Heel spur syndrome is one of the most common, and potentially most devastating, injuries that the athlete can suffer. The heel bone (calcaneus) is a thick, rectangular bone. At the bottom of the calcaneus is a pad to cushion the heel with the ground. There is also a band of connective tissue that runs longitudinally along the arch from the heel to the toes. This is the plantar fascia; it elevates, or supports, the arch. The plantar fascia is a tough, fibrous band composed of three strips. The middle strip is the thickest; the thinner medial and lateral strips are thickest at the heel region, becoming thinner at the metatarsal-toe joints (Figure 4.19).

![Figure 4.19](image-url) The plantar heel spur develops where the plantar fascia inserts into the heel bone (calcaneus).

The spur formation is usually a shelf of bone along the entire width of the heel bone. It is formed by the continual tearing away of the periosteum or lining of the heel bone by the strong plantar fascia, due to abnormal pronation of the foot during the heel contact, midstance, and toe-off phases of gait. As the tearing occurs, a layer of new bone (a calcium deposit) forms. This layer gradually thickens, forming a heel spur located at the insertion of the plantar fascia, at the bottom of the heel bone. This bony prominence penetrates into the surrounding tissue as an irritant and can cause a heel bursitis.

**Causes**

There are several possible causes of heel spurs. One such possibility is poor training shoes. They may be worn down on the heel area or may lack rearfoot control or cushioning. Another cause may be running on hard surfaces, including concrete roads. Although it has been said that running on dirt or grass is better for you, I have not always found this to be true, due to the uneven terrain. Increase in training, sprinting, track workouts for speed training, and hill running are often contributing causes of heel spurs. However, spurs are primarily due to the abnormal biomechanical changes of the pathological foot mechanics due to excessive foot pronation.

**Symptoms**

A heel spur manifests itself as a deep tenderness on the bottom of the heel. The pain may radiate into the sole of the foot. Actually, the pain is not from the spur itself, but from the irritated fibrous bursa, the sac that surrounds the spur. In its early stages, the heel spur syndrome has a characteristic pain cycle of greater soreness in the morning or after sitting for a long period of time, becoming less painful after walking or jogging.

Depending on the extent of the deformity, pain may be variable, being present during rest or only after vigorous exercise. There may also be local swelling. The pain is usually tolerable. After a few weeks, a pattern of dull, aching pain occurs with standing, after a period of rest.

**Treatment**

Therapy for a heel spur includes rest from the event putting stress on your heel; go to an alternate aerobic activity, such as swimming or biking, to stay in good cardiovascular condition. I am a believer in long-distance walking to increase blood flow to the tissues because
blood contains the body’s own natural healing elements. Start at just a few miles; then walk up to the distance that you were running. One rule of thumb is that if you can walk without pain, you may start back with your activities—in moderation.

Massage the heel with ice for 10 minutes. Follow this with moist heat (a hot washcloth in a plastic bag) for 3 to 5 minutes to increase blood supply to the injured area. This sequence, which should be done two or three times per day, is very helpful.

An extremely important move that is often overlooked is to change into a proper running shoe with good heel and forefoot cushioning. This protects the area from additional trauma.

Heel cushion padding placed directly into the shoe (using sponge rubber or felt cut to the shape of the heel, or shaped like a horseshoe, to take the pressure off the lateral portion of the heel) may be of some value. Also, taping the longitudinal arch holds the plantar fascia in place and retards the pulling during the abnormal pronation.

If symptoms and pain persist or recur after a few days of self-treatment and rest, seek the help of a sports-oriented physician. In my professional experience with the less severe cases of heel spur syndrome, various physical therapy modalities, including ultrasound with electrical muscle stimulation and exercise, have been very helpful in treatment when used along with the home physical therapy methods already mentioned.

In more severe cases, anti-inflammatory medications can be used successfully. Another form of treatment is the utilization of a local injection of steroid preparations with lidocaine (a local anesthetic). For patients who do not like the idea of steroids (although this is a very safe and effective treatment) vitamin B-12 may be injected in place of it. This vitamin works as a therapeutic nerve block above the inner aspect of the heel to create vasodilation, or increased blood supply, to the area of the heel spur.

A biomechanical evaluation—including a gait analysis, preferably on a treadmill—should be instituted. Engineering instruments should be utilized to measure any degree of abnormal foot imbalances that may result in extra stress on the foot structures. A temporary, soft orthosis with heel lifts and wedging for forefoot and rearfoot balancing can be used until the proper functional sport orthotic devices can be fabricated to correct any lower extremity or foot deformity.

In the most severe cases, a surgical procedure may be warranted when all conservative and biomechanical therapy efforts have been unsuccessful and there is extreme pain on motion.

It is also wise to remember that perhaps the best treatment for the athlete is rest.

**Prevention**

The symptoms of a heel spur can be painful in acute stages and, if not dealt with early, can become chronic—creating problems for years to come.

The athletic culture is beginning to understand the enormous stress fitness activities put on the feet and legs. Therefore, it comes as no surprise that the athlete looks for the best shoes available. In order to best protect the foot, you need a running shoe with a thick sole, a thicker heel, and a semiflexible forefoot.

In addition to careful selection of shoes in preventing heel spurs, stretching exercises are also important. If the calf muscles and fascia are tight, this will increase the traction effect by the fascia on the heel spur—resulting in pain. Refer to chapter 12, Stretch Exercises 1, 2, and 3.

**Suggested Reading for “Heel Spurs”**

Baxter & Thigpen (1984)