



**Foot Science**  
International



**Formthotics**<sup>TM</sup>  
Custom Medical Orthotics

# Case Study Severs Disease

In association with

**PODIATRYMED**

# Severs Disease

Practitioner    Rebecca Gifford  
Practice        PodiatryMed, Christchurch, NZ  
Patient         Dominic Buyers

*Severs disease or calcaneal apophysitis is the most common cause of heel pain in the growing athlete.*

*It is due to overuse and repetitive micro trauma of growth plates of the calcaneus in the heel.*

*It occurs in children aged 7 to 15, mostly presenting between the ages of 10 to 14.*



# Current Situation

- Dominic presented with painful heels on both feet, which are much worse after prolonged activity. He has also experienced knee pain in the past.
- Dominic is a very active 10 year old boy, he plays representative football and training has recently increased to about 8 hours a week.
- He claims walking on the side of his foot helps relieve the pain and Ibuprofen gel makes a small difference when massaged in to the area.

*Dominic is very frustrated with the situation as he is passionate about loves football, and playing at his very best. I undertook a range of tests to identify what was causing Dominic's pain.*



# Assessment 1

## Balance Test

- This relates to proprioception and postural stability it also provides a good indication of the level of pronation a patient has.
- This test clearly identified that Dominic significantly over pronates which influences his lower limb alignment negatively. This also puts a lot of stress through his achillies tendon which connects into the back of his heel.



## Assessment 2

### Supination Resistance Test

- This test involves the Subtalar Joint Axis, the test is graded 1-5 in regards to how hard it is to supinate the foot. Dominic scored a 4 indicating a heavily pronated foot type.
- Over pronating increases the loading on muscles and associated structures in the heel area and creates a higher chance of overuse symptoms.



## Assessment 3

# Squeeze Test

- This test involves squeezing the heel along the area of the growth plate. A positive test will be uncomfortable for the patient, eliciting the same symptoms associated with the injury, which was the case for Dominic.



## Diagnosis

### Severs Disease

- The tests I conducted confirmed my initial opinion of Severs Disease.
- Severs is a traction apophysitis in which inflammation of the calcaneal apophysis (growth plate) occurs as a result of overuse or micro trauma. The apophysis is where growth of the calcaneus/heel bone begins from. Prior to the age of 14 before this plate fuses into bone, it is prone to overuse and micro trauma.



## Causes

1. Dominic is an over pronator, mainly through the rear foot. This over pronation is causing increased tension at the achillies insertion into the heel bone which is pulling on the growth plate leading to inflammation and pain.
2. Increase in frequency, intensity and duration of activity. The sudden increase in football training didn't allow Dominic's growing body time to adapt. This put a lot more strain on his legs and feet.
3. Footwear also played a big role in Dominic's injury. Football boots do not have much arch or heel support. On natural turf the sprigs sink into the ground unevenly putting additional strain on the growth plate area.

Dominic's running/training shoes were also worn and lacking in inappropriate support.



## Treatment - Footwear

- First we had to get Dominic into some more appropriate shoes for his for every day use.
- Front Runner Bush Inn fitted Dominic with Asics Torrانا. These have inbuilt medial support which will reduce some of Dominic's over pronation, they are also a great base for Formthotics<sup>TM</sup> to work from.
- The Asics Torrانا is an “off road” shoe which is more durable than your standard running shoe – ideal for the ruff and tumble lifestyle of a 10 year old boy.



## Treatment - Formthotics™

- Dominic was fitted with Original Hard Dual Formthotics in both his running shoes and football boots.
- I added rear and mid-foot postings to gain better control and support of his feet. I also fitted Formthotics™ Heel raisers in his football boots to directly offload his achillies tendon relieving tension on the growth plate.



## Treatment - Running Technique

- Due to the rapid acceleration needed in football Dominic had developed a forefoot running style. This puts the calf muscles and achillies tendon under too much strain, landing on his mid foot would remedy this. Mid foot striking would also allow the orthotic to work for him better as the base in this area is much more stable.
- I undertook running technique analysis and retraining with Dominic to help him achieve this.

## Treatment - Strengthening

In addition to the previous I have recommended;

- Icing the area after practice and game to relieve inflammation
- A reduction in training load over the next month to let the injury settle down
- Stretching of the calf muscles and achillies tendon
- Strengthening of the calf muscles

