**Article Full Title**

The immediate effect of talocrural joint manipulation on functional performance of 15-40 years old athletes with chronic ankle instability: A double-blind randomized clinical trial

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**Paper Abstract**

Objective To evaluate the immediate effect of talocrural joint manipulation (TCJM) on functional performance of athletes with chronic ankle instability (CAI). Participants Forty athletes (18males, 22females) with CAI divided into TCJM group (n = 20) and sham manipulation group (n = 20). Intervention TCJM was performed as a quick thrust on the involved talus, in the posterior direction. Sham manipulation was maintaining the same position, without any thrust. Main outcome measures Functional performance of athletes was assessed with single leg hop; speed and Y balance tests, before and after the interventions. Results All functional tests evaluated in this study improved significantly after TCJM (p-value&lt;0.05). These findings were not seen in the control group. Between-group comparisons also showed significant changes for all the measurements after the interventions (p &lt; 0.05). Conclusions TCJM can significantly increase the functional performance of athletes with CIA and can be an effective supplementary treatment for these subjects. However, this was a pre-post study and future studies with long-term follow-ups may provide more reliable results about the long-term effectiveness of this type of treatment.

**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)?**

Cannot Determine, Not Reported, or Not Applicable

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?**

Yes

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

Yes

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**

There was a statistically significant difference in performance of functional testing in athletes with chronic ankle instability who received talocrural joint manipulation treatment.

**Key Finding #2**

Talocrural joint manipulations may aid in increasing ankle dorsiflexion range of motion which improved dynamic balance seen through functional testing.

**Key Finding #3**

Talocrural joint manipulations could increase soleus muscle activation which positively influences performance in athletes with chronic ankle instability.

**Key Finding #4**

Manual therapy such as talocrural joint manipulation can stimulate articular mechanoreceptors increasing afferent input to the talocrural joint that may be impaired in individuals with CAI.

**Please provide your summary of the paper**

The double-blind randomized clinical trial found there was a statistically significant difference between the athletes with chronic ankle instability who received talocrural joint manipulation interventions in comparison to the control sham manipulation. The study is limited to the immediate, short-term effects of talocrural joint manipulation in athletes 15-40 years old as the study looked at pre and post-test performance of the Speed, Hop, and Y-tests after three consecutive days of intervention.

**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 indicates there is value in the utilization of talocrural joint manipulation techniques as a supplemental treatment for athletes who have chronic ankle instability. This information can impact clinical practice and help bridge the gap between treatment of symptoms and functionally preparing an athlete for high-level competition. The immediate effects that were found in this trial may be significant for those who are struggling with sport performance because of chronic ankle instability within athletic activities that require jumping, cutting, and balancing on one leg. There is the potential for many benefits including increasing dorsiflexion range of motion, soleus muscle activation, and afferent input to the talocrural joint. All these benefits would also optimize performance and decrease absences from sporting activities. Though the research supports implementing talocrural manipulation for these athletes, it is important to consider each specific individual when making clinical decisions about manipulations. It is important moving forward from this study to replicate this study and further research the long-term effects that talocrural joint manipulations may have on athletic performance for athletes with chronic ankle instability. It is also important that dosage is studied to optimize manipulations as a supplemental treatment.