The Acute and Residual Effects of IASTM and Roller Massage Stick on Hamstring Range of Motion

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INTRODUCTION

- Fascial tissue: connective tissue that surrounds muscles, nerves, blood vessels and connects structures of the body
- Fascial adhesions result in decreased range of motion and prevent normal muscle function
- Adhesions form due to various mechanisms (Halprin, 2014)
  - Response to injury
  - Sedentary lifestyle
  - Chronic inflammation
- Self-myofascial release is a popular intervention used by patients in many different settings to increase myofascial mobility (Cheatham, 2015)
- Many devices exist, most common being self roller massage and foam roller
- IASTM is the mechanical break up of fascial adhesions or restrictions (Ercole, 2010)
- Generates micro-trauma thus creating an inflammatory response (Moon, 2017)
- Facilitates soft tissue healing (Moon, 2017)
  - Decreases pain
  - Improves mobility
  - Improves muscular performance
  - Promotes restructuring of collagen

Statistical Analyses:
- Two-way repeated measures ANOVA
- 2x3 factorial design
- Two independent variables: Treatment (IASTM and The Stick) and Time (Pre, Post, and 48Post).
- The alpha level was set at p < 0.05.

METHODS

Design & Setting:
- Prospective cohort study
- Conducted at Weber State University

Participants:
- Sixteen (8M, 8F) recreationally-active college-aged participants
  - Age=23.38±4.25yr, Ht=171.38±14 cm, Wt=70.94±11 kg
  - No injuries or surgeries within the past six months
  - Participation in moderate-vigorous intensity exercise for at least 20-60 minutes, at least 3-5 times per week.

Procedures: All participants were randomly assigned to two groups (counterbalanced by gender, dominant leg, and clinician) applying the intervention of either instrument assisted soft tissue mobilization or roller massage stick to their dominant leg and the other to their contralateral leg.
- ROM was measured pre-treatment, immediately post-treatment, and 48hrs-post-treatment
- Both treatments were 3½ minutes
- Participants then conducted their week as they normally would, including workouts, and intensity of those workouts.
- Participants returned after 48 hours for final ROM measurements

RESULTS

- No interaction effect between treatment and time for
  - AROM F(2,14) = 1.956, p=.491 or PROM F(2,14) = .894, p=.989
- Main effect for time showing a significant increase in ROM from pre-treatment to immediate post treatment
- Both interventions produced an acute increase in ROM of the hamstring and sustained the increase 48 hours later

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Immediate post</th>
<th>48 post</th>
</tr>
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<tbody>
<tr>
<td>Stick</td>
<td>56.80±8.555</td>
<td>62.38±9.337</td>
<td>61.75±8.307</td>
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<tr>
<td>IASTM</td>
<td>55.81±8.264</td>
<td>61.50±7.339</td>
<td>60.88±9.818</td>
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Passive ROM

<table>
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<tr>
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<th>Pre</th>
<th>Immediate post</th>
<th>48 post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stick</td>
<td>44.00±13.332</td>
<td>48.81±11.374</td>
<td>49.81±9.772</td>
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<tr>
<td>IASTM</td>
<td>41.50±14.556</td>
<td>48.38±12.743</td>
<td>48.69±8.428</td>
</tr>
</tbody>
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Figure 1. and 2. Participant positions for Active and Passive ROM measurements

DISCUSSION

- Statistically significant increased AROM and PROM regardless of treatment
- The increase in ROM was sustained 48 hours post-treatment.
- The study demonstrates that an increase in range of motion can be achieved with either intervention and be sustained for 48 hours post-treatment after just a 3.5 minute treatment.

CONCLUSIONS

- A single treatment of 3½ minutes of application of either intervention of IASTM or The Stick produced statistically significant increases in hamstring range of motion
- Both treatments were equally effective at increasing and maintaining range of motion of the hamstring
- The effects were sustained 48 hours following the treatment even after a moderate to vigorous intensity training session
- The present findings and results indicate that IASTM and The Stick were equally effective at increasing hamstring ROM
- IASTM and The Stick were equally effective, but The Stick is significantly more affordable.

REFERENCES