Effectiveness of additional supervised exercises compared with conventional treatment alone in patients with acute lateral ankle sprains: systematic review
van Rijn RM, van Ochten J, Luijsterburg PA, van Middelkoop M, Koes BW, Bierma-Zeinstra SM

CRD summary
This generally well-conducted review concluded that there was no strong evidence on any outcome measure following the addition of supervised exercises to conventional treatment in patients with acute lateral ankle sprains. There was limited to moderate evidence of effectiveness for recovery and return to sport in specific populations. The authors' conclusions are likely to be reliable.

Authors' objectives
To evaluate the effectiveness of supervised exercises added to conventional treatment in adolescents and adults with acute lateral ankle sprains.

Searching
In addition to the identification of all references from an earlier review, MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials (CENTRAL) and CINAHL were searched from March 2004 to July 2010 with no language restrictions. Search terms were reported in an online appendix (see URL for Additional Data). Reference lists of all included studies were scanned for further articles.

Study selection
Randomised controlled trials (RCTs), quasi-randomised controlled trials, and controlled clinical trials of adolescents of adults with acute lateral ankle sprain, that compared conventional treatment plus added supervised exercises versus conventional treatment alone, were eligible for inclusion in the review. Conventional treatment was defined as immobilisation, exercise instructions given to the patient, or use of external support. Studies of treatment following surgery, and for recurrent ankle injury or chronic instability, were excluded.

Conventional treatment in the included studies comprised no treatment, ice application, partial immobilisation (tape, brace or bandage), complete immobilisation (plaster cast), home exercise programmes, instructions for early mobilisation, or a combination of these treatments. Supervised exercise was carried out by a visiting physical therapist and included the promotion of strength, mobility, and balance (with or without the use of a balance or wobble board). The number of visits and treatment duration varied. The reported outcomes were pain, instability, re-sprain, recovery, function, return to work, and return to sport. Where reported, outcome measures included visual analogue scales, questionnaires, and functional scoring. In all studies, over half of participants were men; the mean age ranged between 22 and 37 years (where reported). Injury grade was reported in just over half of studies; this was mostly described as moderate.

Two independent reviewers selected the studies; disagreements were resolved by consensus.

Assessment of study quality
Quality assessment was carried out using an adapted version of the Cochrane Collaboration tool. Eleven items were scored, and studies with 6 or more points were considered to have a low risk of bias.

Two reviewers independently carried out the quality assessment; disagreements were resolved by consensus.

Data extraction
Data were extracted or calculated to enable the presentation of estimates, relative risks (RR), or effect sizes, along with 95% confidence intervals (CI).

One reviewer extracted the data. In the event of uncertainty, consultation took place with a second reviewer.

Methods of synthesis
Due to clinical heterogeneity, studies were combined narratively. The synthesised evidence was rated as strong (consistent findings in multiple RCTs with low risk of bias); moderate (consistent findings from one RCT with a low risk of bias; one or more RCTs with a high risk of bias; or multiple RCTs with high risk of bias); limited/conflicting (one RCT with low or high risk of bias; or inconsistent findings from multiple RCTs); or not available (no RCTs).

Sub-group analyses were planned in vulnerable populations and by type of conventional treatment (the latter did not take place due to insufficiently distinguishable treatments).

Studies were grouped by length of follow-up: short-term (within two weeks of randomisation); intermediate (two weeks to three months of follow-up); and long-term (more than three months of follow-up).

Results of the review
Eleven studies (776 patients) were included in the review. Ten studies were considered to have a high risk of bias, with reported limitations in blinding, allocation concealment, and the baseline comparability of study groups. The absence of power analysis in ten studies meant that it was unclear whether these studies were powered to detect significant differences between study groups.

Pain (four studies): There were no significant differences between treatment groups for pain in the short-term or long-term. This was translated as moderate evidence of no effectiveness. Sub-group analyses revealed limited evidence of effectiveness for patients with severe injuries in the intermediate period, conflicting evidence of effectiveness for athletes over the intermediate-term, and moderate evidence of no effectiveness for this group in the short-term and long-term.

Instability (five studies): Evidence of effectiveness for instability was conflicting at the long-term follow-up; moderate evidence revealed no effect at the intermediate stage. This pattern was mirrored in the sub-group analysis of athletes or soldiers. There was limited evidence of effect at the intermediate follow-up in patients with severe injuries. A similar trend was reported for studies measuring re-sprain (five studies); there was limited evidence of no effectiveness in the long-term in patients with severe injuries.

Recovery (two studies): There was limited evidence of effectiveness for recovery in the short-term, and limited evidence for no effectiveness at the intermediate- and long-term follow-up periods. Sub-group analysis in patients with severe injuries revealed limited evidence for effectiveness at the short-term, and limited evidence for no effectiveness at the intermediate- and long-term follow-up.

Functional outcomes (three studies): The analysis of functional outcomes revealed conflicting evidence of effectiveness at the short-term follow up, and limited evidence for no effectiveness in the long-term. Sub-group analysis revealed limited evidence of no effectiveness in athletes.

Return to work/sport: There was conflicting evidence of effectiveness in reducing time to return to work in the short-term and limited evidence of no effect at the intermediate- and long-term (seven studies). In three studies of specific populations (including active sports participants, athletes, and soldiers), there was conflicting evidence of effectiveness for returning to sport (intermediate-term), and limited evidence of no effectiveness in the long-term.

Authors’ conclusions
There was no strong evidence of effectiveness on any outcome measure arising from the addition of supervised exercises to conventional treatment, compared with conventional treatment alone, in adolescents or adults with acute lateral ankle sprains. There was limited to moderate evidence of effectiveness for recovery and return to sport in specific populations, such as athletes or soldiers.

CRD commentary
The review question was clear and supported by potentially reproducible inclusion criteria for all aspects apart from outcomes, which were not pre-specified. The search strategy included several relevant data sources, and attempts were made to minimise language bias. It was not clear to what extent publication bias was a potential threat to the analysis. The review process was carried out with sufficient attempts to minimise error and bias, although the reliance on one reviewer to carry out the data extraction might have compromised these efforts.
An appropriate quality assessment tool was applied; the results were clearly presented and taken into account in the review findings. Study details were presented, although study designs were not distinguished. The authors acknowledged the limitations of this review in relation to the poor quality of included studies, and the inability to confirm intervention effects due to potentially underpowered analyses. The authors’ conclusions reflected the evidence presented and are likely to be reliable.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.
Research: The authors stated that high quality randomised controlled trials are needed to investigate the effectiveness of additional supervised treatments in athletes and patients with severe injuries.

Funding
Erasmus MC University Medical Center, Department of General Practice.

Bibliographic details

PubMedID
20978065

DOI
10.1136/bmj.c5688

Original Paper URL
http://www.bmj.com/content/341/bmj.c5688.abstract

Indexing Status
Subject indexing assigned by NLM

MeSH
Acute Disease; Bias (Epidemiology); Directly Observed Therapy; Exercise Therapy /methods; Humans; Joint Instability /etiology; Lateral Ligament, Ankle /injuries; Pain /etiology; Randomized Controlled Trials as Topic; Recovery of Function; Recurrence; Sick Leave /statistics & numerical data; Sports; Sprains and Strains /therapy; Treatment Outcome

AccessionNumber
12010007203

Date bibliographic record published
03/11/2010

Date abstract record published
10/11/2010

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.