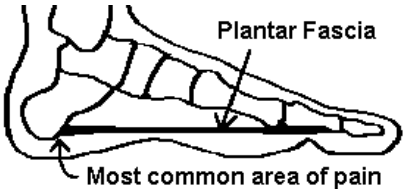
St. Francis Sports Medicine

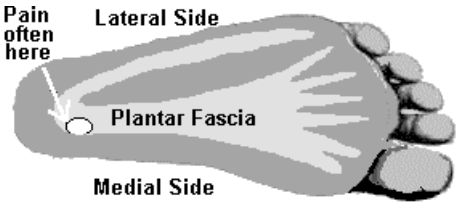
Plantar Fasciitis

WHAT IS PLANTAR FACIITIS?

- Plantar Fasciitis is the most common foot problem for runners.
- Plantar fascia is a thick fibrous material on the bottom of the foot attached to the heel bone (calcaneous) and fans forward toward the toes.
- Plantar fascia is responsible for maintaining the arch of the foot and dynamic shock absorption.
- Local inflammatory response to stresses from repetitive micro-trauma (part of inflexible fascia is pulled away from the heel bone causing inflammation and pain) occurs because continued demand is placed on the tissue before it is adequately healed, so the pain and inflammation continue.

SYMPTOMS





- Starts as a dull intermittent pain in the heel which may progress to a sharp persistent pain.
- The pain site is usually under the heel, on the inside and is very tender to touch.
- The pain may be on the outside of the heel which may occur due to off-loading of the painful side of the heel by walking on the outside border of the foot. Outside heel pain may also be associated with the high impact of landing on the outside of the heel with excessively high arched feet.
- Classic symptom: pain is worse in the morning with the first few steps or at the beginning of sporting activity and pain eases as foot "warms up."

CAUSES → OVERUSE!

- Faulty alignment problems in the feet
  - **Overpronators** (forefoot varus/pes planus/feet rolling in or flattening) and **tight calf muscles** (gastrocnemius / soleus) predisposes the foot to abnormal forces and irritation/additional stretching on the plantar fascia
  - Excessive **high arch/rigid feet** (forefoot valgus/pes cavus) and **tight calf muscles** increases stresses/stretch forces across the plantar fascia when extending the toes during push-off; "pump bump" or runner's bump (exostosis) on the back of heel is present.
- Muscle imbalances or fatigue
- **Abrupt change in exercise or workout regimen**
- Training errors (toe running, hill running, soft terrain/running on sand)
- Improper footwear for the ground or inappropriate shoes for the functional demands placed on the feet
- Obesity
- Increasing age
- Chronic repetitive plantar fasciitis results in a "heel spur" (a secondary finding on x-ray) → Not the **CAUSE** of the problem but the **RESULT** of the problem.

TREATMENT

- **"RELATIVE REST"** FROM ACTIVITY – **NO RUNNING!!!** (Avoid activity that provokes the pain) Weight bearing sports can be temporarily replaced by swimming and/or cycling to maintain cardiovascular fitness and weight training can be used to maintain strength fitness.
- Ice can be applied to the heel to reduce inflammation/pain - frozen peas (15 minutes), ice water in plastic bottle (3-5 minutes) or ice cube massage (3-5 minutes).
- Over the counter medication such as non-steroidal anti-inflammatory pills (Ibuprofen-Advil/Motrin, Naproxen-Aleve/Naprosyn, Aspirin) can be used. Always consult a physician before taking medication.
- Heel pads/lifts/cups (felt/sponge/gel/neoprene) placed inside the shoe with the foot slightly flexed may be used to relieve stresses by helping top absorb the shock.
- Appropriate shoe fit/wear including choosing a stability/motion-control shoe (flexible pronator) versus a cushioning shoe (rigid supinator).

- **PHYSICAL THERAPY** - Evaluation of alignment and muscle flexibility/strength imbalances to eliminate or modify the cause is important to prevent recurrences.
  - Treatment/Modalities to decrease inflammation
  - Correct the abnormal foot alignment with appropriate foot orthotics (motion control to decrease pronation versus cushioning to improve rigidity).
  - Taping (Figure 1a).
  - Night splints (Figure 1b).

Figure 1a.

Figure 1b.

  - Stretch tight structures including gastrocnemius and soleus muscles.
  - Strengthen the muscles in dysfunction including the small muscles of the foot to support the plantar fascia.
  - As flexibility and strength improve, emphasis needs to be placed on endurance of the involved muscle with **SLOW/GRADUAL** progression back to weight bearing sports/running (progress ½ -1 mile per run only)
  - Once return to pain-free activity, teach **PREVENTION:**
    - Stretching
    - Gentle repetitive warm-ups
    - Use of proper foot support
    - Importance of allowing time for **RECOVERY** from fatigue and micro-trauma after high-intensity workouts
  - Other treatments include immobilization (Cam walker/cast), steroid injections, and surgical release of the plantar fascia.