Exercise therapy for the conservative management of full thickness tears of the rotator cuff:
a systematic review
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CRD summary
This review found that there is some evidence to support the use of exercise in the management of full thickness rotator cuff tears. However, the authors emphasised the need for well-designed randomised controlled trials. These cautious conclusions appear to be supported by the data presented, but failure to adequately synthesise the results means that they should be interpreted with some degree of caution.

Authors' objectives
To determine the effectiveness of therapeutic exercise for the treatment of full thickness tears of the rotator cuff.

Searching
MEDLINE, AMED, PEDro, EMBASE, the Cochrane Library and CINAHL were searched from inception to July 2006; the search terms were reported. The reference lists of retrieved articles were screened for additional relevant studies. No language restrictions were applied.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) and observational studies, including case studies, were eligible for inclusion.

Specific interventions included in the review
Studies in which at least one treatment group received exercise therapy, either in isolation or in conjunction with other treatments, were eligible for inclusion. Four studies involved exercise only programmes; six combined exercise with other treatments (splints, analgesics, non-steroidal anti-inflammatory drugs, corticosteroid injections, therapeutic modalities including ultrasound, and education).

Participants included in the review
Studies of skeletally mature adults with a clinical diagnosis of full thickness, massive, or inoperable rotator cuff tears were eligible for inclusion. The age of the participants ranged from 44 to 83 years. Where reported, duration of symptoms prior to treatment ranged from 1 week to 30 years. Rotator cuff tears were diagnosed by ultrasound, magnetic resonance imaging, arthrogram and arthroscope.

Outcomes assessed in the review
Studies had to report at least one of the following outcome measures to be eligible for inclusion: shoulder impairment, shoulder disability, pain, patient-perceived effect or benefit, and impact on quality of life. The outcomes assessed in the included studies were: shoulder impairment, shoulder disability, pain, Oxford Shoulder Score, Modified Constant-Murley Score, Shoulder Pain and Disability Index, American Shoulder and Elbow Surgeons Score, Simple Shoulder Test, UCLA Shoulder Rating Score, Japanese Orthopaedic Association Score, Modified Wolfgang's Criteria, SF-36, SF-12 and patient perception. They were assessed at between 7 weeks and 7.6 years.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
Two reviewers independently assessed the quality of observational studies using guidance from the Centre for Reviews and Dissemination. The criteria used were appropriate patient selection, prospective investigation, adequate follow-up, loss to follow-up reported, blinded assessment and appropriate outcomes measured. Any disagreements were resolved through consensus.
Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

Methods of synthesis
How were the studies combined?
Results of individual studies were tabulated, with little attempt made to adequately synthesise them.

How were differences between studies investigated?
Differences between the studies were not formally investigated but were discussed in the text.

Results of the review
Ten studies (304 patients) were included: 8 case-series and 2 single case studies.

Two studies were prospective and two were retrospective; the direction of data collection was unclear in the remaining 6 studies. None of the studies reported that the investigators were blinded. All studies included relevant participants, specified appropriate inclusion criteria, accounted for loss to follow-up and measured appropriate outcomes. Six studies reported a duration of follow-up that was greater than 1 year.

All studies reported improved outcomes based on the intervention.

Authors' conclusions
There is some evidence to support the use of exercise in the management of full thickness rotator cuff tears. Well-designed RCTs are needed to assess the efficacy of exercise in the management of full thickness and massive rotator cuff tears.

CRD commentary
The review addressed a focused question that was supported by clearly defined inclusion criteria. An extensive literature search was undertaken without any language restrictions, although no attempts were made to locate unpublished studies; there is therefore a possibility of publication bias. A detailed quality assessment was conducted and the results were clearly reported. Appropriate steps were taken to minimise bias and errors in the assessment of study quality, but it is unclear whether such steps were also taken for the study selection and data extraction processes.

Adequate study details were presented clearly in the tables. The ‘Results’ section contained no information on the results of the included studies, although results data were tabulated in detail. Although meta-analysis would have been inappropriate given the differences between the studies, some synthesis of the findings across studies would have helped in the interpretation of the results. The authors’ cautious conclusions appear to be supported by the data presented, but failure to adequately synthesise the results means that these should be interpreted with some degree of caution.

Implications of the review for practice and research
Practice: The authors stated that exercise therapy can be recommended as a therapeutic option to patients. However, it is not possible to provide specific guidance such as when to start the programme and what it should include.

Research: The authors stated that well-designed RCTs using appropriate validated outcome measures are needed to address the efficacy of exercise in the management of full thickness and massive rotator cuff tears.

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