The Effectiveness of Kinesio Tape on Isometric Vastus Medialis Strength During Knee Extension

Midori K. Powell, BS, ATS;
Faculty Advisor: Lynn S. Matthews, ATC, PT, DPT, COMT, FAAOMPT
Athletic Training Department

BACKGROUND

- Patellofemoral pain syndrome (PFPS) is described as pain in the anterior knee, posterior to the patella, or along the patellar borders due to excessive lateral tracking.1,2
- PFPS occurs more frequently in females than males; however, recent evidence is scant supporting this oft-quoted gender discrimination.3,4
- Quadriceps strength plays an important part in an individual’s quality of life.
- PFPS has been attributed to VMO weakness.
- Hand-held dynamometry is used to assess isometric muscle strength.5
- KT tape is an elastic tape with texture that mimics properties of the skin.6,7
- The use of Kinesio Tex (KT) tape to facilitate muscle strength is still a controversial issue due to inconsistency in the literature.8

INSTRUMENTATION

- Hand-Held Dynamometer
- Lafayette Manual Muscle Testing (MMT) System® Hand Dynamometer, Lafayette, IN
- Kinesiology Tape
- Gripit K Tape, Thomastown, Australia
- Goniometer
- Sammons Preston, Bolingbrook, IL

PROCEDURE

- Informed Consent
- Health History Questionnaire
- Height and Weight
- Application of Tape
- MVC
- Repeat

PURPOSE

- The purpose of this study was to determine the effectiveness of Gripit K tape on isometric VMO strength during knee extension.

HYPOTHESIS

- Our hypothesis was that Gripit K tape will facilitate VMO activation, which will increase VMO strength during knee extension.

RESEARCH DESIGN

- Study Design: Randomized Control
- Independent Variable: Gripit K Tape
- Dependent Variable: Average maximum quadriceps strength

PARTICIPANTS

- Inclusion Criteria: Daemen College students and staff, over the age of 18, and healthy individuals that participate in physical activity two to three times a week
- Exclusion Criteria: Any kind of lower extremity injury within the last 6 months or previous surgeries, excessive amounts of hair on the quadriceps, and possible allergy to the tape adhesive

RESULTS

- IBM SPSS 23 was used for data analysis.
- Statistical significance was defined as p ≤ 0.05.
- A repeated measures ANOVA was used to determine the statistical significance of average maximal quadriceps strength between the experimental and control limb.
- A statistically significant difference was observed between the pretest and posttest across both the control and experimental group (p = 0.011).
- There was a large magnitude of difference between the pretest and posttest results.

Table 1. This table represents the mean, standard deviation, and number of participants in the control and experimental group during pretesting and posttesting.

<table>
<thead>
<tr>
<th></th>
<th>Group</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>PreTest</td>
<td>Experimental</td>
<td>32.700</td>
<td>5.7420</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>32.667</td>
<td>8.8546</td>
<td>3</td>
</tr>
<tr>
<td>PostTest</td>
<td>Experimental</td>
<td>32.683</td>
<td>6.6746</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>39.033</td>
<td>8.4347</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>40.983</td>
<td>8.5710</td>
<td>6</td>
</tr>
</tbody>
</table>

CONCLUSION / DISCUSSION

- A greater change in strength was observed in the experimental group compared to the control group.
- Larger number of participants could show a greater separation between the control and experimental groups.
- More research is necessary to understand the relationship between kinesiology tape and muscle strength.

REFERENCES


Figure 1. Application of Gripit K tape
Figure 2. Start position of the patient