold, C., Linton, S. J., Melin, L., A cognitive-behavioral return-to-work program: effects on pain patients with a history of long-term versus short-term sick leave, Pain, 91, 155-63, 2001	clinical intervention - outpatient - no workplace item
Martin, Marie H. T., Nielsen, Maj Britt D., Madsen, Ida E. H., Petersen, Signe M. A., Lange, Theis, Rugulies, Reiner, Effectiveness of a coordinated and tailored return-to-work intervention for sickness absence beneficiaries with mental health problems, Journal of Occupational Rehabilitation, 23, 621-30, 2013	Not workplace and participants not all employed
Mattila, Riikka, Malmivaara, Antti, Kastarinen, Mika, Kivela, Sirkka-Liisa, Nissinen, Aulikki, The effects of lifestyle intervention for hypertension on low back pain: a randomized controlled trial, Spine, 32, 2943-7, 2007	Not workplace and no WP outcomes

May, David C., Results of an OSHA ergonomic intervention program in New Hampshire, Applied occupational and environmental hygiene, 17, 768-73, 2002	Not workplace - federal regulatory organisational inspections
May, Douglas R., Reed, Kendra, Schwoerer, Catherine E., Potter, Paul, Ergonomic office design and aging: a quasi-experimental field study of employee reactions to an ergonomics intervention program, Journal of occupational health psychology, 9, 123-35, 2004	NO WP OUTCOMES
McCraty, R., Atkinson, M., Tomasino, D., Impact of a workplace stress reduction program on blood pressure and emotional health in hypertensive employees, Journal of Alternative & Complementary Medicine - New York, 9, 355-69, 2003	Not WP, not clear chronic

Mendez-Hernandez, Pablo, Dosamantes-Carrasco, Darina, Siani, Carole, Flores, Yvonne N., Arredondo, Armando, Lumbreras-Delgado, Irma, Granados-Garcia, Victor M., Denova-Gutierrez, Edgar, Gallegos-Carrillo, Katia, Salmeron, Jorge, A workplace physical activity program at a public university in Mexico can reduce medical costs associated with type 2 diabetes and hypertension, Salud publica de Mexico, 54, 20-7, 2012	Not all LTC - health promotion
Mishra, S., Xu, J., Agarwal, U., Gonzales, J., Levin, S., Barnard, N. D., A multicenter randomized controlled trial of a plant-based nutrition program to reduce body weight and cardiovascular risk in the corporate setting: the GEICO study, European journal of clinical nutrition, 67, 718-24, 2013	Not all participants LTC

Mortensen, P., Larsen, A. I., Zebis, M. K., Pedersen, M. T., Sjogaard, G., Andersen, L. L., Lasting effects of workplace strength training for neck/shoulder/arm pain among laboratory technicians: Natural experiment with 3-year follow-up, BioMed research international, 2014, 2014	Not LTC
Mueser, Kim T., Aalto, Steve, Becker, Deborah R., Ogden, John S., Wolfe, Rosemarie S., Schiavo, Diane, Wallace, Charles J., Xie, Haiyi, The effectiveness of skills training for improving outcomes in supported employment, Psychiatric services (Washington, D.C.), 56, 1254-60, 2005	Not workplace - supported employment as part of clinical treatment
Munir, Fehmidah, Randall, Raymond, Yarker, Joanna, Nielsen, Karina, The influence of employer support on employee management of chronic health conditions at work, Journal of occupational rehabilitation, 19, 333-44, 2009	Not effectiveness study

Nakao, Mutsuhiro, Nishikitani, Mariko, Shima, Satoru, Yano, Eiji, A 2-year cohort study on the impact of an Employee Assistance Programme (EAP) on depression and suicidal thoughts in male Japanese workers, International archives of occupational and environmental health, 81, 151-7, 2007	Not all have a LTC
Nassif, Hala, Brosset, Nicolas, Guillaume, Marion, Delore-Milles, Emilie, Tafflet, Muriel, Buchholz, Frederic, Toussaint, Jean-Francois, Evaluation of a randomized controlled trial in the management of chronic lower back pain in a French automotive industry: an observational study, Archives of physical medicine and rehabilitation, 92, 1927-1936.e4, 2011	NO WP OUTCOMES
Netterstrom,Bo, Friebel,Lene, Ladegaard,Yun, Effects of a Multidisciplinary Stress Treatment Programme on Patient Return to Work Rate and Symptom Reduction: Results from a Randomised, Wait-List Controlled Trial, Psychotherapy and Psychosomatics, 82, 177-186, 2013	Not workplace

Noben, Cindy Y. G., Nijhuis, Frans J. N., de Rijk, Angelique E., Evers, Silvia M. A. A., Design of a trial-based economic evaluation on the cost-effectiveness of employability interventions among work disabled employees or employees at risk of work disability: the CASE-study, BMC public health, 12, 43, 2012	Not primary research
Nordmark, B., Blomqvist, P., Andersson, B., Hagerstrom, M., Nordh-Grate, K., Ronnqvist, R., Svensson, H., Klareskog, L., A two-year follow-up of work capacity in early rheumatoid arthritis: a study of multidisciplinary team care with emphasis on vocational support, Scandinavian journal of rheumatology, 35, 7-14, 2006	Not workplace - clinical treatment and active vocational support
Nystuen, Pal, Hagen, Kare B., Solution-focused intervention for sick listed employees with psychological problems or muscle skeletal pain: a randomised controlled trial [ISRCTN39140363], BMC public health, 6, 69, 2006	Not workplace

Odeen, Magnus, Ihlebaek, Camilla, Indahl, Aage, Wormgoor, Marjon E. A., Lie, Stein A., Eriksen, Hege R., Effect of peer-based low back pain information and reassurance at the workplace on sick leave: a cluster randomized trial, Journal of occupational rehabilitation, 23, 209-19, 2013	Not all participants LTC
Oleske, Denise M., Lavender, Steven A., Andersson, Gunnar B. J., Kwasny, Mary Morrissey, Are back supports plus education more effective than education alone in promoting recovery from low back pain?: Results from a randomized clinical trial, Spine, 32, 2050-7, 2007	NO WP OUTCOME DATA
Osilla, Karen Chan, Zellmer, Steven P., Larimer, Mary E., Neighbors, Clayton, Marlatt, G. Alan, A brief intervention for at-risk drinking in an employee assistance program, Journal of studies on alcohol and drugs, 69, 14-20, 2008	Not an LTC

Ott, M. Gerald, Yong, M., Zober, A., Nasterlack, M., Messerer, P., Pluto, R. P., Lang, S., Oberlinner, C., Impact of an occupational health promotion program on subsequent illness and mortality experience, International archives of occupational and environmental health, 83, 887-94, 2010	No LTC
Pedersen, Mogens T., Blangsted, Anne K., Andersen, Lars L., Jorgensen, Marie B., Hansen, Ernst A., Sjogaard, Gisela, The effect of worksite physical activity intervention on physical capacity, health, and productivity: a 1-year randomized controlled trial, Journal of occupational and environmental medicine / American College of Occupational and Environmental Medicine, 51, 759-70, 2009	Not LTC
Pegus, Cheryl, Bazzarre, Terry L., Brown, Jeffrey S., Menzin, Joseph, Effect of the Heart At Work program on awareness of risk factors, self-efficacy, and health behaviors, Journal of occupational and environmental medicine / American College of Occupational and Environmental Medicine, 44, 228-36, 2002	CVD risk factors not LTC/D

Peterson, Ulla, Bergstrom, Gunnar, Samuelsson, Mats, Asberg, Marie, Nygren, Ake, Reflecting peer-support groups in the prevention of stress and burnout: randomized controlled trial, Journal of advanced nursing, 63, 506-16, 2008	NOT LTC
Phillips, R., Schneider, J., Molosankwe, I., Leese, M., Foroushani, P. Sarrami, Grime, P., McCrone, P., Morriss, R., Thornicroft, G., Randomized controlled trial of computerized cognitive behavioural therapy for depressive symptoms: effectiveness and costs of a workplace intervention, Psychological medicine, 44, 741-52, 2014	NO WP OUTCOMES
Poulain, C., Kerneis, S., Rozenberg, S., Fautrel, B., Bourgeois, P., Foltz, V., Long-term return to work after a functional restoration program for chronic low-back pain patients: A prospective study, European Spine Journal, 19, 1153-1161, 2010	Not workplace

Radford, Kate, Phillips, Julie, Drummond, Avril, Sach, Tracey, Walker, Marion, Tyerman, Andy, Haboubi, Naseer, Jones, Trevor, Return to work after traumatic brain injury: cohort comparison and economic evaluation, Brain injury, 27, 507-20, 2013	Not workplace intervention
Rannard, Anne, Gabbay, Mark, Sen, Dil, Riley, Richard, Britt, David, Feasibility trial of GP and case-managed support for workplace sickness absence, Primary health care research & development, 15, 252-61, 2014	NOT WP INTERVENTION
Rantonen, J., Luoto, S., Vehtari, A., Hupli, M., Karppinen, J., Malmivaara, A., Taimela, S., The effectiveness of two active interventions compared to self-care advice in employees with non-acute low back symptoms: a randomised, controlled trial with a 4-year follow-up in the occupational health setting, Occupational and environmental medicine, 69, 12-20, 2012	On review of the study at data extraction and 3rd review agreed not a workplace intervention

Rantonen, Jarmo, Vehtari, Aki, Karppinen, Jaro, Luoto, Satu, Viikari-Juntura, Eira, Hupli, Markku, Malmivaara, Antti, Taimela, Simo, Face-to-face information combined with a booklet versus a booklet alone for treatment of mild low-back pain: a randomized controlled trial, Scandinavian journal of work, environment & health, 40, 156-66, 2014	Not WP
Reavley, Nicola, A systematic grounded approach to the development of complex interventions: The Australian WorkHealth Program - Arthritis as a case study, Social Science and Medicine, 70, 2010	Not primary research
Ross,Robert H., Callas,Peter W., Sargent,Jesse Q., Amick,Benjamin C., Rooney,Ted, Incorporating injured employee outcomes into physical and occupational therapists' practice: A controlled trial of the worker-based outcomes assessment system, Journal of Occupational Rehabilitation, 16, 607-629, 2006	Not workplace

Rota, Eugenia, Evangelista, Andrea, Ciccone, Giovannino, Ferrero, Luca, Ugolini, Alessandro, Milani, Chantal, Ceccarelli, Manuela, Galassi, Claudia, Mongini, Franco, Effectiveness of an educational and physical program in reducing accompanying symptoms in subjects with head and neck pain: a workplace controlled trial, The journal of headache and pain, 12, 339-45, 2011	Not all sample have LTC
Rutanen, Reetta, Nygard, Clas-Hakan, Moilanen, Jaana, Mikkola, Tomi, Raitanen, Jani, Tomas, Eija, Luoto, Riitta, Effect of physical exercise on work ability and daily strain in symptomatic menopausal women: a randomized controlled trial, Work (Reading, Mass.), 47, 281-6, 2014	No LTC
Ryan, P., Hill, R., Anczewska, M., Hardy, P., Kurek, A., Nielson, K., Turner, C., Team-based occupational stress reduction: A European overview from the perspective of the OSCAR Project, International Review of Psychiatry, 17, 401-408, 2005	not workplace

Scheel, I. B., Birger Hagen, K., Herrin, J., Oxman, A. D., A call for action: A randomized controlled trial of two strategies to implement active sick leave for patients with low back pain, Spine, 27, 561-566, 2002	duplicate paper (STAR ID: 492848)
Schneider, Justine, Sarrami Foroushani, Pooria, Grime, Paul, Thornicroft, Graham, Acceptability of online self-help to people with depression: users' views of MoodGYM versus informational websites, Journal of medical Internet research, 16, e90, 2014	Not effectiveness study (qualitative)
Shaw, L., Domanski, S., Freeman, A., Hoffele, C., An investigation of a workplace-based return-to-work program for shoulder injuries, Work (Reading, Mass.), 30, 267-76, 2008	Not an interventions study
Shaw, William S., Besen, Elyssa, Pransky, Glenn, Boot, Cecile R. L., Nicholas, Michael K., McLellan, Robert K., Tveito, Torill H., Manage at work: a randomized, controlled trial of a self-management group intervention to overcome workplace challenges associated with chronic physical health conditions, BMC public health, 14, 515, 2014	study design

Silberman, Jordan, Schwartz, Steven, Giuseffi, Danielle L., Wang, Chun, Nevedal, Dana, Bedrosian, Richard, Reductions in employee productivity impairment observed after implementation of web-based worksite health promotion programs, Journal of occupational and environmental medicine / American College of Occupational and Environmental Medicine, 53, 1404-12, 2011	Not all LTC
Skisak CM, Tsai SP, Bhojani F, Impact of a disability management program on employee productivity in a petrochemical company, JOEM, 48, 497-504, 2006	Not all chronic condition
Stapelfeldt, Christina M., Christiansen, David H., Jensen, Ole K., Nielsen, Claus V., Petersen, Karin D., Jensen, Chris, Subgroup analyses on return to work in sick-listed employees with low back pain in a randomised trial comparing brief and multidisciplinary intervention, BMC musculoskeletal disorders, 12, 112, 2011	Not a workplace intervention

Steenstra, Ivan A., Anema, Johannes R., Bongers, Paulien M., de Vet, Henrica C. W., van Mechelen, Willem, Cost effectiveness of a multi-stage return to work program for workers on sick leave due to low back pain, design of a population based controlled trial [ISRCTN60233560], BMC musculoskeletal disorders, 4, 26, 2003	Not research findings - study design
Steultjens, E., Minis, M. A., Timely comprehensive occupational therapy significantly improves functional and work-related outcomes in employed patients with rheumatoid arthritis who are at risk of work loss, Australian occupational therapy journal, 57, 281-2, 2010	Study design. Commentary of Macedo et al 2009 - (STAR REF 491583 - weed out - on review of the abstract unclear - query
Sullivan, Michael J. L., Stanish, William D., Psychologically based occupational rehabilitation: the Pain-Disability Prevention Program, The Clinical journal of pain, 19, 97-104, 2003	Not workplace
Tveito, Torill H., Eriksen, Hege R., Integrated health programme: a workplace randomized controlled trial, Journal of advanced nursing, 65, 110-9, 2009	Not all LTC - prevention/promotion intervention

Uchiyama, Ayako, Odagiri, Yuko, Ohya, Yumiko, Takamiya, Tomoko, Inoue, Shigeru, Shimomitsu, Teruichi, Effect on mental health of a participatory intervention to improve psychosocial work environment: a cluster randomized controlled trial among nurses, Journal of occupational health, 55, 173-83, 2013	NO WP OUTCOMES
Van Oostrom, S. H., Anema, J. R., Terluin, B., Venema, A., De Vet, H. C. W., Van Mechelen, W., Development of a workplace intervention for sick-listed employees with stress-related mental disorders: Intervention Mapping as a useful tool, BMC health services research, 7, 2007	Not primary research
van Oostrom, Sandra H., Driessen, Maurice T., de Vet, Henrica C. W., Franche, Renee-Louise, Schonstein, Eva, Loisel, Patrick, van Mechelen, Willem, Anema, Johannes R., Workplace interventions for preventing work disability, The Cochrane database of systematic reviews, CD006955, 2009	Not an intervention study

van Oostrom, Sandra H., Heymans, Martijn W., de Vet, Henrica C. W., van Tulder, Maurits W., van Mechelen, Willem, Anema, Johannes R., Economic evaluation of a workplace intervention for sick-listed employees with distress, Occupational and environmental medicine, 67, 603-10, 2010	no intervention effect data - economics data only (include for economics)
Van Rhenen, W., Blonk, R. W. B., van der Klink, J. J., van Dijk, F. J., Schaufeli, W. B., The effect of a cognitive and a physical stress-reducing programme on psychological complaints, International archives of occupational and environmental health, 78, 139-148, 2005	Not LTC
van Rhenen, Willem, Blonk, Roland W. B., Schaufeli, Wilmar B., van Dijk, Frank J. H., Can sickness absence be reduced by stress reduction programs: on the effectiveness of two approaches, International archives of occupational and environmental health, 80, 505-15, 2007	Not all population stressed (LTC)

Varekamp, Inge, Verbeek, Jos H. A. M., van Dijk, Frank J. H., How can we help employees with chronic diseases to stay at work? A review of interventions aimed at job retention and based on an empowerment perspective, International archives of occupational and environmental health, 80, 87-97, 2006	Not primary research
Varekamp, Inge, Verbeek, Jos H., de Boer, Angela, van Dijk, Frank J. H., Effect of job maintenance training program for employees with chronic disease - a randomized controlled trial on self-efficacy, job satisfaction, and fatigue, Scandinavian journal of work, environment & health, 37, 288-97, 2011	Not workplace
Vermeulen, Sylvia J., Anema, Johannes R., Schellart, Antonius J. M., Knol, Dirk L., van Mechelen, Willem, van der Beek, Allard J., A participatory return-to-work intervention for temporary agency workers and unemployed workers sick-listed due to musculoskeletal disorders: results of a randomized controlled trial, Journal of occupational rehabilitation, 21, 313-24, 2011	unemployed population

Vora, Rathin N., Barron, Bruce A., Almudevar, Anthony, Utell, Mark J., Work-related chronic low back pain-return-to-work outcomes after referral to interventional pain and spine clinics, Spine, 37, E1282-9, 2012	Not workplace - medical management of LBP - Not workplace (hospital based follow up post initial 8 week 'conservative care')
Wallstedt-Paulsson, Eva, Eklund, Mona, Outcome of work rehabilitation for people with various disabilities and stability at a one-year follow-up, Work (Reading, Mass.), 31, 473-81, 2008	population - employed and unemployed
Wang, Philip S., Simon, Gregory E., Kessler, Ronald C., Making the business case for enhanced depression care: the National Institute of Mental Health-harvard Work Outcomes Research and Cost-effectiveness Study, Journal of occupational and environmental medicine / American College of Occupational and Environmental Medicine, 50, 468-75, 2008	Study design. not an intervention study ('review' of literature with commentary on WORCS Trial)
Watson, Alice J., Singh, Kanwaljit, Myint-U, Khinlei, Grant, Richard W., Jethwani, Kamal, Murachver, Ellen, Harris, Kimberly, Lee, Thomas H., Kvedar, Joseph C., Evaluating a web-based self-management program for employees with hypertension and prehypertension: a randomized clinical trial, American heart journal, 164, 625-31, 2012	NO WP OUTCOMES
Webb, M. S., Smyth, K. A., Yarandi, H., A progressive relaxation intervention at the worksite for African-American women, Journal of National Black Nurses' Association : JNBNA, 11, 1-6, 2000	Not LTC - risk factor for High blood pressure
Yoder, Virginia G., Dixon, Dave L., Barnette, Debra J., Beardsley, James R., Short-term outcomes of an employer-sponsored diabetes management program at an ambulatory care pharmacy clinic, American journal of health-system pharmacy : AJHP : official journal of the American Society of Health-System Pharmacists, 69, 69-73, 2012	Not an intervention study - experiences on a RTW scheme

Young, Amanda E., Return to work following disabling occupational injury--facilitators of employment continuation, Scandinavian journal of work, environment & health, 36, 473-83, 2010	NOT AN INTERVENTION STUDY - Experiences on a RTW scheme
Zebis, Mette K., Andersen, Lars L., Pedersen, Mogens T., Mortensen, Peter, Andersen, Christoffer H., Pedersen, Mette M., Boysen, Marianne, Roessler, Kirsten K., Hannerz, Harald, Mortensen, Ole S., Sjogaard, Gisela, Implementation of neck/shoulder exercises for pain relief among industrial workers: a randomized controlled trial, BMC musculoskeletal disorders, 12, 205, 2011	No LTC

Workplace health: support for employees with disabilities and long-term conditions