Traditional Physical Therapy vs Heel Lifts in Treating Sever’s Disease

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Clinical Picture of Sever’s Disease

• Also known as calcaneal apophysitis
• Most common in males
• Dominant cause of heel pain in children between 8-15 years of age
• Most common with frequent running and jumping, and soccer
• Ideas behind why Sever’s disease occurs
  – Mechanical overuse affecting the calcaneal apophysis growth plate
  – Shear stress that compromises the apophysis growth plate
  – When bones grow faster than muscles and tendons

PICO Question

• Does traditional physical therapy interventions provide greater pain relief compared to heel lifts in children with Sever’s Disease?

Methods

• Databases searched:
  – PubMed, MEDLINE, PEDro, CINAHL, Cochrane, Google Scholar, SportDiscus (EBSCOHost), Web of Science, Scopus
• Terms searched:
  – Sever’s Disease or calcaneal apophysitis with physical therapy, treatments, insoles, heel wedges, heel cups, orthotics, stretching
• 362 articles were found pertaining to heel pain
  – 9 articles were relevant to Sever’s Disease
  – Only 4 of those were relevant to our PICO question

Current Research

• Research pertaining to the most effective treatment of Sever’s Disease is limited
• Traditional Physical Therapy Interventions
  – Physicians suggest conservative care until symptoms have resolved, then begin the use of a heel cup and stretching program
• Insoles - Heel Lift
  – Perhamre et al conducted three studies
    • Determined the best insole to treat Sever’s Disease
    • None of the three studies involved traditional PT in addition to the insole

Traditional Physical Therapy

Leeb & Stickel 2012

• Physician recommendations:
  – Conservative treatments, such as rest from sports & avoid walking barefoot
  – Ice for 10 minutes, 2-3 times per day
  – Anti-inflammatory medicine for pain
  – Insoles; heel cups preferred over heel pads
• After symptoms have resolved, a stretching program with heel lifts are recommended
  – Stretch gastrocnemius-soleal complex for 10 seconds, 3-5 times per day
  – Heel lifts should only be used when calcaneal apophysitis has fully healed
• Minimal qualitative literature regarding the effectiveness
**Insoles: Study #1**  
Perhamre et al 2011

- **Purpose:**
  - Determine if two different types of insoles, heel cup and heel wedge, are effective in relieving significant heel pain in individuals with Sever’s Disease
- **Study Design and Subjects**
- **Intervention**
- **Results**
  - Significant reduction in pain level during activity with insoles for each of the two activities without reducing their level of activity
  - After discontinuation of insoles, pain increased slightly but not to the level before using the insoles
  - During treatment with insoles, all subjects maintained a high level of activity
- **Study Limitations**

**Future Research**

- Randomized experimental studies
  - Stretching group
  - Heel cup group
  - Stretching and heel cup group
- Studies focusing on lower extremity stretches of all muscle groups
  - Addressing when gastrosoleus complex stretches should be utilized in the healing process

**Insoles: Study #2**  
Perhamre et al 2011

- **Purpose:**
  - Determine if a heel wedge or heel cup provides the best pain relief in individuals with Sever’s Disease
- **Study Design and Subjects**
- **Intervention**
- **Results**
  - Pain was significantly lower in the heel cup group compared with heel wedge group
  - During the 12 week preferred insole phase, >75% of subjects preferred heel cup
  - After discontinuation of insoles, pain increased slightly but not to the level before using the insoles
  - During treatment with insoles, all subjects maintained a high level of activity
- **Study Limitations**

**Conclusion**

- Sever's Disease consisting of heel pain is a common condition between 8 and 15 years of age
- Traditional physical therapy such as stretching is recommended
  - Stretch all lower extremity muscle groups
  - Be cautious not to overstretch the gastrosoleus complex
  - Address proper footwear
- An individually made molded rigid heel cup with a fixating brim
  - Use in addition to traditional physical therapy interventions
  - Allows patient to participate at high activity levels
  - Significantly reduces pain compared to any other insole

**Insoles: Study #3**  
Perhamre et al 2012

- **Purpose:**
  - To assess the effect of the heel cup on participants’ heel pad thickness and heel peak pressure
- **Study Design and Subjects**
- **Intervention**
- **Results**
  - Heel pad thickness significantly increased by 2.19 mm when using sports shoes without a heel cup compared with standing barefoot
  - Heel pad thickness increased 1.43 mm more when adding heel cup, for a total of 3.57 mm
  - Heel peak pressure was significantly reduced by 21% when using a heel cup compared with the shoe without an insole
- **Study Limitations**

**References**