

INTRODUCTION

- Joint mobilizations have been shown to impact neural feedback, stimulate joint receptors, increase local strength, control pain, increase range of motion, and improve postural control¹⁻⁶.
- A variety of research has suggested a strong neural feedback link within the lower extremity.
- Hip weakness is a suggested contributor to lower extremity injuries in females⁷⁻¹⁰.
- Ankle injury is associated with hip weakness and delayed onset of hip muscle activation¹¹⁻¹³.
- Similar findings suggest that distal nerve stimulation increases proximal hip abductor EMG activity further linking neural feedback in the lower extremity¹⁴.
- It has been seen in clinical observations that performing ankle mobilizations increases hip abduction strength, however, this has not been studied.

METHODS

- 20 healthy college females with no history of ankle sprains in the previous 3 years were randomly assigned to either a control group or an experimental group. Participants were also randomly assigned a leg to be tested.
- Participants were positioned in sidelying with a strap placed just proximal to the iliac crest and another strap placed overtop a hand held dynamometer positioned 5.08 cm proximal to the lateral joint line of the knee.
- The second strap was positioned so that the participant's hip abduction strength was measured at 10° of abduction.
- The participant performed one practice trial followed by 5 trials of 5 seconds each with 10 seconds rest between reps. The average of the 5 trials was recorded.
- Following hip abduction strength testing, the study investigator performed 4 ankle mobilizations for one minute each with 30 seconds rest between mobilizations.
- Mobilization techniques performed included a distal fibular glide, talocrural rocking, posterior talocrural glide, and a subtalar eversion tilt.
- The experimental group received grade III mobilizations while the control group received grade I mobilizations.
- Following the mobilizations, participants rested for 15 minutes before their hip abduction strength was remeasured.

RESULTS

- The control group had a -2.12% change from initial measurement to post-mobilization measurement.
- The experimental group showed an 8.48% increase in strength following the mobilizations.
- Analysis of variance demonstrated a significant difference in strength following mobilizations between treatment groups (p=0.01).
- Figure 5 shows the change in strength for both groups.

Table 1. Hip Abduction Strength (lbs)

	Control (n=10)	Treatment (n=10)
Initial Average	28.8	29.1
Post-Mobilization	28.2	31.6
Percent Change	-2.12	8.48

DISCUSSION

- It can be hypothesized that the increases in strength seen following the grade III joint mobilizations may be due to increased motor recruitment.
- Previous research has shown that joint mobilizations stimulate mechanoreceptors and thus proprioceptive feedback.
- Given this, the joint mobilizations performed in this study may have stimulated the sural nerve, thus increasing hip abductor motor recruitment as seen in previous studies¹⁴.
- With this idea in mind, ankle mobilizations used to provide increased hip strength could serve as a preventative strategy for lower extremity injuries.

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Figure 1. Distal Fibular Glide



Figure 2. Posterior Talocrural Glide



Figure 3. Eversion Tilt

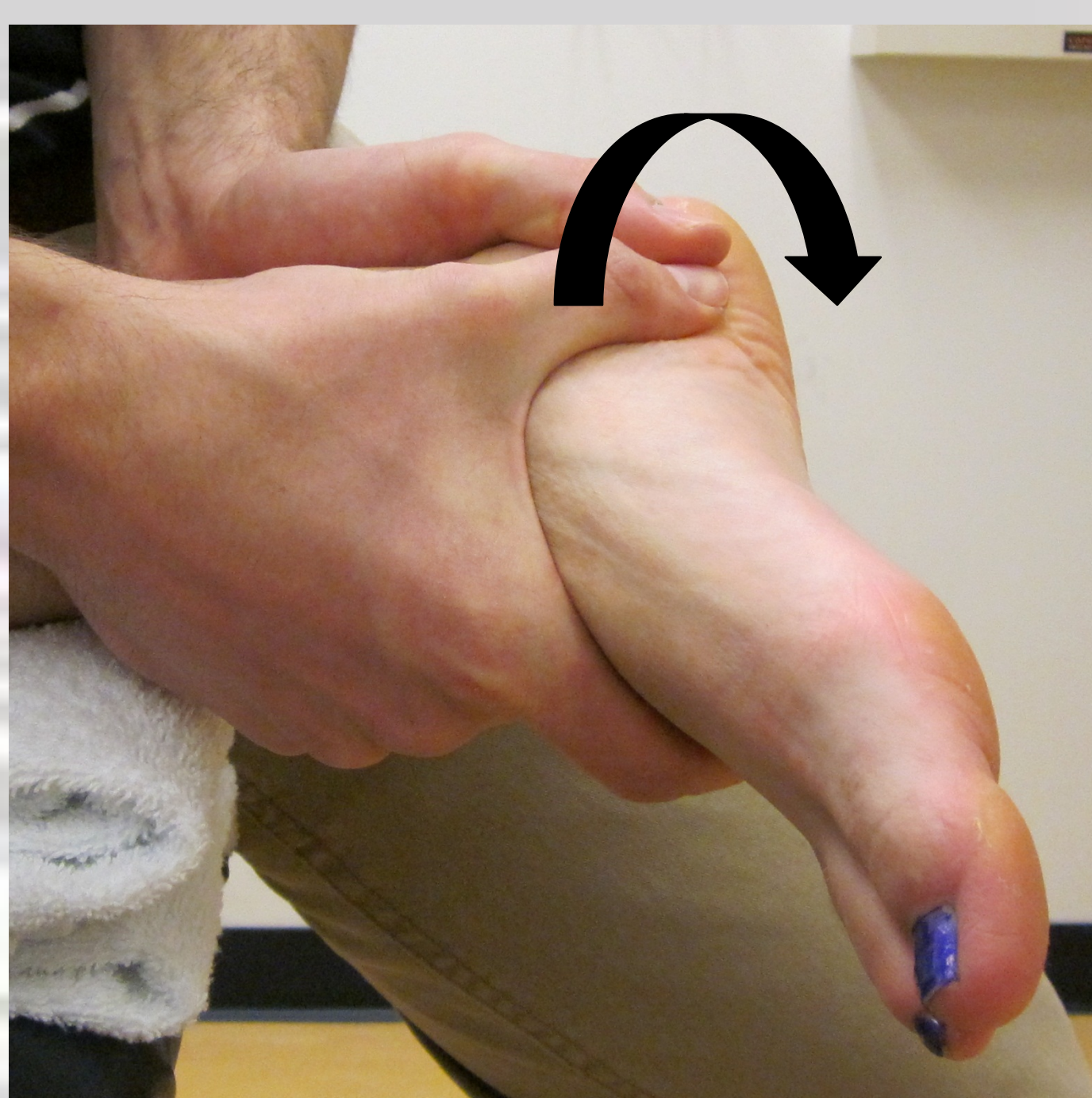


Figure 4. Talocrural Rocking

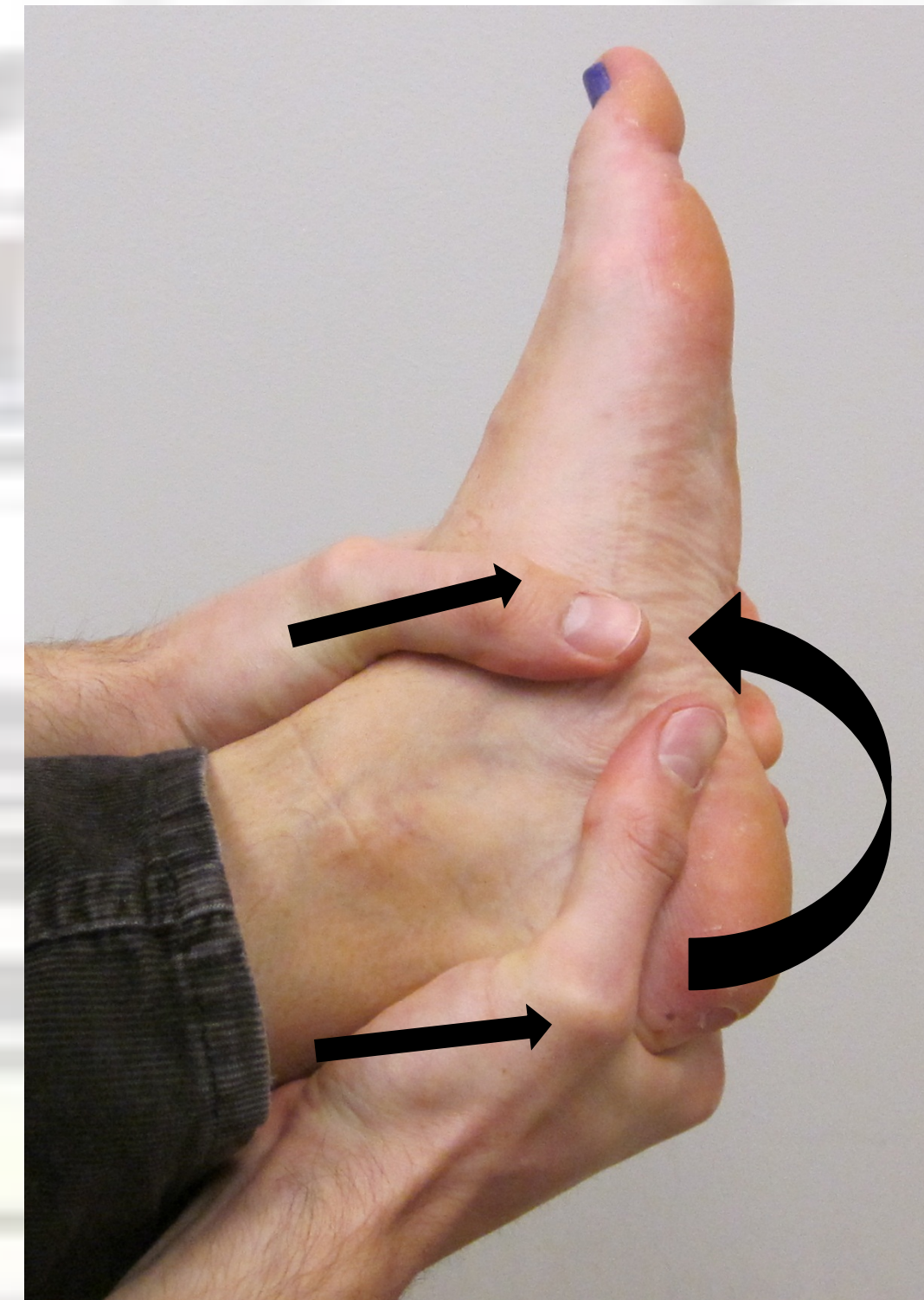


Figure 5. Change in Strength

