

# Plantar Fasciitis: A Conservative Treatment Approach



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Plantar fasciitis, a term used to denote inflammation of the plantar fascia that surrounds the heel and arch, is one of the most common occupational and sport related causes of foot pain.

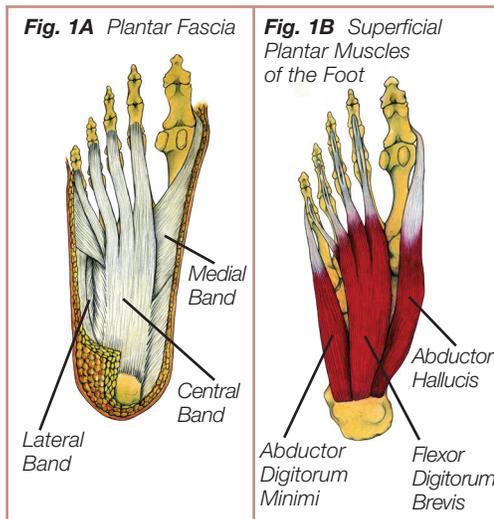
## **SYMPTOMS**

The initial chief complaint is typically a sharp pain on the heel and arch of the foot, particularly noticeable with the first few steps in the morning or after long time periods of non-weight bearing. Usually, after walking approximately 10 to 12 steps the plantar fascia looses up and the pain gradually diminishes. However, symptoms may resurface as throbbing, a dull ache, or a fatigue-like sensation in the arch of the foot after prolonged periods of standing, especially on unyielding cement surfaces.

## **FUNCTION**

The plantar fascia is a thick, fibrous, relatively inelastic sheet of connective tissue. It originates from the heel, separates into three distinct bands as it passes over the superficial musculature of the foot, and inserts onto the base of each toe (Figures 1A and 1B). The function of the plantar fascia is twofold:

- Aids in supporting the arch of the foot when standing, landing from a jump, and during ambulation.
- Is instrumental in reconfiguring the foot into a rigid platform in preparation for a stable and efficient toe-off.



Under normal conditions, the plantar fascia performs these functions appropriately without incurring injury. However, micro-tears may occur if the plantar fascia is subject to repetitive forces that exceed its intrinsic strength. This may lead to inflammation and/or degenerative changes, resulting in symptoms associated with plantar fasciitis.

Recent studies indicate that plantar fasciitis may be more of a non-inflammatory degenerative process. Sonographic examination of patients diagnosed with plantar fasciitis revealed marked degenerative thickening of the plantar fascia. The following hypotheses may explain why degenerative changes or inflammation of the plantar fascia lead to foot and heel pain:

- Irritation of pain fibers caused by chronic pressure from a thickened plantar fascia.
- Ischemic pain from chronic pressure of a thickened fascia against blood vessels in the bottom of the foot.
- Increased pain receptor sensitivity secondary to inflammation, and enhanced effect of local pain neurotransmitters/chemicals.

## **RISK FACTORS**

The following risk factors have been associated with predisposing to the development of plantar fasciitis:

- Occupations that involve prolonged standing such as: teachers, nurses, construction workers, cooks, and military personnel; and sports that involve repetitive jumping and/or foot strikes such as: mid-long distance running and basketball.
- Age related degenerative changes of the plantar fascia and fat pad of the heel.
- Training errors: inappropriately increase duration, frequency and intensity of the training routine, hill training commenced too early, improper shoe gear.
- Overweight.
- Faulty mechanics of the foot due to structural abnormalities.

## TREATMENT

Conservative treatment for plantar fasciitis should focus on decreasing pain, promoting healing, restoring range of motion and strength, correcting training errors, limiting biomechanical deviations caused by structural abnormalities, and maximizing good nutrition. In my experience and based on a review of the literature the following treatment protocol is suggested:

1. Deep tissue procedures, such as the Graston Technique (manual therapy that utilizes specially designed devices) (Figures 2A and 2B) and Active Release Technique



(a patented manual therapy technique). Myofascial techniques have been shown to stimulate the production of collagen (the subunits necessary for tissue repair). Collagen synthesis may lead to the replacement of a weakened degenerative fascia with a stronger and more functional fascia.

2. Manual adjustments to the ankle and foot to free up joint restrictions.
3. Ultrasound and electric muscle stimulation combination therapy to restore normal muscle tone, aid in the healing process, and reduce pain.
4. Supportive taping with leukotape (Figure 3).



5. A home exercise program for myofascial release therapy can be taught to the patient (Figures 4A and 4B). Myofascial release can also be conducted by rolling a golf ball or frozen plastic bottle under the arch.
6. A home stretching routine for the calf musculature and plantar fascia can be conducted on a flat floor surface, a slant board, or pro-stretch device.
7. Implementation of a strength training routine for the muscles on the bottom of the foot and surrounding leg musculature.
8. Use of a prefabricated night splint. However, there has been poor compliance associated with the night splint.
9. Buying the proper running shoe. A high arch foot structure may benefit from a cushioned sneaker. The sneaker liner can be removed and replaced with a cushioned liner. A flat foot structure may benefit from a motion control sneaker.
10. Running shoes should be changed every 300-500 miles. A sneaker loses approximately fifty percent of its ability to absorb ground reactive forces after 300-500 miles.
11. Use of an appropriate arch support or viscoelastic heel cup as necessary.
12. Minimize training errors.
13. Modified training with swimming, bicycling, and the elliptical machine until running can be conducted relatively pain free.
14. Histological findings in plantar fasciitis have indicated degenerative changes with no inflammatory precursors; therefore, the healing potential of NSAIDs, ice therapy, and iontophoresis for the treatment of plantar fasciitis may be limited.
15. A walking boot may be worn for approximately six weeks to limit the ground reactive forces acting on the fascia, thereby limiting repetitive strain and promoting healing.
16. Cortisone injections or surgical management may need to be considered if conservative measures are not successful in alleviating symptoms or allowing the patient to comfortably manage symptoms associated with plantar fasciitis.

**To schedule an appointment please call 617-471-2444.**

A published article on plantar fasciitis can be viewed at [www.dubinchiro.com](http://www.dubinchiro.com).

Artwork by Audrey Mahoney

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