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 control14.

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

Twenty 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.

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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>
<thead>
<tr>
<th>Table 1. Hip Abduction Strength (lbs)</th>
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<tr>
<td>Control (n=10)</td>
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<tr>
<td>Initial Average</td>
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<td>Post-Mobilization</td>
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<td>Percent Change</td>
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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.

REFERENCES