Comparison of conventional treatment and supervised rehabilitation for treatment of acute lateral ankle sprains: a systematic review of the literature

CRD summary
This review concluded that there is limited evidence that conventional treatment combined with supervised rehabilitation training may be superior to conventional treatment alone for acute lateral ankle sprain. The authors’ conclusion seems reasonable given the small number and poor quality of the studies identified.

Authors’ objectives
To compare the effectiveness of conventional treatment combined with supervised rehabilitation training with conventional treatment alone for acute lateral ankle sprain.

Searching
MEDLINE (1966 to March 2004), CINAHL, PEDro, EMBASE (1984 to April 2002) and the Cochrane Controlled Trials Register (March 2004) were searched without language restrictions for relevant articles; the search terms were reported. Bibliographic references of selected articles were also searched. In addition, peer-reviewed, non-indexed journals available on the Internet were also reviewed. Only published, full reports were included.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs), quasi-RCTs and controlled clinical trials were eligible for inclusion.

Specific interventions included in the review
Studies that compared conventional treatment plus supervised rehabilitation training (such as weight bearing and exercise supervised by a physical therapist) with conventional treatment alone were eligible for inclusion. Conventional treatment was defined as either immobilisation or non-supervised treatment involving exercise instructions and the use of external support. Training was required to begin within 2 weeks of the injury. In addition, initial training provided under protection of tape, bandage or brace was accepted. Studies involving post-surgical treatment, or treatment of recurrent ankle injuries or chronic instability, were excluded.

Participants included in the review
Adolescents and adults with acute lateral ankle ligament injuries were eligible for inclusion. Where reported, the participants included recreational athletes, recruits and professional soldiers; their ages ranged from 12 to 66 years and the mean age ranged from 22 to 26.6 years. Participants were recruited from a regional accident unit, the emergency room and physical therapy practices.

Outcomes assessed in the review
Measures assessing time to return to sports and work, pain, swelling, subjective instability, objective instability, range of motion, and patient satisfaction were included in the review. The outcomes were categorised by length of follow-up: immediate effect (within 2 weeks of randomisation), short-term effect (2 to 6 weeks after randomisation), intermediate effect (6 weeks to 6 months after randomisation) and long-term effect (greater than 6 months' follow-up).

How were decisions on the relevance of primary studies made?
Two reviewers independently reviewed the literature and selected articles for inclusion; any disagreements were resolved by consensus. Reviewers were not blinded to the study author, place of publication, or results.

Assessment of study quality
The methodological quality of the primary studies was assessed using the Delphi list, supplemented by two additional items derived from the Cochrane Musculoskeletal Injuries Group. Each criterion was rated as being positive, negative or inconclusive. Equal weights were given to each criterion and a total score was calculated by summing the number of positively scored criteria (range: 0 to 11). A study was considered to be of high quality if a quality score of 6 or more was achieved. Two reviewers independently assessed the methodological quality of the primary studies; any disagreements were resolved by a third reviewer. Reviewers were not blinded to the study author, place of publication, or results. The level of agreement between the two reviewers was assessed using the kappa statistic.

**Data extraction**

Two reviewers independently extracted the data from the primary studies; any disagreements were resolved by consensus. Where possible, the results were expressed as relative risks with 95% confidence interval for discrete outcomes, and as effect sizes for continuous outcomes where means and standard deviations were reported.

**Methods of synthesis**

How were the studies combined?
The studies were combined in a narrative, grouped by type of outcome.

How were differences between studies investigated?
Heterogeneity was not formally assessed.

**Results of the review**

Seven RCTs (n=714) were included.

Overall, the methodological quality of the primary studies was deemed to be poor. One of the included studies was considered to be of high quality; however, while the randomisation method was satisfactory, concealment of treatment allocation was not deemed satisfactory in this trial. There were a high proportion of patient drop-outs in the included studies (39%). Agreement between reviewers for initial decisions was fair (kappa 0.58).

Pain (3 studies, n=152).

One high-quality trial demonstrated a statistically significant effect in favour of the supervised rehabilitation group at short-term follow-up. No significant differences were observed in the immediate, intermediate or long term.

Swelling (2 studies, n=128).

One study demonstrated a statistically significant improvement in the supervised rehabilitation group at short-term follow-up. Compared with standard treatment, supervised rehabilitation did not show a statistically significant effect on swelling reduction, immediately or at intermediate follow-up, in either study.

Functional instability (subjective feeling of giving way) (4 studies, n=224).

The authors of one low-quality primary study reported a significant difference in the incidence of functional instability after a mean follow-up of 230 days in favour of the exercise group (effect size not reported). Three other studies did not find any statistically significant differences between the treatment groups.

Re-injury (4 studies, n=267).

One study demonstrated a statistically significant beneficial effect of supervised rehabilitation (early exercise instruction combined with balance training) on the incidence of re-injury at long-term follow-up. Three additional studies did not report any statistically significant differences between supervised rehabilitation and standard treatment on the incidence of re-injury.

Return to work (4 studies, n=278).
One study reported a statistically significantly shorter time to return to work in the supervised exercise group at immediate follow-up, while no statistically significant between group differences were shown in another (high-quality) trial at short-term or intermediate follow-up. Effect sizes were not calculated in two of the studies reporting on time taken to return to work after injury.

Return to sport (2 studies, n=96).

Neither study (one of which was deemed to be of high quality) showed a statistically significant effect between treatment groups on time taken to return to sport after injury.

Patient satisfaction (2 studies, n=123).

Greater patient satisfaction was reported with the supervised rehabilitation group at long-term but not intermediate follow-up; this was based on one study. Another study reported no benefit of supervised rehabilitation at long-term follow-up.

Range of motion (1 study, n=80).

No statistically significant difference between the treatment groups was shown on passive dorsal and plantar flexion at immediate or intermediate follow-up.

**Authors' conclusions**

There is limited evidence available that conventional treatment combined with supervised rehabilitation training may be superior to conventional treatment alone for acute lateral ankle sprains in adolescents or adults.

**CRD commentary**

The review question was supported by clear inclusion and exclusion criteria. Several databases were searched without language restrictions; however, abstracts and unpublished material were not included which might have introduced publication bias. The procedures undertaken to select studies and extract the data were likely to minimise reviewer error or bias. The methodological quality of the primary studies was assessed using appropriate criteria and the results were reported. The heterogeneous nature of the studies precluded a quantitative assessment and a narrative synthesis was appropriately conducted. The authors acknowledged that the small number of RCTs and overall poor quality of these studies make it difficult to draw firm conclusions. As such, their tentative conclusion that limited evidence suggests that conventional treatment combined with supervised rehabilitation training may be superior to conventional treatment alone appears reasonable.

**Implications of the review for practice and research**

Practice: The authors did not state any implications for practice.

Research: The authors recommended that further well-conducted RCTs are conducted.

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