Research Paper Review

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The Efficacy of Manual Joint Mobilisation/Manipulation in Treatment of Lateral Ankle Sprains: A Systematic Review

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ABSTRACT

BACKGROUND
Lateral ankle sprains are common and can have detrimental consequences to the athlete. Joint mobilisation/manipulation may limit these outcomes.

OBJECTIVE
Systematically summarise the effectiveness of manual joint techniques in treatment of lateral ankle sprains.

METHODS
This review employed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. A computer-assisted literature search of MEDLINE, CINHAL, EMBASE, OVID and Physiotherapy Evidence Database (PEDro) (January 1966 to March 2013) was used with the following keywords alone and in combination 'ankle', 'sprain', 'injuries', 'lateral', 'manual therapy', and 'joint mobilisation'. The methodological quality of individual studies was assessed using the PEDro scale.

RESULTS
After screening of titles, abstracts and full articles, eight articles were kept for examination. Three articles achieved a score of 10 of 11 total points; one achieved a score of 9; two articles scored 8; one article scored a 7 and the remaining article scored a 5. Three articles examined joint techniques for acute sprains and the remainder examined subacute/chronic ankle sprains. Outcome measures included were pain level, ankle range of motion, swelling, functional score, stabilometry and gait parameters. The majority of the articles only assessed these outcome measures immediately after treatment. No detrimental effects from the joint techniques were revealed in any of the studies reviewed.

CONCLUSIONS
For acute ankle sprains, manual joint mobilisation diminished pain and increased dorsiflexion range of motion. For treatment of subacute/chronic lateral ankle sprains, these techniques improved ankle range-of-motion, decreased pain and improved function.

ANALYSIS

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Background Information

Lateral ankle sprains are common in active people and the ankle is one of the most commonly injured joints in sports, accounting for up to 30% of all sports-related injuries (1, 2). The mechanism of injury responsible for the majority of these sprains is forced ankle inversion and plantarflexion. These injuries occur most frequently during athletic activities that require jumping, running or explosive lateral or cutting movements (2-6).

Symptoms of lateral ankle sprains normally last for 6-8 weeks depending on severity, treatment administered etc., but can persist for up to 18 months after injury in some patients (7). Clinicians should be concerned with restoring muscle strength and function, joint and general proprioception, as well as dorsiflexion range of motion. If a motion restriction remains, the ankle joint is thought to be at higher risk of developing osteoarthritic changes (8).

The clinical evidence regarding the use of manual therapies in lateral ankle sprains is generally supportive, although recent systematic reviews have shown mixed results (9-11). The purpose of the current study was to update our knowledge on the state of clinical evidence regarding the use of manual therapies in the treatment of lateral ankle sprains.

PERTINENT RESULTS

The initial literature searches yielded 54 potentially eligible studies. Eighteen studies were assessed in full text and 8 studies (including only 244 total participants) investigating manual therapies in the treatment of lateral ankle sprains were chosen for inclusion in the review.

Study Quality

Study methodological quality was evaluated using the PEDro scale (12). Scores ranged from 5/11 to 10/11, with an average score of 8.1. The most common weakness among these studies was the lack of long-term follow-up.

Effect of manual joint techniques for acute lateral ankle sprains:
Three studies (7, 13, 14) (minimum PEDro score=6) investigated manual therapies for acute lateral ankle sprains. The use of anteroposterior mobilization of the talus was associated with an increase in pain-free dorsiflexion following a single treatment and in general at 8-10 days post-injury. The authors proposed that manual mobilization has an initial pain altering effect on ankle sprains, but does not have a mechanical effect. More work is required in this area.

Effect of manual joint techniques for subacute/chronic lateral ankle sprains:
Five studies (15-19) investigated manual therapies for subacute or chronic lateral ankle sprains. The specific techniques utilized were more heterogeneous than those employed in acute ankle sprains. One study (17) investigated the changes in pressure pain threshold (PPT), ankle ROM and performance following a Maitland A-P talar mobilization. They noted significant improvements in ankle dorsiflexion ROM and PPT only.

Two studies (16, 18) utilized a Mulligan mobilization with movement (MWM) technique where an A-P

mobilization is applied to the talus while the standing participant actively dorsiflexed. In both studies, an improvement was noted in ankle dorsiflexion ROM but no change was noted in pain sensitivity.

Finally, two studies (15, 19) utilized thrust manipulation interventions. These studies employed a talocrural distraction manipulation and noted a positive effect on the dorsiflexion ROM, pain and functional score resulted at the 1-month follow-up.

CLINICAL APPLICATION & CONCLUSIONS

Eight studies investigated the effect of mobilization/manipulation on lateral ankle sprains. Manual joint mobilization appears to help to diminish pain, at least temporarily, for patients with an acute ankle sprain. Mobilization appears also to have a positive effect on dorsiflexion ROM, but the clinical relevance of these findings is unknown.

For treatment of subacute/chronic lateral ankle sprains, some form of joint manual therapy appears to help with ankle ROM (especially dorsiflexion) and pain reduction. No detrimental effects were noted in any of the studies.

While the lack of long-term follow-up in any of the eligible studies makes extrapolation of the findings to the long-term difficult, clinicians should feel confident in utilizing manual mobilization/manipulation techniques in acute and subacute lateral ankle sprains as a method of decreasing pain and increasing mobility. These manual techniques are useful additions to a comprehensive treatment plan icing, modalities, soft tissue therapy, proprioception/balance rehabilitation, and eventual progression to sport or task-specific training.

STUDY METHODS

Search Strategy

MEDLINE, CINAHL, EMBASE, Physiotherapy Evidence Database (PEDro) and OVID databases were searched from inception to March 2013. Search terms relating to "ankle", "sprain", "injuries", "lateral", "manual therapy" and "joint mobilization" were used alone and in combination in the final search.

Selection Criteria

Randomized, controlled trials on humans with a lateral ankle sprain were considered eligible if the following criteria were met:

Inclusion Criteria

- Joint mobilization or manipulation of the distal tibiofibular (we have a review on this listed below), talocrural, subtalar joint or midfoot,
- intervention compared with a control group,
- one of the following outcome measures: ankle joint ROM, pain level, swelling and/or some type of functional outcome, and
- follow-up times defined as either short term (< 3 months), medium term (3–6 months) or long term (> 6 months).

Exclusion Criteria

- Investigated ankle injuries other than lateral ankle sprains such as high ankle sprains or fractures, or
- other interventions in addition to manual joint techniques.

Study Quality
The methodological quality of individual studies was assessed using the PEDro scale (12). PEDro uses 11 criteria broadly encompassing patient eligibility, blinding, grouping and intervention and outcome similarity. Reviewed studies were awarded one point for each criterion that was clearly satisfied. The maximum score a paper can achieve is 11.

STUDY STRENGTHS/WEAKNESSES

Limitations
- The heterogeneity of techniques utilized limited capacity to pool data.
- Follow-up periods were limited.
- The participants in most studies were relatively young (< 32 years).

Strengths
- A comprehensive search strategy was employed.
- Study methodology was subjected to rigorous evaluation.

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