



## Plantar Fasciitis - "Heel Pain"

This handout explains the physiology, interventions, and self-care at home:

### What is plantar fasciitis:

Your foot has a thick, non-stretchable fibrous band (plantar fascia) just inside the skin on the sole of your foot. It is attached at the beginning of your toes and going all the way back to the calcaneous bone (heel) for the other attachment site.

Its purpose is to make the sole of your foot thicker and thereby making it more difficult for foreign objects to penetrate the sole and cause damage to your interior foot.

Fasciitis means that there is inflammation in the plantar fascia. It occurs mostly at the attachment site by the heel as this smaller area has more concentrated pressure.

### Who is prone to getting inflammation of the plantar fascia:

First we need to look at what causes the inflammation. As explained in the handout on "the structure of your foot," in a "normal" gait-cycle, the **subtalar joint**, between the calcaneous (heel) bone and the talus (ankle) bone, causes your foot to pronate appropriately; and one of the three motions of this is the inner longitudinal arch turning downward. This is in the beginning of the gait-cycle when the heel strikes the ground.

**If there is a lot of stress, weakness, damage, etc. to the subtalar joint, your foot may "over-pronate" in the beginning of the gait-cycle and get longer, causing the pulling, tearing, and inflammation of the "non-stretchable" plantar fascia.**

**People who hike, run, walk, or stand a lot** are more likely to create an unstable subtalar joint and get plantar fasciitis. Extra weight and predisposing factors also play a role.

### Changes to your heel bone and painful symptoms:

In an attempt to make the plantar fascia longer and eliminate the stretching, tearing, and inflammation, your foot will grow a bone-spur where the plantar fascia is attached to your heel bone. However, it may not be the bone-spur itself that causes the pain.

The sharp, shooting heel-pain is often confined to the times when you take the first few steps after sleeping or resting. There are a couple of reasons for this:

- Your foot is in a neutral position and not elongated when you sleep or rest. When you suddenly stand, your over-pronated foot flattens out: the plantar fascia gets pulled: and some tearing of the plantar fascia may happen.
- When you sleep or rest, the swelling and fluid-buildup increases. The first steps afterward will cause extra pressure and pain in the now weight-bearing heel. But, with each step, the excess fluids will be pushed away, causing the pain to stop.



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**Removing the bone-spur surgically or just releasing the plantar fascia will get rid of the pulling, tearing, and inflammation; however, the over-pronation of your foot in the gait cycle, related to an unstable subtalar joint, does not go away.**

*The handout on "The structure of your foot" explains the various damage that over-pronation can do to the structure of your foot.*

**Other remedies to reduce the swelling and stabilize the foot:**

- Ice compression around and under your heel, such as a frozen bag of peas, to reduce the swelling. Limit the time to avoid damage to your skin.
- NSAIDS to reduce the swelling.
- Steroid injections to reduce the swelling.
- Stretching exercises to reduce tension in the foot and calf. You can do **an online search for "plantar fasciitis stretching exercises."** You will find explanations, as well as videos that show how these exercises are done. Such exercises would be beneficial, especially if they help stabilize the subtalar joint.
- Low-dye taping to temporarily bring up the arch and eliminate the over-pronation. You can do **an online search for "low-dye taping for plantar fasciitis."** You will find explanations, as well as videos that show how this is done. This taping of the foot in a neutral position is often used prior to getting an orthotic or arch support.

**Orthotics or arch supports that prevent your foot from over-pronating during your gait-cycle, elongation of your foot, as well as stretching, tearing, and inflammation of your plantar fascia may be your best solution, as it also prevents or reduces the various damage to the structure of your foot that over-pronation can cause.**

- You need to get an orthotic or arch support that fits your own arch when your foot is in its neutral position; that means when your feet are dangling and you are not weight-bearing.
- If you want to buy a product that is already fabricated, make sure to hold it under your dangling foot to see if it makes a perfect fit with the sole of your own foot.
- If you cannot find a prefabricated product that meets that criteria, an orthotist can make a plaster cast of your foot in the neutral position and a custom-made orthotic that prevents your foot from over-pronating.

*The handout on "Orthotics" gives you more detailed information.*