Interventions in health-care settings to protect musculoskeletal health: a systematic review


CRD summary
This well-conducted review assessed occupational safety and health interventions on musculoskeletal health among workers in health-care settings, concluding that multi-component patient handling interventions and exercise training interventions had a positive effect on musculoskeletal health. The findings from the original review are likely to be reliable; updated evidence does not seem to significantly alter these findings.

Authors' objectives
To assess the effect of occupational safety and health interventions on musculoskeletal health status among care workers in healthcare settings.

Searching
MEDLINE, EMBASE, CINAHL, PsycINFO, Academic Source Premier and Business Source Premier were searched for peer-reviewed studies in English, Spanish, Swedish or French. Search terms were reported, but search dates were not. Experts were contacted.

An updated search was undertaken in all the databases except for CINAHL, to identify studies published between 2006 and 2009 (see Other Publications of Related Interest).

Study selection
Studies that were conducted in a health care setting and assessed any primary and secondary prevention intervention designed to protect musculoskeletal health were eligible for inclusion. Eligible studies had to report musculoskeletal symptoms, disorders or clinical diagnoses. A wide range of settings were eligible, with the most common in the included studies being in hospital. Interventions were excluded if the primary outcome was violence reduction or if they were designed to meet regulatory requirements.

Participation rates ranged from 44% to 100% (where reported). Participants were most commonly nurses or nursing assistants. Most interventions involved some type of training. Outcomes included musculoskeletal symptoms, injury rates, and absenteeism, lost-time rates and workers' compensation claims.

One reviewer screened titles and abstracts, and a random 10% were screened by a second reviewer. All full papers were screened by two reviewers. Disagreements were resolved by consensus.

For the updated search, two reviewers screened titles and abstracts, and where abstracts were insufficient, a small subset of full papers were screened.

Assessment of study quality
Study quality was assessed against 19 quality criteria including: reporting of the research question, hypotheses interventions used, exposure parameters and contamination; length of follow-up; patient spectrum and characteristics; withdrawals; and analysis used. Each criterion was weighted and scored from 1 to 4 to produce a maximum quality score of 47. Quality scores were expressed as percentages: high quality (80% to 100%); medium to high quality (60% to 79%); medium quality (40% to 59%); and limited quality (<40%). Limited-quality studies were excluded from the review.

Quality of the included studies was independently assessed by pairs of reviewers. Each reviewer was randomly paired with at least two other reviewers. Pairs of reviewers resolved disagreements through discussion or consensus with a third reviewer.
Data extraction
Pairs of reviewers (rotated to minimise bias) independently extracted data on whether interventions had a positive, negative or no effect on outcomes (or a combination of these). Disagreements were resolved by discussion or where necessary through consultation with a third reviewer.

Methods of synthesis
Medium and high-quality studies were combined in a narrative synthesis supported by tables and grouped by intervention.

Results of the review
Sixteen studies were included in the review (n at least 3,579 patients, range 45 to 1,239 where stated), including seven randomised, eight non-randomised and one pre- versus post-intervention. Two studies were high quality and 14 medium to high quality. Loss to follow-up was generally low, ranging from 0% to 57% (where reported). The updated search identified three new studies; two medium to high quality and one high quality. No other details were provided.

There was moderate evidence that multi-component patient handling (three studies) and exercise training (six studies) had a positive effect on musculoskeletal health. Insufficient evidence to determine an effect on musculoskeletal health was reported for all other interventions, due largely to an insufficient number of studies. Across 14 studies, 10 reported positive effects and seven reported negative effects for some outcomes. Two of four studies reported positive outcomes for injury, lost work days and workers' compensation claims; two studies reported no effect for one or more of these outcomes. No intervention had a negative effect on outcomes.

The three studies identified by the updated search provided moderate evidence that patient handling training alone, and cognitive behavioural training alone, did not have a significant effect on musculoskeletal health.

Authors' conclusions
A moderate level of evidence supported a positive effect on musculoskeletal health for interventions with multi-component patient handling and exercise training.

The updated review concluded that there was evidence to support exercise as providing positive health benefits, but training alone was not shown to be effective.

CRD commentary
This well-conducted review was based on a broad question that was appropriately defined in terms of study settings, interventions and outcomes of interest. The search for published studies was reasonably thorough. No attempt was made to identify unpublished studies, so the potential for publication bias could not be excluded. The exclusion of studies in all but four languages might also have meant that some studies were missed and language bias could have been present. Multiple reviewers were involved in the selection, extraction and quality assessment of studies, and extensive steps were undertaken to minimise bias and error during the extraction and assessment processes.

Study quality was assessed against an extensive list of quality criteria and each score converted to a quality category. Given the heterogeneity of the included studies, the use of a narrative synthesis appeared to be appropriate. Several interventions were investigated in only single studies.

Although a proportion of studies comprised small sample sizes and non-randomised designs, the authors’ conclusions appear to be reliable, although they may not represent the entire evidence base.

The updated review explicitly stated that two reviewers screened studies for inclusion, but it was not clear whether multiple reviewers were involved in data extraction and quality assessment. No further details were provided on the three new studies identified, but further details were available from the authors. The additional evidence base was small and did not seem to significantly alter the findings from the original review.
Implications of the review for practice and research

Practice: The authors stated that there was limited high-quality evidence to support the musculoskeletal health benefits of interventions implemented in individual settings such as hospitals, long-term care facilities and other healthcare establishments. From the updated review, the authors stated that workplaces should not implement patient handling or cognitive behavioural training as isolated interventions.

Research: The authors stated that more high-quality studies were needed, particularly studies that focused upon equipment such as mechanical lifts and patient transfer aides, and interventions that involved multi-component patient handling and exercise training. An expert group should be used to define key interventions prior to such studies. Well-designed studies, controlled studies with adequate sample sizes, appropriate musculoskeletal outcome measurement, and four to 12 months follow up were required.

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Bibliographic details

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Other publications of related interest

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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.