Clinical outcomes of exercise in the management of subacromial impingement syndrome: a systematic review

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CRD summary
This review concluded that there was limited evidence to support the use of exercise in the treatment of subacromial impingement syndrome. Further well-defined clinical trials on specific exercise interventions were needed. The conduct of this review was generally good and the authors’ conclusions are suitably cautious given the quality of available evidence.

Authors' objectives
To review the effectiveness of exercise intervention for the management of subacromial impingement syndrome.

Searching
MEDLINE, EMBASE, CINAHL, PEDro, AMED, SPORTDiscus, The Cochrane Library, NRR and ICL were searched up to May 2009 without language restrictions. The MEDLINE search strategy was reported. References of included articles were searched.

Study selection
Randomised controlled trials of exercise alone or combined with other conservative management compared with a non-exercise intervention or combinations of exercise with different surgical or conservative treatments in adults (18 to 66 years) with a diagnosis of non-acute subacromial impingement were eligible for inclusion. Non-acute impingement was defined as a minimum duration of three months. The condition had to be classified as Stages I and II (Neer 1983). Eligible studies had to report any relevant clinical outcome (further details not reported). Studies of participants with a history of non-specific shoulder pain, rotator cuff injury or associated cervical spine involvement were excluded.

The included studies assessed varied interventions that included: supervised exercise for three to six months; self-training or physiotherapy stabilising and stretching exercises; hot-packs; and Theraband strengthening exercises. Outcome measures included: pain measured with visual analogue scales; active range of movement; function (different measures that included Neer questionnaire); and muscle strength.

Studies were selected by two reviewers.

Assessment of study quality
Validity was assessed using the PEDro scale of randomisation, allocation concealment, baseline comparability, blinding, measurement of key outcomes and use of intention-to-treat analysis.

Validity assessment was performed independently by two reviewers. Discrepancies were resolved by discussion or consultation with a third reviewer.

Data extraction
Results for outcomes were extracted as reported in the studies.

Data extraction was performed independently by two reviewers. Discrepancies were resolved by discussion.

Methods of synthesis
As the studies were heterogeneous with regards to design, populations, interventions, control groups and outcomes, a best-evidence synthesis was presented.
Results of the review
Eight trials (n=461, range 14 to 125) were included. Four achieved a PEDro score of 6 or above and were considered good quality; the other four scored 4 or less and were considered poor quality.

Three trials used a non-exercise comparator: one compared to placebo; one used a waiting list control; and one used a functional brace worn during the day and at night if possible. The placebo-controlled trial found statistically significant differences between groups for pain and Neer score at six months, but not after two and a half years (patients were no longer in their randomised groups at this point). The waiting list controlled trial found a statistically significant improvement for the intervention group for pain, function, range of abduction and extension and quality of life (short-form 36). The trial with the brace control found no statistically significant differences between groups.

Five trials included exercise as part of the comparator. One found that the intervention group had significantly less pain over a 24-hour period and on the subacromial compression test after treatment. One trial found a significantly greater pain reduction at 12 months for the intervention group. The other three trials did not report any statistically significant differences between groups.

Authors' conclusions
There was limited evidence to support the use of exercise in treatment of subacromial impingement syndrome. Further well-defined clinical trials on specific exercise interventions were needed.

CRD commentary
This review specified inclusion criteria for study design, participants and interventions, but included a broad range of outcomes. The search covered a range of relevant databases and was not restricted by language. Study selection, validity assessment and data extraction were performed by two reviewers to help reduce the risk of any errors or bias in the process. Study validity was assessed and although some details were reported, these were not full details for each study. Results were presented in tables and as a narrative, which seemed to be appropriate. Results were only reported as being statistically significant or not without any effect sizes or p-values as justification.

The conduct of this review was generally good and the authors' conclusions are suitably cautious given the quality of available evidence.

Implications of the review for practice and research
Practice: The authors stated that there was only limited evidence to support the use of exercise in the treatment of subacromial impingement syndrome.

Research: The authors stated that well-defined and powered clinical trials were needed to assess specific exercise interventions. Classification of shoulder problems including subacromial impingement syndrome needed further consideration. Trials should specify elements of muscle balance and movement pattern corrections to re-educate muscle activity and specify the components of the control groups.

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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.