Sever's disease
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.

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 but it is likely 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, without treatment. 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.

Painful symptoms are probably caused by the pulling of the Achilles tendon at the attachment point, or by increased impact (hitting the ground hard) at the heel, or a combination of both.

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
  - 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.

Treatment may include:

- education on how to self-manage the symptoms and flare-ups (this is an essential part of the treatment)
- activity modification – limiting the pain-inducing activities for a short period of time may be beneficial
- load management – this may initially include a period of decreased or modified 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 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 – 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), but 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, oversew 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

**References**

More information

Bones muscles and joints

The following content is displayed as Tabs. Once you have activated a link navigate to the end of the list to view its associated content. The activated link is defined as Active Tab

- Bone muscle and joint basics
- Healthy bones muscles and joints
- Bone and bone marrow conditions
- Osteoporosis
- Muscle conditions
- Joint conditions
- Hand and foot conditions
- Back neck and spine conditions

Bone muscle and joint basics

- Bone marrow
  Bone marrow is the spongy tissue in the hollow centres of a person’s long bones and is the blood cell ‘factory’.

- Bones
  The adult skeleton is made up of 206 bones, which provide the structure for our bodies.

- Choosing the right shoe
  The right footwear can help keep your feet healthy, make your physical activity easier and help keep your body safe from injury.

- Growth hormone
  Some athletes and bodybuilders wrongly believe that taking synthetic growth hormone will help build up their muscles.

- Joints
  A joint is the part of the body where two or more bones meet to allow movement.

- Locomotor system
  The skeleton and skeletal muscles work together to allow movement.

- Muscles
  There are about 600 muscles in the human body.

Healthy bones muscles and joints

- 10 tips for getting enough vitamin D
  A balanced UV approach is required to ensure some sun exposure for vitamin D while minimising the risk of skin cancer.

- 10 tips for safe stretching
  Make stretching part of your life... 10 tips for safe stretching.

- 10 tips on how to eat more calcium
  Reduce your intake of coffee, alcohol and soft drinks... 10 tips on how to eat more calcium.

- Ageing - muscles bones and joints
  Exercise can prevent age-related changes to muscles, bones and joints and can reverse these changes too.

- Bone density testing
  Most procedures that measure bone density are quick and pain-free.

- Calcium
  If you don’t have enough calcium in your diet, your bones will eventually become weak and brittle.

- Choosing the right shoe
  The right footwear can help keep your feet healthy, make your physical activity easier and help keep your body safe from injury.

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Posture
Bad habits such as slouching and inactivity cause muscle fatigue and tension that ultimately lead to poor posture.

Vitamin D
A balanced approach to sunlight exposure will help you get enough vitamin D while protecting against skin cancer.

Vitamin D - maintaining levels in winter (video)
Vitamin D is important for healthy bones, muscles and the nervous system.

Bone and bone marrow conditions

Acromegaly
Acromegaly is caused by an excess of growth hormone in adults, which causes the overgrowth of bones in the face, hands, feet and internal organs.

Amyloidosis
A person with amyloidosis produces aggregates of insoluble protein that cannot be eliminated from the body.

Bone cancer
Bone cancer is a rare form of cancer that is treated with chemotherapy, radiotherapy or hormone therapy.

Bone fractures
Common sites for bone fractures include the wrist, ankle and hip.

Fibrous dysplasia
Fibrous dysplasia causes abnormal growth or swelling of bone, but it is not a form of cancer.

Leukaemia
Most children and many adults with acute leukaemia can expect to be cured, while chronic leukaemia can be successfully managed.

McCune-Albright syndrome
The severity of symptoms or how a child with McCune-Albright syndrome will be affected throughout life is difficult to predict.

Multiple myeloma
Multiple myeloma is cancer of plasma cells in the bone marrow.

Osteomyelitis
Osteomyelitis means an infection of bone which can either be recent or longstanding.

Paget’s disease of bone
Paget’s disease of bone is a chronic condition that causes abnormal enlargement and weakening of bone.

Rib injuries
Rib injuries may include bruises, torn cartilage and bone fractures.

Rickets
Rickets is a preventable childhood bone disease caused by a lack of vitamin D.

Scoliosis
Scoliosis is an abnormal sideways curve of the spine.

Shin splints
‘Shin splints’ refers to pain felt anywhere along the shinbone from knee to ankle.

Treacher Collins syndrome
Treacher Collins syndrome is a genetic disorder that affects growth and development of the head, causing facial defects and hearing loss.

Osteoporosis

Menopause and osteoporosis
Regular weight-bearing exercise and maintaining a diet rich in calcium from childhood will help reduce bone loss at menopause.

Osteoporosis
A healthy, calcium-rich diet and regular physical activity throughout life can help prevent osteoporosis.

- **Osteoporosis and exercise**
  Exercise can reduce the risk of fractures resulting from osteoporosis by both slowing the rate of bone loss, and reducing the person's risk of falling by building muscle strength and improving balance.

- **Osteoporosis in children**
  Osteoporosis in children is rare and usually caused by an underlying medical condition.

- **Osteoporosis in men**
  Up to 30 per cent of all fractures that occur in people with osteoporosis and osteopenia, occur in men.

**Muscle conditions**

- **Bell's palsy**
  The majority of people with Bell's palsy, around 90 per cent, will recover completely with time.

- **Helping a child with a disability with everyday activities**
  If you have a child with a disability you can help improve their communication and movement by encouraging them to take part in daily activities.

- **Multiple sclerosis (MS)**
  Multiple sclerosis is not contagious, but it is progressive and unpredictable.

- **Muscle cramp**
  A muscle cramp is an uncontrollable and painful spasm of a muscle.

- **Muscular dystrophy**
  People affected by muscular dystrophy have different degrees of independence, mobility and carer needs.

- **Myasthenia gravis**
  Myasthenia gravis is an autoimmune disease that causes muscle weakness.

- **Polymyositis**
  Polymyositis is hard to diagnose and may be mistaken for muscular dystrophy.

- **Spinal muscular atrophy (SMA)**
  A child with spinal muscular atrophy type 1 rarely lives beyond three years of age.

- **Sprains and strains**
  It is important to get the correct treatment for a sprain or strain as soon as possible after the injury to help you recover quickly.

**Joint conditions**

- **Ankle sprains**
  Ankle sprain is a common sports injuries caused by overstretched and tearing the supporting ligaments.

- **Ankylosing spondylitis**
  Ankylosing spondylitis (AS) is a type of inflammatory arthritis that targets the joints of the spine.

- **Arthritis explained**
  People can manage their arthritis using medication, physiotherapy, exercise and self management techniques.

- **Baker's cyst**
  Baker's cysts of the knee don't always require active treatment and sometimes will only require observation by the treating doctor.

- **Bursitis**
  Bursitis is often caused by overuse and the inflammation will continue unless the particular activity or movement is stopped.

- **Carpal tunnel syndrome**
  Carpal tunnel syndrome can be caused by repetitive hand movements, pregnancy and arthritis.

- **Developmental dysplasia of the hip (DDH)**
Around 95 per cent of babies born with developmental dysplasia of the hip can be successfully treated.

- Elbow pain
  Elbow pain and can result from overuse in a range of sports or occupations.

- Knee injuries
  Mild knee injuries may heal by themselves, but all injuries should be checked and diagnosed by a doctor or physiotherapist.

- Osgood-Schlatter syndrome
  Osgood-Schlatter syndrome is a painful knee condition that affects adolescents.

- Perthes' disease
  Most children with Perthes' disease eventually recover, but it can take anywhere from two to five years.

- Reactive arthritis
  Reactive arthritis is a form of arthritis that occurs as a result of some bacterial infections.

Hand and foot conditions

- Achilles tendonitis
  People who run regularly seem to be susceptible to Achilles tendonitis.

- Children's feet and shoes
  A child learning to walk receives important sensory information from the soles of their feet, and shoes can make walking more difficult.

- Choosing the right shoe
  The right footwear can help keep your feet healthy, make your physical activity easier and help keep your body safe from injury.

- Cysts - ganglion cysts
  A ganglion cyst is the most common lump on the hand, and tends to target women between the ages of 20 and 40 years of age.

- Diabetes - foot care
  Good foot care and regular check-ups can help people with diabetes avoid foot problems.

- Dupuytren's contracture
  Dupuytren's contracture gradually causes clawing of the fingers as they are pulled towards the palm.

- Feet - problems and treatments
  Correctly fitted shoes help you avoid foot and leg pain or injury.

- Foot care - podiatrists
  Podiatrists can advise about how to choose the right shoes for your feet.

- Foot odour - causes and cures
  Even the most fastidiously clean people can suffer from foot odour.

- Foot orthoses
  People who have chronic foot or leg problems that interfere with their health may be prescribed orthoses by their podiatrist.

- Foot problems - heel pain
  The heel protects the structures of the foot, but heel pain is a common foot complaint.

- Footwear for healthy feet
  Wearing shoes that fit properly and support your feet is vital to avoid sore feet and to prevent or alleviate many common foot problems.

- Left-handedness
  If your child is naturally left-handed, don't try to force them to use their right hand.

- Raynaud's phenomenon
  Raynaud's phenomenon can be a sign of a more serious underlying condition, so see your doctor if you experience it.

- Sever's disease

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Sever's disease is a common cause of heel pain, particularly in the young and physically active.

Back neck and spine conditions

- **Back pain**
  
  Back pain is common. Some people will develop back pain that is persistent (lasts more than three months). There are many things that you can do to live well with back pain.

- **Back pain – disc problems**
  
  Most disc problems resolve without specific treatment.

- **Back pain in children**
  
  Children with back pain may grow into adults with chronic bad backs, so it is important to encourage sensible back care.

- **Living with persistent pain**
  
  Pain is our built-in alarm system. It makes us aware that something might be going wrong in our body. However, there are many things you can do to deal effectively with persistent pain.

- **Neck pain**
  
  Treatments like physiotherapy, osteopathy or remedial massage can generally help neck and shoulder pain.

- **Scoliosis**
  
  Scoliosis is an abnormal sideways curve of the spine.

- **Shoulder pain**
  
  Shoulder pain is common in our community. The good news is that with appropriate treatment pain will improve so you can get back to doing the things you enjoy.

- **Tendonitis**
  
  Most cases of tendonitis recover completely, but severe untreated tendonitis can lead to rupture of the tendon.

- **Treating persistent pain**
  
  Pain is our built-in alarm system. It makes us aware that something might be going wrong in our body. However, there are many things you can do to deal effectively with persistent pain.

- **When do I need to see my doctor about persistent pain?**
  
  Living with persistent pain isn’t easy. Your doctor can help you balance your pain, your treatment and hurdles you encounter in life.

Related Information

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Home

Related information on other websites

- Australian Podiatry Association (Vic).
- Medscape – Sever Disease.
- The Australasian Podiatry Council – Find a Podiatrist.
- The Royal Children’s Hospital, Melbourne – Parent Information.

Content Partner

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