Exercise therapy for office workers with nonspecific neck pain: a systematic review
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CRD summary
This review found evidence supporting the effectiveness of muscle strengthening exercise and endurance exercise for the treatment of non-specific neck pain in office workers. Lack of information about the strength of the effects observed in the results and the potential for various review biases mean the authors’ conclusions should be interpreted with some caution and that their reliability is unclear.

Authors' objectives
To evaluate the evidence on types of exercise for the prevention and treatment of non-specific neck pain in office workers.

Searching
PubMed, CINAHL, the Cochrane Library, Science Direct, PEDro, ProQuest, APA PsycNET and Scopus were searched for relevant studies in English from 1980 to April 2010; search terms were reported. References lists of the retrieved articles were checked to identify additional references.

Study selection
Published randomised controlled trials (RCTs) of at least one type of exercise intervention in office workers, computer users or visual display unit operators with non-specific neck pain were eligible for inclusion. Trials on neck pain due to serious spinal pathology, systemic disease or other specific causes were excluded.

In most included trials, the participants had non-specific neck pain; in the remaining trials, healthy volunteers and participants with neck pain were included (where specified). Some of the participants had chronic neck pain. The exercise interventions included stretching exercises, strengthening training, and neck endurance exercise. The comparators included no intervention, adjustments of workstations, education, aerobic exercise, deep breathing and health promotion. Outcomes measured were pain and pain intensity, sick leave, disability, pressure pain thresholds, recovery, and duration of pain.

Two reviewers independently performed the study selection.

Assessment of study quality
Two reviewers independently assessed methodological quality using the 11-point (yes/no item) PEDro scale. The reviewers did not use the first item on the list because it evaluated external validity of the results. A high quality trial was that which attained a PEDro score of at least 5 out of 10 "yes" answers; a low quality study was defined as scoring less than 5 out of 10 "yes" answers. If a trial had been previously rated according to the PEDro scale and confirmed on the PEDro database, that score was used in the review.

Data extraction
Data were extracted as reported on participants, intervention parameters, outcomes and results by two independent reviewers using standardised forms. Any disagreements between the reviewers were resolved by consensus or by a third reviewer.

Methods of synthesis
The results were summarised in a narrative synthesis. The authors used vote counting to summarise the results on the basis of whether positive, neutral or negative outcomes resulted from the interventions. A rating system was also used to summarise the trials based on the quality and outcome of the trials ranging from strong evidence (evidence from multiple good-quality RCTs) to no evidence (no RCTs).

Subgroup analyses were conducted stratified by purpose (prevention, treatment or disability reduction) and according to type of exercise (strengthening, endurance, stretching and non-specific exercise).
Results of the review
Nine RCTs (n=1,804 participants) were included in the review. Six trials were judged to be of high quality with a mean PEDro score of 6.8 points out of 10; three trials were judged to be of poor quality with mean scores of 3.8 points. Allocation concealment was adequately reported in three trials and there was no blinding of patients or therapists in any of the RCTs. Characteristics of neck pain were not specified in 71% of the included trials.

Prevention of neck pain: Two high quality RCTs reported conflicting results for muscle strengthening exercise programmes in asymptomatic participants. One high quality RCT found no evidence of benefit for the use of non-specific exercise on the prevention of non-specific neck pain.

Treatment of neck pain: Three high quality RCTs found muscle strengthening exercise programmes conferred significant benefits in reducing intensity, discomfort and duration of neck pain. One good-quality RCT found no differences in neck pain intensity in workers with neck pain after a strengthening programme. Two trials found significant benefits of muscle endurance training for treating neck pain compared with aerobic and stretching exercises regularly, and general advice on postural and movement control. One trial found that the combination of stretching and strengthening had no significant effect on pain intensity in workers with neck pain.

Reduction of disability associated with neck pain: There was conflicting evidence on the effectiveness of muscle strengthening training on disability reduction. Three high quality RCTs found that muscle strengthening training did not result in significant differences in work ability, sick leave, disability or recovery. One high quality RCT showed benefits with muscle strengthening. One RCT found that muscle endurance exercise had a positive effect on reducing disability associated with neck pain. One trial found reductions in disability with non-specific exercise, rest breaks and workstation adjustments compared with workers who had received rest breaks and workstation adjustments only.

Authors’ conclusions
Strong evidence was found that supported the effectiveness of muscle strengthening exercises and endurance exercise for the treatment of neck pain and moderate evidence for muscle endurance exercise reducing pain-related disability. More research was required to determine the most effective exercise programmes for office workers.

CRD commentary
The review addressed a clear question. Criteria for the inclusion of studies were stipulated. Appropriate databases were searched for relevant studies, but the exclusion of unpublished studies and abstracts meant that there was some risk of publication bias. The restriction of the review to studies published in English language meant there was a risk of language bias. Steps were taken to minimise errors and bias at each stage of the review process.

The authors summarised the results by vote counting, which could lead to erroneous conclusions and overstating of effects found in the results. It was not clear why combining the results in a meta-analysis was not used. There was no information provided on the magnitude of the observed effects in the included trials. Some of the limitations of the review for potential language and publication biases were acknowledged by the authors.

The lack of information about the strength of the effects observed in the results and the potential for language and publication biases mean that the authors’ conclusions should be interpreted with some caution and their reliability is unclear.

Implications of the review for practice and research
Practice: The authors stated that further research should select more distinct groups of patients who may be more likely to benefit from specific exercise interventions.

Research: The authors stated that further well-designed trials were required to determine whether differences in study characteristics affected the effectiveness of the interventions and that direct comparisons between different types of exercise programmes should be investigated.
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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.