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## Sever's disease

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### Summary

- Sever's disease is the common name for calcaneal apophysitis. It is a common cause of heel pain, particularly in young and physically active people.
  - Between the ages of 8 and 14 years the heel bone experiences a period of growth. This may lead to heel pain during or after physical activity.
  - Treatment includes modifying activities and teaching young people how to manage the condition when a flare-up happens.
  - Sever's disease will resolve itself without treatment, and rarely causes long-term problems.
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Sever's disease (also known as 'Severs' or calcaneal apophysitis) is a common cause of heel pain, particularly in people who are young and physically active. It usually develops around puberty. Boys are slightly more likely to have this condition than girls.

The cause of Sever's disease is unknown. It is likely to be caused by multiple factors such as overuse and increased body weight.

Sever's disease is a self-limiting condition. This means that symptoms often ease with time. Medical and allied health professionals can help manage the symptoms of Sever's disease so that the young person can continue to take part in physical activity.

### Cause of Sever's disease

The Achilles tendon joins the calf muscle at the back of the leg to the heel bone. Sever's disease is thought to occur because the growth area where the Achilles tendon attaches to the bone (the apophysis) is 'active'. This means it is beginning to change from cartilage to bone.

During this phase, pre-teens can get pain at the attachment area, or in the tendon or the heel bone itself. This is known as apophysitis. Sever's disease most commonly affects children between the ages of eight and 14 years, when growth spurts are beginning.

### Symptoms of Sever's disease

A few signs and symptoms point to Sever's disease, which may affect one or both heels. These include:

- heel pain during physical exercise, especially activities that require running or jumping
- worsening of pain after exercise
- limping – often in the morning, or during or after sport
- a tendency to tiptoe.

### Factors that contribute to Sever's disease

Sever's disease is age- and activity-related. It usually starts in pre-teens, and may be more common in pre-teens who are physically active. It occurs when the calcaneal (heel) apophysis is open and active.

Factors that may contribute to Sever's disease in pre-teens include changes in:

- height and weight
  - how much physical activity they are doing – this may be an increase in volume, intensity or frequency of activity. This commonly occurs:
    - as one sports season ends and another starts
    - where there is crossover in sport
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- when a child starts to train and play for a team (the volume of activity increases with multiple weekly training sessions and a game)
- when they are involved in a sports carnival which involves playing multiple games in one day or over a number of days
- frequency of physical activity
- the type of physical activity – such as starting a different activity, or returning to a physical activity after a break. Sever's disease is most commonly associated with sports and activities that are weight bearing, such as sports that involve running or jumping or both (for example, football, netball, running and gymnastics)
- equipment or external factors – such as changing to shoes with a low heel (for example, football boots or some types of running shoes; the lower heel adds extra load to the apophysis, because it places the Achilles tendon on increased stretch), doing a sport in bare feet, or even walking at the beach in thongs/flip flops.

Physical attributes that may contribute to developing Sever's disease include:

- foot posture – active children who have a flat foot posture may be slightly more predisposed to Sever's disease
- increased body weight, or
- a high BMI (body mass index).

### **Diagnosis of Sever's disease**

A doctor or allied health professional can diagnose Sever's disease by asking the young person to describe their symptoms and by conducting a physical examination. In some rare instances, medical imaging may be required to rule out other causes of heel pain.

When an apophysis is active it is changing from cartilage to bone. During this phase, the normal x-ray appearance will vary from no bony tissue to small deposits of bone to a fully united bony tendon attachment.

However, there is usually no difference in what can be seen in a heel x-ray of a child experiencing Sever's disease-related pain, and that of another child of the same age who is pain free. For this reason, x-rays are generally not used to diagnose Sever's disease.

### **Treatment of Sever's disease**

No one treatment method has been proven to be better than others in the long-term management of pain from Sever's disease.

Sever's disease is a self-limiting condition (will get better on its own) and treatment depends on the how much pain is present.

Treatment may include:

- education on how to self-manage the symptoms and flare-ups
- activity modification – limiting the pain-inducing activities for a short period of time may be beneficial
- load management – at first this may include a period of decreased or modified (changed) load. However, load is important for the tendon, heel bone and apophysis, so after the initial flare, load needs to be managed to ensure these remain healthy
- avoiding stretches and 'eccentric' exercises (such as lowering your heel over a step or jumping or hopping) in the initial phase
- use of a heel raise (in consultation with your health professional) – often just used in any shoes causing the problem, to take the pressure off the apophysis and tendon
- support for any biomechanical factors that are contributing to the pain – particularly around the foot. For example, foot taping or doing exercises to improve neuromuscular control around the foot, may be helpful
- orthotics (special shoe inserts) – these may help relieve some biomechanical symptoms
- cold packs – applying ice or cold packs to the back of the heels for around 15 minutes after physical activity when a flare-up occurs
- medication – pain-relieving medication such as ibuprofen may help in some cases (such as for tendon pain). This should always be combined with other treatment following consultation with a doctor, pharmacist or allied

health professional

- time – generally the pain will ease in one to two weeks if the person seeks help from an allied health professional, although it can take longer. As the apophysis takes two years to mature (sometimes longer), there may be flare-ups from time to time, triggered by growth spurts, changes in sporting activities, increased intensity, changes in footwear or changes in surface.

Self-monitoring of symptoms (such as heel pain and stiffness in the morning), how much sport and what type of sport is being played, and any overall growth or growth of the feet, is very useful. Such records inform the individual and the treating health professional, and help them to modify the treatment program. They can also help to predict likely flare-ups and thus prevent them, and help you to be better prepared to manage unavoidable flare-ups.

### **Other causes of heel pain**

Causes of heel pain in pre-teens, other than Sever's disease, include:

- bursitis – bursae are small sacs that contain fluid to lubricate moving parts such as joints and muscles. Common causes of bursitis at the back of the heel include injury, overuse and tight shoes
- posterior ankle impingement (not common in this age group) – can occur after an ankle sprain and in activities such as dance, gymnastics and football where participants spend a lot of time on their toes
- stress fracture (not common in this age group) – can result when loading on the bone leads to weakening of the bone
- heel fracture – can occur with a fall from a height directly onto the heel
- juvenile rheumatoid arthritis – causes persistent joint pain, swelling and stiffness
- tumour – this is a less common cause of heel pain, but is important to consider and rule out.

### **Where to get help**

- **Podiatrist**
- **Australian Podiatry Association Tel (03) 9416 3111**
- **Physiotherapist**
- **Australian Physiotherapy Association Tel. (03) 9092 0888**
- **Orthotist**
- Your **GP (doctor)**

**This page has been produced in consultation with and approved by:**

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