



1 PLANTAR FASCIITIS

A common cause of heel pain is an inflammation of the band of fibrous connective tissue (fascia) running along the bottom (plantar) surface of the foot, from the heel to the ball of the foot. The inflammation is called plantar fasciitis. It is common among athletes who run and jump a lot, and also those who stand for prolonged periods. For example, teachers or factory workers may be more susceptible to this injury.

The condition occurs when the plantar fascia is strained over time beyond its normal extension, causing the soft tissue fibers of the fascia to tear or stretch at points along its length, leading to inflammation, pain, and possibly the growth of a bone spur where the plantar fascia attaches to the heel bone.

The inflammation may be aggravated by shoes that lack appropriate support, especially in the arch area; by walking barefoot; and by the chronic irritation that sometimes accompanies an athletic lifestyle.

Resting provides only temporary relief. When you resume walking, particularly after a night's sleep, you may experience a sudden elongation of the fascia band, which stretches and pulls on the heel. As you walk, the heel pain may lessen or even disappear, but that may be just a false sense of relief. The pain often returns after prolonged rest or extensive walking.

This pamphlet is one of a series produced by APMA about foot health conditions and concerns, including diabetes, arthritis, athlete's foot, warts, foot orthotics, aging, children's feet, forefoot and rearfoot surgery, walking, foot and ankle injuries, nail problems, footwear, and others. These brochures are no substitute for visiting a podiatric physician for medical advice. Order these pamphlets online at www.APMA.org.

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HEEL PAIN



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HEEL PAIN IS GENERALLY THE RESULT OF FAULTY BIOMECHANICS (HOW THE FOOT FUNCTIONS MECHANICALLY AS WE WALK OR RUN) THAT PLACE TOO MUCH STRESS ON THE HEEL BONE AND THE SOFT TISSUES THAT ATTACH TO IT. THE STRESS MAY ALSO RESULT FROM INJURY, OR A BRUISE INCURRED WHILE WALKING, RUNNING, OR JUMPING ON HARD SURFACES; WEARING POORLY CONSTRUCTED FOOTWEAR; OR BEING OVERWEIGHT.

The heel bone is the largest of the 26 bones in the human foot, which also has 33 joints and a network of more than 100 tendons, muscles, and ligaments. Like all bones, the heel bone is subject to outside influences that can affect its integrity and its ability to keep us on our feet.

Heel pain, sometimes disabling, can occur in the front, back, or bottom of the heel.

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Heel Pain

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2 HEEL SPURS

Heel spurs are often associated with plantar fasciitis. This bony growth and projection, visible by X-ray, appears on the bottom of the heel and extends towards the toes and can develop from the pull and tension of the plantar fascia. A heel spur indicates stress on the bone from the pull of the fascia, and is not a cause of heel pain. However, because a heel spur is usually associated with the heel pain caused by plantar fasciitis, heel pain is sometimes referred to as “heel spur syndrome.”

Heel spurs result from strain on the heel bone by the stretching of the plantar fascia, the long band of tissue that connects the heel and the ball of the foot. Heel spurs may result from biomechanical imbalance, running or jogging, improperly fitted or excessively worn shoes, or obesity. On rare occasions, the heel spur may fracture and pull away from the heel bone and could then be the cause of heel pain.

3 EXCESSIVE PRONATION

Heel pain sometimes results from **excessive pronation**. Pronation is the normal flexible motion and flattening of the arch of the foot that allows it to adapt to ground surfaces and absorb shock in the normal walking pattern.

As you walk, the heel contacts the ground first; the weight shifts first to the outside of the foot, then moves toward the big toe. The arch rises, the foot generally rolls upward and outward, becoming rigid and stable in order to lift the body and move it forward. Excessive pronation—excessive flattening of the foot or lowering of the arch—can create an abnormal amount of stretching and pulling on the ligaments and tendons attaching to the bottom and back of the heel bone. The posterior tibial tendon helps hold the arch up and provides support during step-off on the toes when walking. If this tendon becomes inflamed, over-stretched or torn, pain can radiate to the bottom of the heel as well as inner ankle, and a gradual loss of the inner arch of the foot can occur. Without treatment, this condition can create dysfunction and the foot can eventually become rigid, changing the way you walk or making it difficult to wear shoes. Excessive pronation may also contribute to strain on the hip, knee, and lower back.

4 OTHER CAUSES OF HEEL PAIN

Some general health conditions can also bring about heel pain.

- **Rheumatoid arthritis** and other forms of arthritis, including gout, which usually manifests itself in the big toe joint, can cause heel discomfort in some cases.
- Heel pain may also be the result of an **inflamed bursa (bursitis)**, a small, irritated sac of fluid; a **neuroma** (benign nerve enlargement) or nerve inflammation; or other **soft-tissue growth**. Such heel pain may be associated with a heel spur, or may mimic the pain of a heel spur.
- Pain at the back of the heel is associated with inflammation of the Achilles tendon as it runs behind the ankle and inserts on the back surface of the heel bone. The inflammation is called **Achilles tendinitis**. It is common among people who run and walk a lot and have tight tendons. The condition occurs when the tendon is strained over time, causing the fibers to tear or stretch along its length, or at its insertion on to the heel bone, leading to inflammation, pain, and the possible growth of a bone spur on the back of the heel bone. The inflammation is aggravated by the chronic irritation that sometimes accompanies an active lifestyle and certain activities that strain an already tight tendon.

- **Bone bruises** are common heel injuries. A bone bruise or contusion is an inflammation of the heel bone. A bone bruise is a sharply painful injury caused by the direct impact of a hard object or surface on the foot.
- **Stress fractures** of the heel bone also can occur, but these are less frequent.
- **Haglund’s deformity** (“pump bump”) is a bone enlargement at the back of the heel bone, in the area where the Achilles tendon attaches to the bone. This sometimes-painful deformity generally is the result of bursitis caused by pressure against the shoe, and can be aggravated by the height or stitching of the heel counter of a particular shoe.



CHILDREN’S HEEL PAIN

Heel pain can also occur in children, most commonly between ages 8 and 13, as they become increasingly active in sports activity in and out of school. This physical activity, particularly jumping, inflames the growth centers of the heels; the more active the child, the more likely heel pain will occur.

Sever’s Disease, a common problem in growing children, occurs before the closing of the heel bone growth plate, during which time the Achilles tendon pulls on the heel bone and creates a shear force or stress on the growth plate, resulting in mild swelling and heel pain. It is a self-limiting condition that resolves when the growth plate closes. Podiatric care is necessary to protect the growing bone and to provide pain relief. A podiatric physician can recommend treatment options, which may include shoes with shock-absorbing heel cups, orthotics, anti-inflammatory medication, ice massage, and Achilles tendon stretching.

PREVENTION

A variety of steps can be taken to avoid heel pain and accompanying afflictions:

- Wear shoes that fit well—front, back, and sides—and have shock-absorbent soles, rigid shanks, and supportive heel counters.
- Wear the proper shoes for each activity.
- Do not wear shoes with excessive wear on heels or soles.
- Prepare properly before exercising. Warm up and do stretching exercises before and after running.
- Pace yourself when you participate in athletic activities.
- Don’t underestimate your body’s need for rest and good nutrition.
- If overweight or obese, make an effort to lose weight.

PODIATRIC MEDICAL CARE

If pain and other symptoms of inflammation (like redness, swelling, or heat) persist, you should limit normal daily activities and contact a doctor of podiatric medicine. Seek early treatment, as chronic foot pain can be much more difficult to treat, and long-term issues can take much longer to remedy.

The podiatric physician will perform a comprehensive foot exam, including gait evaluation, and may perform diagnostic X-rays to determine the underlying cause of your heel pain.

Early treatment might involve oral or injectable anti-inflammatory medication, ice therapy, stretching protocol (preferably non-weight bearing), exercise and shoe recommendations, taping or strapping, or use of shoe inserts or orthotic devices. Taping or strapping supports the foot, placing stressed muscles and tendons in a physiologically restful state. Physical therapy may be used in conjunction with some treatments.

A custom functional orthotic device may be prescribed to correct biomechanical imbalance, control excessive pronation, and support the ligaments and tendons attaching to the heel bone. It can effectively treat the majority of heel and arch pain without the need for surgery.

Only a relatively few cases of heel pain require more advanced treatments or surgery. If surgery is necessary, it may involve the release of the plantar fascia, removal of a spur, removal of a bursa, or removal of a neuroma or other soft-tissue growth.