**Article Full Title**

Manual therapy in joint and nerve structures combined with exercises in the treatment of recurrent ankle sprains: A randomized, controlled trial

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**Paper Abstract**

Background: Recurrent ankle sprains often involve residual symptoms for which subjects often perform proprioceptive or/and strengthening exercises. However, the effectiveness of mobilization to influence important nerve structures due to its anatomical distribution like tibial and peroneal nerves is unclear. Objectives: To analyze the effects of proprioceptive/strengthening exercises versus the same exercises and manual therapy including mobilizations to influence joint and nerve structures in the management of recurrent ankle sprains. Study design: A randomized single-blind controlled clinical trial. Method: Fifty-six patients with recurrent ankle sprains and regular sports practice were randomly assigned to experimental or control group. The control group performed 4 weeks of proprioceptive/ strengthening exercises; the experimental group performed 4 weeks of the same exercises combined with manual therapy (mobilizations to influence joint and nerve structures). Pain, self-reported functional ankle instability, pressure pain threshold (PPT), ankle muscle strength, and active range of motion (ROM) were evaluated in the ankle joint before, just after and one month after the interventions. Results: The within-group differences revealed improvements in all of the variables in both groups throughout the time. Between-group differences revealed that the experimental group exhibited lower pain levels and self-reported functional ankle instability and higher PPT, ankle muscle strength and ROM values compared to the control group immediately after the interventions and one month later. Conclusions: A protocol involving proprioceptive and strengthening exercises and manual therapy (mobilizations to influence joint and nerve structures) resulted in greater improvements in pain, self-reported functional joint stability, strength and ROM compared to exercises alone.

**NIH Risk of Bias Tool**

Quality Assessment of Controlled Intervention Studies

1. **Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT**

Yes

1. **Was the method of randomization adequate (i.e., use of randomly generated assignment)?**

Yes

1. **Was the treatment allocation concealed (so that assignments could not be predicted)?**

Yes

1. **Were study participants and providers blinded to treatment group assignment?**

Yes

1. **Were the people assessing the outcomes blinded to the participants' group assignments?**

Yes

1. **Were the groups similar at baseline on important characteristics that could affect outcomes (e.g., demographics, risk factors, co-morbid conditions)?**

Yes

1. **Was the overall drop-out rate from the study at endpoint 20% or lower of the number allocated to treatment?**

Yes

1. **Was the differential drop-out rate (between treatment groups) at endpoint 15 percentage points or lower?**

Yes

1. **Was there high adherence to the intervention protocols for each treatment group?**

Yes

1. **Were other interventions avoided or similar in the groups (e.g., similar background treatments)?**

Yes

1. **Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants?**

Yes

1. **Did the authors report that the sample size was sufficiently large to be able to detect a difference in the main outcome between groups with at least 80% power?**

No

1. **Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)?**

Cannot Determine, Not Reported, or Not Applicable

1. **Were all randomized participants analyzed in the group to which they were originally assigned, i.e., did they use an intention-to-treat analysis?**

Yes

**Key Finding #1**

The manual therapy techniques used in this study demonstrated lower levels of pain, lower functional ankle instability in the ankle joint, greater PPTs, and greater strength of the ankle muscle when used in parallel with proprioceptive and strengthening exercises.

**Key Finding #2**

Participants who received the combined manual therapy and exercises treatment scored higher on the Cumberland Ankle Instability Test (CAIT) compared to those only receiving exercises.

**Key Finding #3**

The group receiving only proprioceptive and strengthening exercises exhibited a beneficial effect on all the measure variables, however, the benefits were not to the extent at which the combined treatment group exhibited.

**Key Finding #4**

**Please provide your summary of the paper**

This study analyzed the effect of specific manual therapy techniques with proprioceptive and strengthening exercises compared to the use of only proprioceptive and strengthening exercises to manage recurrent ankle sprains. During the study, both groups demonstrated improvements in all measured domains; however, greater improvement was seen in the experimental group which incorporated manual therapy into the treatment. The results suggest that clinicians should supplement their exercise treatment program with manual therapy, specifically joint mobilizations, when treating patients with recurrent ankle sprains. A limitation to this study that must be considered is the criteria that the participant was required to be involved in regular sport practice. Due to this criteria, the results that were produced in the study may not necessarily be translated to a sedentary population.

**Please provide your clinical interpretation of this paper. Include how this study may impact clinical practice and how the results can be implemented.**

This study offers strong evidence for the use of manual therapy to hep treat and manage recurrent ankle sprains. Clinicians should utilize mobilizations of the talocrural joint and superficial fibular nerve in coordination with proprioceptive and strengthening exercises, when appropriate, to maximize the patient’s rehab potential. Caution should be taken when using the specified manual therapy techniques with sedentary populations as this study focused on participants engaging in regular sports practice. The test-retest principal should be utilized to best gauge the efficacy of the treatment on the patient.