

The effects of ankle and proximal tibiofibular manipulations on ankle range of motion (ROM) and squat strength and biomechanics

ACTRN12622000811707

Status	RECRUITING
Sponsor	Murdoch University
Enrollment	23 participants

Plain Language Summary

Tight ankles — limited range of motion when you flex your foot upward — are a common limiting factor in exercises like squats and can affect movement quality and injury risk. Manipulation therapy, where a trained clinician applies a quick, controlled force to a joint to restore its movement, is sometimes used to address this. This study at Murdoch University tests whether manipulation of the ankle joint or the joint at the top of the shin bone (the proximal tibiofibula) improves squat performance and ankle flexibility in experienced weight trainers.

Participants attend three sessions. The first is a baseline assessment; the other two involve receiving two different types of manipulation (ankle vs. knee) in random order, followed by weighted squat testing with motion capture video. Researchers measure maximum squat weight, movement patterns, and ankle range of motion after each treatment.

To join, you must be aged 20–40, regularly perform back squats (at least once a week for the past year), be able to squat at least your own body weight, and have restricted ankle dorsiflexion on at least one side. People with a history of ankle injury, lower limb surgery, or conditions like rheumatoid arthritis cannot participate. Women who are pregnant or in their menstrual bleed period on a test day are also excluded.

Key Eligibility Criteria

Inclusion (5)

- Male and female participants between 20-40 years of age.
- Good physical health including no history of ankle injury (sprain and/or strain).
- Physically active, defined as a 12-month history of resistance training, including back squats averaging at least 1 session per week over the last 12 months and at least once per week for 8 weeks prior to screening
- Able to squat at least one times body weight for a 1 repetition maximum (1RM), and able to squat to a depth of at least the thigh parallel to the ground.
- Limited ankle dorsiflexion range of motion (DF-ROM), on at least one ankle of less than 44 degrees tested using the weightbearing lunge test

Exclusion (5)

- Any contraindication to extremity manipulation therapy, including a history of neurological diseases, rheumatoid diseases, or osteoarthritis of lower limbs or spine, self-reported injury within the past 6 months to the ankle, knee or hip including minor sprain, strains or fracture, receiving any major surgery to the lower limbs in the past 12 months, receiving any surgery that included internal fixations in the lower limbs.
- Any contraindication to strenuous exercise, based on the criteria set out in stage 1 of the Exercise & Sports Science Australia (ESSA) Adult Pre-Exercise Screening System
- Any joint manipulation to the lower limbs in the past 6 weeks.
- Score of less than 80 on the Foot and Ankle Disability Index (FADI) questionnaire, indicating impaired foot and ankle function (incorporated in the Demographic and Screening Questionnaire).
- Female participants: pregnant or 3 months post-partum, or during a menstrual bleed.

Locations (1 total)

<https://www.anzctr.org.au/Trial/Registration/TrialReview.aspx?ACTRN=ACTRN12622000811707>

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WA, Australia

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