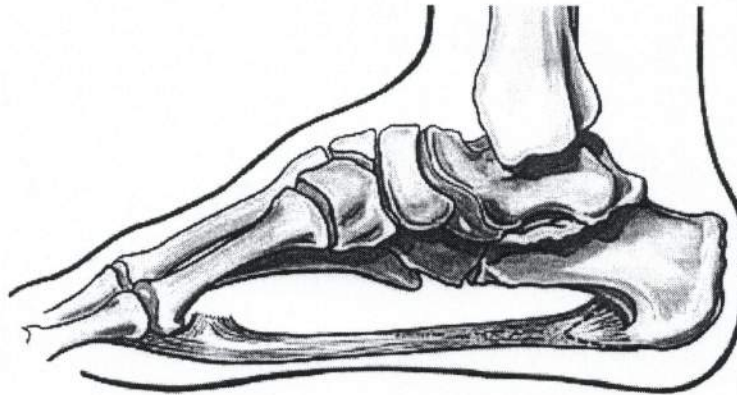


Plantar Fasciitis

Foot Anatomy

The plantar fascia consists of dense bands of connective tissue deep below the skin that extend out in a fan like shape from the heel bone to the toes. You can feel this tissue tighten if by pulling your toes and foot up towards your head. Tension in the plantar fascia acts to help maintain the arch of the foot. During walking or running, the arch flattens, allowing the foot to absorb shock as it makes contact with the ground. Repetitive trauma to this tissue can produce micro-tears, the signature of plantar fasciitis.



Plantar Fasciitis image from [Clinical Guide to Sports Injuries](#)
by Roald Bahr, Sverre Maehlum and Tommy Bolic.

The plantar fascia is most commonly injured near its attachment point on the medial tubercle of the calcaneus (see above picture).

What causes Plantar Fasciitis?

Plantar fasciitis is thought to be caused by repetitive stress of the plantar fascia which results in micro-tears of these bands as they arise from the heel. Because these tears usually don't occur from a single traumatic event, the onset of irritation or inflammation is gradual and increases with activity over time.

Plantar fasciitis is more common in those over the age of 40 and slightly more often in women than in men. This inflammation of the plantar fascia may however develop in

very active individuals who are in their teens or twenties. People with extremely flat feet or unusually high arches are also more prone to plantar fasciitis because of improper biomechanics and increased stress on the fascia. Jobs that require being on your feet all day, or a lot of walking may also lead to the development of plantar fasciitis. A sudden weight gain may also increase stress to an otherwise normal plantar fascia.

Symptoms and Diagnosis

Diagnosis of plantar fasciitis is made by obtaining the patient's history and performing a physical examination. Palpation will reveal tenderness at the bottom of the foot (usually near the heel). The area of tenderness may spread towards the toes as the condition worsens.

Pain is often felt on the first step out of bed in the morning or when beginning an activity after rest. At this time, the tissue is tight and not yet warmed up. Simple movements will stretch the fascia (including the injured area) and create pain. As your foot warms up, the pain generally subsides. If the condition persists, pain will worsen and get to the point where it is felt throughout the day.

In prolonged cases of plantar fasciitis (or when left untreated), the result may be the formation of a bone spur off the calcaneus at the origin of the plantar fascia tissue. This bone spur itself is not the cause of pain, but rather the result of chronic irritation to the bone caused by the stretching of the tight tissue.

Treatment

In our office, treatment may consist of:

- Ultrasound
- Soft tissue mobilization / transverse friction massage
- Ice
- Stretching and strengthening exercises
- Patient education on different techniques used to decrease stress placed on the plantar fascia
- Orthotics

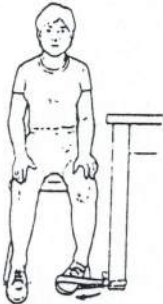
Tight calf muscles will increase the stress on the fascia and predispose you to plantar fasciitis. Therefore, a program of stretching the calf muscle and Achilles tendon are the mainstay of treating the condition and lessening the chance of recurrence. Your doctor may suggest purchasing a slant board to help make the stretching process easier.

Strengthening the intrinsic muscles of the foot will help support the arch and decrease stress on the plantar fascia. Custom orthotics or the use of a heel cushion in your shoes will also decrease stress on the fascia, while rolling a golf ball under your foot is a great way to provide a self massage.

Temporarily abstaining from the activity or activities that aggravate the fascia is also necessary for the condition to resolve. If the condition is severe, a night splint may be recommended to provide a gentle and prolonged stretch to the calf muscle while you sleep. Your medical doctor may suggest oral anti-inflammatories to facilitate resolution.

Home Exercises

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1. Sitting in a chair, assemble elastic tubing to table and your foot as shown
2. Without moving your hip or knee, turn the bottom of your foot inward toward your body
3. Hold _____ seconds
4. _____ repetitions, _____ times per day

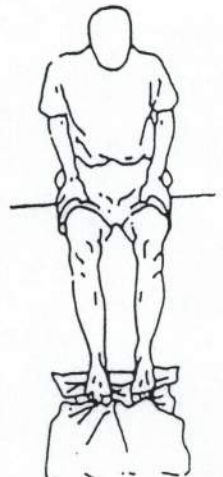
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1. Sitting in a chair, assemble elastic tubing to table and your foot as shown
2. Without moving your hip or knee, tip the bottom of your foot outward away from your body
3. Hold _____ seconds
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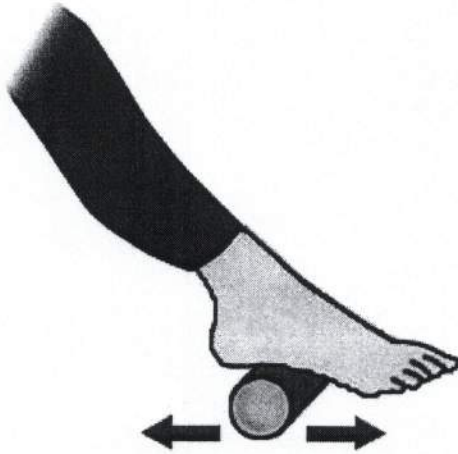
2. Towel Curling:

- Sit with both feet flat on the ground.
- Your feet should be on a towel spread out over a smooth surface.
- Flex your toes repeatedly to curl the towel up under your arches.
- Try to 'reach out' with your toes and 'grab' the towel.
- _____ sets of _____ repetitions _____ times per day.



Frozen can roll

Roll your bare injured foot back and forth from the ball of the foot to the heel over a frozen juice or water can. This is a good exercise after activity because not only stretches the plantar fascia but provides cold therapy to the injured area.



Stair Stretch

Stand on a step on the balls for your feet, hold the rail or wall for balance. Slowly lower the heel of the injured foot to stretch the arch of your foot. Hold 30 seconds and repeat.



Calf/Achilles Stretch

Stand facing a wall place your hands on the wall chest high. Move the injured heel back and with the foot flat on the floor. Move the other leg forward and slowly lean toward the wall until you feel a stretch through the calf, hold 30 seconds and repeat.

