A Device to Treat Achilles Tendinopathy

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Background

- Achilles tendinopathy affects active and aging populations
- Current braces correct underlying symptoms through immobilization

The Scotty Sock:
- is discrete and comfortable
- made from spandex and neoprene
- promotes rehabilitation
- allows for natural movement
- no known risks

The Injury

There are four main classifications of Achilles Tendon injuries

- Normal
- Tendinosis
- Tendinopathy
- Rupture

Injury leads to heel pain, tenderness & stiffness of Achilles, trouble walking, running, and jumping

Current Approaches

Night Splints:
- stretch the Achilles tendon while sleeping
- some allow for walking but immobilize the ankle

Strassburg Sock:
- strap that pulls on the toes
- not easily worn within a shoe
- can apply unnatural force
- sock length can lead to discomfort
- current “gold standard”

The Design

The Scotty Sock exhibits a sleek, sock like profile that slips over the foot. Tension bands wrap around the foot pulling the foot into an appropriate position: dorsiflexion for daily rehabilitation and wear, plantarflexion for active use. Tension bands are fashioned from Velcro and standard physical therapy Thera-bands. Bands vary in stiffness, which is indicated by band color.

Preliminary Results

<table>
<thead>
<tr>
<th>No Brace</th>
<th>Scotty Sock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Putting Shoes On</td>
<td>25</td>
</tr>
<tr>
<td>Shuttle Run</td>
<td>18</td>
</tr>
</tbody>
</table>

The Market

- 25% competitive athletes and 50% competitive runners affected by Achilles injuries[2]
- Elderly have increased risk of Achilles injury
- About 300,000 injuries annually in the USA[7]
- 29% of surgeries result from mismanaged or unmanaged Achilles tendon injuries[9]

Estimation of Product Cost

- Neoprene - $15-50 per sock
- Spandex - $10/yard
- Velcro - $1/yard
- Therabands - $2/yard
- Sewing Equipment - $200 initial, $10-15 per week

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References