Effectiveness of Stretching and Arch Strengthening in a 10-year-old male with Calcaneal Apophysitis

Hannah Hardesty, SPT and Catherine Andrea, PT, MPT, NCS, PCS

BACKGROUND & PURPOSE:
Calcaneal apophysitis, or Sever’s disease, is a self-limiting condition which causes heel pain in children.1 Current research on interventions is limited but tends to involve the cessation of activity, resulting in the interruption of physical activity and limiting participation with peers.2,3

Risk factors2,3,6
• Ages 8-14 years
• Overweight
• Involved in sports

Common impairments3,7
• Foot overpronation
• Tight gastrocnemius/soleus
• Genu varus

CASE DESCRIPTION:
Calcaneal apophysitis is a common condition in children that often results in the cessation of physical activity and participation in social activities, which can have a negative effect on both physical and mental well-being.2-5 This case demonstrates positive outcomes with the use of static/dynamic stretching combined with arch strengthening in the rehabilitation of a patient with bilateral calcaneal apophysitis without reducing the child’s participation in daily and recreational activities.

The aim of this case report is to create an independent exercise program to minimize pain while allowing continued participation in recreational activities.

INTERVENTIONS:

Manual Therapy
• Soft tissue manipulation to bilateral calves, feet
• Calf, hamstring stretch

Arch Strengthening
• Marble pick ups, Resisted side-stepping
• Heel raises
• BOSU ball marching
• Heel/toe walking on half foam

Static Self-stretching
• Standing calf stretch
• Ball toss- standing on wedge
• Seated hamstring stretch

Dynamic Self-stretching
• BOSU ball ankle ROM
• BOSU ball front lunges
• Inch-worms/Bear crawls

RESULTS:

Table 1

<table>
<thead>
<tr>
<th>Outcome Measures</th>
<th>Examination Week 1</th>
<th>Discharge Week 8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Functional Strength</strong>&lt;br&gt;Bilateral Heel Raises</td>
<td>1 repetition</td>
<td>30 repetitions</td>
</tr>
<tr>
<td>Limited due to pain</td>
<td>No pain</td>
<td></td>
</tr>
<tr>
<td><strong>Range of Motion</strong>&lt;br&gt;Ankle Dorsiflexion</td>
<td>L R</td>
<td>L R</td>
</tr>
<tr>
<td>AROM</td>
<td>4° 0°</td>
<td>7° 10°</td>
</tr>
<tr>
<td>PROM</td>
<td>7° 8°</td>
<td></td>
</tr>
<tr>
<td><strong>Lower Extremity Functional Scale</strong>&lt;br&gt;Pain</td>
<td>59/80 80/80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10/10 2/10</td>
<td></td>
</tr>
</tbody>
</table>

* Lower Extremity Functional Scale (LEFS) MCID = 9 points8

Patient successfully returned to pain-free running and recreational activities with his peers.

CLINICAL RELEVANCE:
Calcaneal apophysitis is a common condition in children that often results in the cessation of physical activity and participation in social activities, which can have a negative effect on both physical and mental well-being.2-5 This case demonstrates positive outcomes with the use of static/dynamic stretching combined with arch strengthening in the rehabilitation of a patient with bilateral calcaneal apophysitis without reducing the child’s participation in daily and recreational activities.

REFERENCES: