Effectiveness of workplace rehabilitation interventions in the treatment of work-related low back pain: a systematic review

Williams RM, Westmorland MG, Lin CA, Schmuck G, Creen M

CRD summary
This review investigated the effectiveness of workplace-based rehabilitation interventions for workers with musculoskeletal work-related low back pain. The authors concluded that there was some evidence of effectiveness of workplace rehabilitation interventions for injured workers with low back pain, but incomplete reporting, inadequate synthesis and the possibility of bias in the review made the reliability of the conclusions unclear.

Authors' objectives
To investigate the effectiveness of workplace-based rehabilitation interventions for workers with musculoskeletal work-related low back pain.

Searching
MEDLINE, CINAHL, EMBASE and AMED were searched from January 1982 to April 2005 for English-language articles. Search terms were reported. Reference lists were examined for further studies. Abstracts and unpublished studies were excluded.

Study selection
Prospective or cross-sectional studies of employees who had work-related musculoskeletal low back pain injuries were eligible for inclusion if the intervention was carried out in the workplace and involved secondary prevention. Case studies were excluded.

Randomised controlled trials (RCTs) and controlled and uncontrolled cohort studies were included. The interventions included were: early return to work/modified work; clinical interventions with occupational components; ergonomics that included exercises and lumbar supports; exercises and workplace visits; and supervisor involvement for return to work. At least 10 outcomes were of interest in the review, these included: injury statistics; function; pain; disability; sick leave; work adaptation; and work modification. A range of occupational groups was included.

Five independent reviewers were involved in study selection; two or three reviewers resolved disagreements by consensus.

Assessment of study quality
Methodological quality was determined using the Evaluation Guidelines for Rating the Quality of an Intervention Study (study evaluation in terms of literature review, study design, participants, intervention, outcomes, analysis and recommendations). Each item was scored from 0 to 2 and the maximum quality score was 48. Two reviewers independently performed the validity assessment. Disagreements were resolved by consensus with an additional one or two reviewers.

Data extraction
The authors stated neither how the data were extracted for the review nor how many reviewers performed the data extraction.

Methods of synthesis
The studies were presented in a narrative synthesis categorised by intervention. A table of primary study details was available to determine between-study differences.

Results of the review
Fifteen articles that described 10 studies were included in the review (n appeared to be approximately 2,474): three RCTs (n=350); four cohort studies with control groups (n=2,015 maximum); and three uncontrolled cohort studies
(n=109). Eight articles had a quality score of 32 or more (medium to very high).

**Early return to work/modified work**: One study (described in four articles) reported that the intervention was associated with decreasing rates of back injuries and lost-time back injuries, and reduced pain and disability (one controlled cohort study).

**Occupational interventions**: One study reported that intervention was associated with 2.4 times faster return to regular work compared with the usual care group (95% CI to 1.19, 4.89; one RCT, n=130) and decreasing pain and disability demonstrated by a significantly lower Oswestry Disability Questionnaire score (p=0.02).

**Ergonomics (exercises and lumbar support)**: Studies reported that interventions were associated with satisfaction in most workers (one cohort study), effective return to work after more than 200 days of sick leave (one cohort study), a significant reduction in pain intensity (one RCT), complete recovery in 27 out of 30 workers (one cohort study) and perceived benefit from lumbar support (1 cohort study).

**Exercises and workplace visits**: Studies reported that interventions were associated with a smaller number of workers with daily pain (one RCT) and a significantly lower number of lost days compared to control (one controlled cohort study).

**Supervisor involvement in return to work**: One cohort study reported that interventions were associated with significantly increased knowledge, more initiations of ergonomic improvements, more contact with and follow-up of sick-listed personnel.

**Authors' conclusions**
There was some evidence of effectiveness of workplace rehabilitation interventions for injured workers with low back pain.

**CRD commentary**
The research question was clear and supported by inclusion criteria for participants and interventions. Criteria for study design were broad and none were specified for outcomes that may have led to subjective decisions during study selection. Four appropriate databases were searched, however, the authors excluded non-English language and unpublished studies, which increased the possibility of language and publication biases. Validity of primary studies was assessed with appropriate criteria. Study details were included. Multiple reviewers were involved in validity assessment and study selection, which reduced possible error and bias; any similar steps taken for data extraction were not described. Studies were synthesised narratively, which appeared appropriate given the differences between studies. Synthesis was limited to the best-quality included studies, but all studies were described in the narrative. It appeared that the authors' conclusions were supported by the evidence presented, but incomplete reporting of study outcomes, inadequate synthesis of evidence with respect to study quality and the potential for selective reporting of positive outcome measures meant that the conclusions may not be reliable. The recommendations for future research appeared justified.

**Implications of the review for practice and research**

**Practice**: The authors did not state any implications for practice.

**Research**: The authors stated that further high-quality RCTs with a cost-benefit component and reliable and valid outcome measures that reflected all stakeholders' perspectives were needed. Investigators should collaborate with epidemiologists and statisticians; studies should aim for improved understanding of return-to-work and psycho-social factors.

**Funding**
Not stated.

**Bibliographic details**
Williams RM, Westmorland MG, Lin CA, Schmuck G, Creen M. Effectiveness of workplace rehabilitation

**PubMedID**
17453982

**DOI**
10.1080/09638280600841513

**Original Paper URL**
http://www.informaworld.com/smpp/content~db=all~content=a776487412~tab=content~order=page

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Exercise; Human Engineering; Humans; Low Back Pain /rehabilitation; Occupational Diseases /rehabilitation

**AccessionNumber**
12008104306

**Date bibliographic record published**
03/02/2009

**Date abstract record published**
11/11/2009

**Record Status**
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.