

SEVER'S DISEASE (Calcaneal Apophysitis)

What is Sever's disease?

Sever's disease, also called calcaneal apophysitis, is a painful bone disorder that results from inflammation (swelling) of the growth plate in the heel. A growth plate, also called an epiphyseal plate, is an area at the end of a developing bone where cartilage cells change over time into bone cells. As this occurs, the growth plates expand and unite, which is how bones grow.

Sever's disease is a common cause of heel pain in growing kids, especially those who are physically active. It usually occurs during the growth spurt of adolescence, the approximately 2-year period in early puberty when kids grow most rapidly. This growth spurt can begin any time between the ages of 8 and 13 for girls and 10 and 15 for boys. Sever's disease rarely occurs in older teens because the back of the heel usually finishes growing by the age of 15, when the growth plate hardens and the growing bones fuse together into mature bone. Sever's disease is similar to Osgood-Schlatter disease, a condition that affects the bones in the knees.

What causes Sever's disease?

During the growth spurt of early puberty, the heel bone (also called the calcaneus) sometimes grows faster than the leg muscles and tendons. This can cause the muscles and tendons to become very tight and overstretched, making the heel less flexible and putting pressure on the growth plate. The Achilles tendon (also called the heel cord) is the strongest tendon that attaches to the growth plate in the heel. Over time, repeated stress (force or pressure) on the already tight Achilles tendon damages the growth plate, causing the swelling, tenderness, and pain of Sever's disease.

Such stress commonly results from physical activities and sports that involve running and jumping, especially those that take place on hard surfaces, such as track, basketball, soccer, and gymnastics.

Sever's disease also can result from standing too long, which puts constant pressure on the heel. Poor-fitting shoes can contribute to the condition by not providing enough support or padding for the feet or by rubbing against the back of the heel.

Although Sever's disease can occur in any child, these conditions increase the chances of it happening:

- **pronated foot**
(a foot that rolls in at the ankle when walking), which causes tightness and twisting of the Achilles tendon, thus increasing its pull on the heel's growth plate
- **flat or high arch**
which affects the angle of the heel within the foot, causing tightness and shortening of the Achilles tendon
- **short leg syndrome**
(one leg is shorter than the other), which causes the foot on the short leg to bend downward to reach the ground, pulling on the Achilles tendon
- **overweight or obesity**
which puts weight-related pressure on the growth plate

What are signs and symptoms of Sever's disease?

The most obvious sign of Sever's disease is pain or tenderness in one or both heels, usually at the back. The pain also might extend to the sides and bottom of the heel, ending near the arch of the foot.

A child also may have these related problems:

- swelling and redness in the heel
- difficulty walking
- discomfort or stiffness in the feet upon awaking
- discomfort when the heel is squeezed on both sides
- an unusual walk, such as walking with a limp or on tiptoes to avoid putting pressure on the heel

Symptoms are usually worse during or after activity and get better with rest.

How is it diagnosed?

Although imaging tests such as X-rays generally are not that helpful in diagnosing Sever's disease, some doctors order them to rule out other problems, such as fractures. Sever's disease cannot be seen on an X-ray.

How it is treated?

The immediate goal of treatment is pain relief. Because symptoms generally worsen with activity, the main treatment for Sever's disease is rest, which helps to relieve pressure on the heel bone, decreasing swelling and reducing pain.

As directed by the doctor, a child should cut down on or avoid all activities that cause pain until all symptoms are gone, especially running barefoot or on hard surfaces because hard impact on the feet can worsen pain and inflammation. The child might be able to do things that do not put pressure on the heel, such as swimming and biking, but check with a doctor first.

The doctor might also recommend that a child with Sever's disease:

- perform foot and leg exercises to stretch and strengthen the leg muscles and tendons
- elevate and apply ice (wrapped in a towel, not applied directly to the skin) to the injured heel for 20 minutes two or three times per day, even on days when the pain is not that bad, to help reduce swelling
- use an elastic wrap or compression stocking that is designed to help decrease pain and swelling
- take an over-the-counter medicine to reduce pain and swelling, such as acetaminophen (Tylenol) or ibuprofen (Advil, Motrin)

Note: Children should not be given aspirin for pain due to the risk of a very serious illness called Reye syndrome.

How long does it last?

One of the most important things to know about Sever's disease is that, with proper care, the condition usually goes away within 2 weeks to 2 months and does not cause any problems later in life. The sooner Sever's disease is addressed, the quicker recovery is. Most kids can return to physical activity without any trouble once the pain and other symptoms go away.

Although Sever's disease generally heals quickly, it can recur if long-term measures are not taken to protect the heel during a child's growing years. One of the most important is to make sure that kids wear proper shoes.

Good quality, well-fitting shoes with shock-absorbent (padded) soles help to reduce pressure on the heel. The doctor may also recommend shoes with open backs, such as sandals or clogs, that do not rub on the back of the heel. Shoes that are heavy or have high heels should be avoided. Other preventive measures include continued stretching exercises and icing of the affected heel after activity.

If the child has a pronated foot, a flat or high arch, or another condition that increases the risk of Sever's disease, the doctor might recommend special shoe inserts, called orthotic devices, such as:

- heel pads that cushion the heel as it strikes the ground
- heel lifts that reduce strain on the Achilles tendon by raising the heel
- arch supports that hold the heel in an ideal position

If a child is overweight or obese, the doctor will probably also recommend weight loss to decrease pressure on the heel.

The risk of recurrence goes away on its own when foot growth is complete and the growth plate has fused to the rest of the heel bone, usually around age 15.