The Effects of Foam Rolling on Hamstring Flexibility
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INTRODUCTION

- Hamstring strains are one of the most common musculoskeletal injuries.¹
- Recurrence rate of 34%.¹
- Hamstring strain injury risk increases with a lack of flexibility.²
- Self-myofascial release helps to increase range of motion (ROM), which reflects improved flexibility.³
- A 3-5° increase in the stand and reach test (improved flexibility) occurred following foam rolling.⁴
- However, the Stand and Reach test incorporates low-back and hamstring flexibility, making it unreliable as an isolated hamstring flexibility measurement.⁵,⁶
- Active knee extension test is considered the gold standard for measuring hamstring ROM; therefore, this test may be better for measuring isolated hamstring flexibility.⁷

METHODS

Instrumentation

- **Active Knee Extension Test (AKET) (Figure 1)**
  - Intrarater reliability of .76-.97⁸
  - 3 times with 1 minute rest

- **Inclinometer (Figure 2)**

- **Foam Roller (Figure 3):**
  - A more rigid roller exerts more pressure than a pliable one.⁹
  - Foam rolling protocol: 5 - one minute bouts to the hamstring muscle with 1 minute rest between each bout.¹⁰

Figure 1: AKET apparatus

Figure 2: Acumet Single Digital Inclinometer

Figure 3: TriggerPoint GRID Foam Roller 1.0

PROCEDURES (Figure 4)

- Recruitment (Pretest)
- Foam Rolling
- Hamstring Flexibility Measured¹¹
- Informed Consent
- Test Limb Measured
- Leg Dominance Determined
- Height and Weight

RESULTS

Statistical Analysis

- Knee extension range of motion change score, means and standard deviations are presented for test and control limb (Table 1)
- An independent t-test will be utilized to compare differences between groups; SPSS v.23 was used for data analysis; p < 0.05

<table>
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<tr>
<th>Test Limb</th>
<th>Mean</th>
<th>SD</th>
<th>t-test</th>
<th>p-value</th>
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<td>Post Test</td>
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<td>5.5</td>
<td></td>
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</tr>
<tr>
<td>Control</td>
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<td>6.9</td>
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<tr>
<td>Experimental</td>
<td>66.7</td>
<td>8.6</td>
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Table 1: Means±SD and Change Scores

CONCLUSIONS

- Greater clinically meaningful changes in ROM in the experimental group following foam rolling (Table 1)
- The changes in the control limb could be due to the cross-over effect. Although we waited 10 minutes the effects of foam rolling on the contralateral limb were seen in the control limb post-foam rolling¹²
- Control limb increases in ROM were higher than the standard error of measurement for the inclinometer¹³
- While these results may suggest a clinically meaningful change in ROM, the small sample size is a limitation to this study and may have contributed to the lack of statistical significance
- Further research needs to be done on foam rolling the hamstring and testing AKET to isolate any hamstring flexibility improvements
- Further needs to be done on the cross-over effect after foam rolling as the findings of this study may suggest a longer lasting effect

REFERENCES