

# Madigan Army Medical Center

## Musculoskeletal Treatment Guidelines

### PLANTAR FASCIITIS

#### Diagnosis/Definition

- Inflammation of the thick fibrous band of tissue that courses through the arch of the foot and inserts into the inferior aspect of the heel. It is the most common cause of arch and heel pain and is commonly associated with a heel spur.

#### Initial Diagnosis and Management

- **History**
  - Patient complains of either a diffuse area of pain in the arch area which increases with any type of prolonged activity (generalized type) or pain in the heel when rising out of bed which slowly improves after several minutes of walking (localized type). The localized type of fasciitis is commonly associated with a heel spur and is more common in middle-aged people. Patients should be questioned about the following factors, all of which can cause/exacerbate plantar fasciitis: barefoot walking, wearing sandals, loafers, moccasins, deck shoes, badly worn shoes, shoes with no arch support or shoes with a flexible shank (the shank is the middle part of the sole, immediately in front of the heel- it should be rigid/stiff), excessive running or running on unstable surfaces (e.g. sand), or recent weight gain.
- **Exam**
  - Tenderness along the fascia as it courses through the arch (generalized type) or point tender at the plantar/medial plantar area of the heel (localized type). Check ankle joint ROM. Less than 10 degrees of dorsiflexion with the knee extended will aggravate fasciitis. Check posture of foot with patient standing. Plantar fasciitis can be seen in any foot type but is more prevalent in the overpronated (flat) foot.
- **Radiograph Evaluation**
  - Lateral and AP weight bearing views of the foot. **The presence of a plantar heel spur does not change the treatment plan, and symptoms are identical whether or not a spur is present.**
- **Initial Treatment**
  - Treatment is the same for the generalized type (arch pain) and the localized type (heel pain). Limit activity for 30 days. No barefoot walking. Lace-up rigid shanked shoes only (e.g. moderate to high quality running shoe, walking shoe or cross-trainer). No wearing of sandals, loafers, badly worn shoes, slippers or flexible shanked shoes. Add OTC arch support (e.g. " Polysorb" insoles) to shoes-available at PX/BX, NSAID's, and Calf/Heel Cord stretches (see below).

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### Ongoing Management and Objectives

- Major objective is to prevent excessive stretch of the plantar fascia by wearing an appropriate shoe with an arch support in it whenever the patient is standing, walking or running, including off-duty for military patients. If symptoms persist beyond 30 days continue initial treatment and have the patient use an NSAID different from the one given originally. The patient should be instructed in manually stretching the plantar foot before arising from bed or after periods of prolonged non-weight bearing by bringing the great toe upward into dorsiflexion and holding for 15 seconds.

### Indication a profile is needed

- Any limitations that affect strength, range of movement, and efficiency of feet, legs, lower back and pelvic girdle.
- Slightly limited mobility of joints, muscular weakness, or other musculo-skeletal defects that may prevent moderate marching, climbing, timed walking, or prolonged effect.
- Defects or impairments that require significant restriction of use.

### Specifications for the profile

#### ➤ Initial Visit

Continue the following for one month

- Limit Activity (profile for active duty). No high impact type activity. Amount of restrictions on walking, marching and running contingent on severity of symptoms.
- Appropriate shoe (see shoes to avoid under "history"). A lace-up rigid shanked shoe is recommended. The shank of the shoe is the middle part of the sole, immediately in front of the heel. No barefoot walking allowed.
- Patient should wear an over-the-counter type arch support (e.g. Polysorb insoles by Spenco, Dr. Scholl's arch supports, Sorboair insoles or similar brand) in all shoes. These are available at the PX and at sport shoe stores.
- Heel cord stretches- wall push up with knee bent. 30 second stretch, three to five times daily. Place ice on symptomatic area for twenty minutes after aggravating activity.
- Calf stretches- same as Heel cord above, but with knee straight.
- Gentle upward stretching to the great toe upon arising before weightbearing.
- Non-steroidal anti-inflammatory medication.

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- Dispense appropriate patient education/information\* regarding fasciitis. It should be stressed to the patient that all of these things should be done **every day**, i.e. wearing an appropriate shoe during the day and then wearing loafers at night will only delay improvement of the patient's condition.

### ➤ **Second Month and Third Months:**

If there has been at least a 50% improvement in the patient's condition, continue the above treatments. If less than 50% improvement, continue the above, plus:

- Add "running shoes only" to profile.
- Consider a change in NSAID used.
- Send patient to Madigan Physical Therapy for evaluation and treatment which may include fabrication of a customized orthosis for plantar fasciitis.
- Continue these treatments for another eight weeks.

### ➤ **Fourth Month:**

If there has been at least a 50% improvement in the patient's condition, continue the above treatments. If less than 50% improvement, continue the above, plus refer patient to the podiatry clinic.

### **Patient/Soldier Education or Self care Information**

- See attached sheet
- Demonstrate deficits that exist
  - Describe/show soldier his/her limitations
- Explain injury and treatment methods
  - Use diagram attached to describe injury, location and treatment.
- Instruct and demonstrate rehab techniques
  - Demonstrate rehab exercises as shown in attached guide
  - Warm up before any sports activity
  - Participate in a conditioning program to build muscle strength
  - Do stretching exercises daily
- Ask the patient to demonstrate newly learned techniques and repeat any other instructions.
- Fine tune patient technique
  - Correct any incorrect ROM/stretching demonstrations or instructions by repeating and demonstrating information or exercise correctly.
- Encourage questions
  - Ask soldier if he or she has any questions
- Give supplements such as handouts

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- Schedule follow up visit
  - If pain persists
  - The pain does not improve as expected
  - Patient is having difficulty after three days of injury
  - Increased pain or swelling after the first three days
  - Patient has any questions regarding care

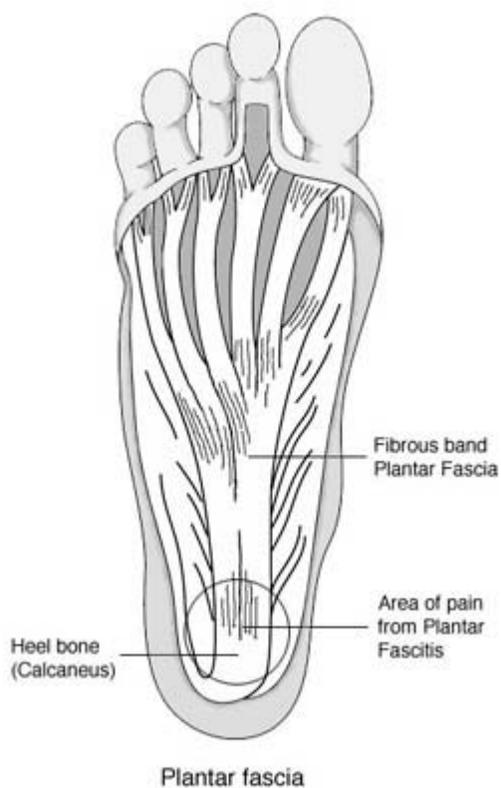
### **Indications for referral to Specialty Care**

- The above treatments should be utilized for at least six months before a referral to podiatry is considered. The patient needs to be informed of the recalcitrant nature of this condition and the importance of wearing an appropriate shoe with an arch support, every day, whenever weight bearing, in order for the condition to resolve. Patients can expect possible injection treatment in the Podiatry clinic.
- If symptoms have not improved after one month the patient should be sent to physical therapy for evaluation and fitting for a plantar fasciitis orthosis or other interventions as indicated.
- Information on the evaluation and treatment of plantar fasciitis is available in the Podiatry Clinic.

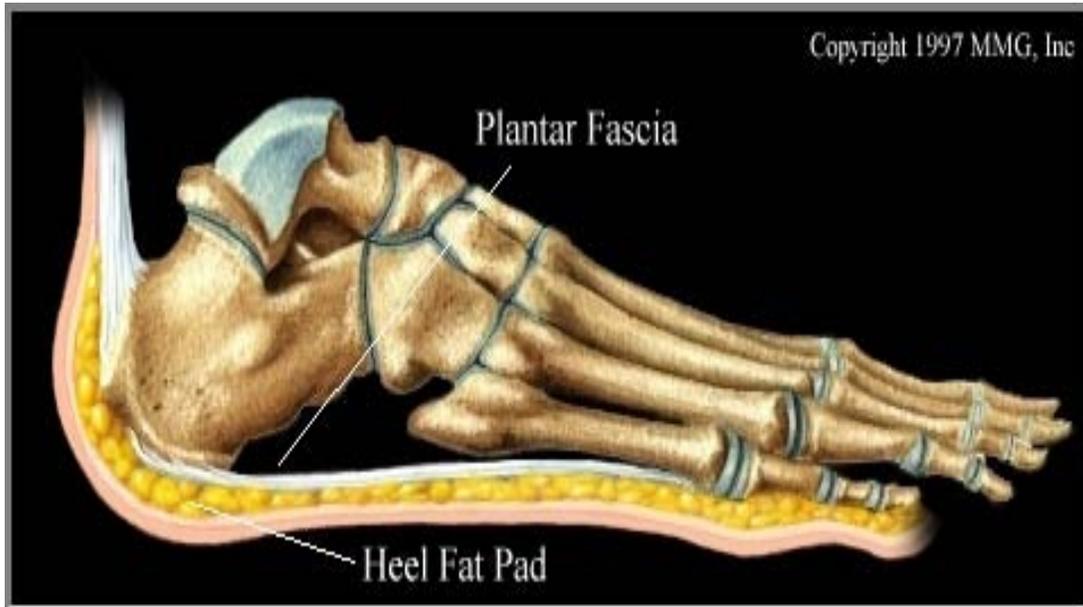
### **Referral criteria for Return to Primary Care**

- Patient will be returned to primary care provider for chronic management following resolution of acute condition along with recommendations for long-term treatment.
- Patients requiring surgery will be followed in the podiatry clinic until the peri-operative period is complete.

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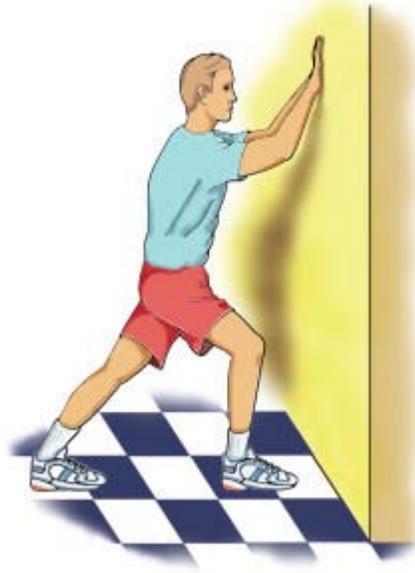
## Exercises

Rest is the first treatment for plantar fasciitis. Try to keep weight off your foot until the inflammation goes away. You can also apply ice to the sore area for 20 minutes three or four times a day to relieve your symptoms. Often a doctor will prescribe nonsteroidal anti-inflammatory medication such as ibuprofen. A program of home exercises to stretch your Achilles tendon and plantar fascia are the mainstay of treating the condition and lessening the chance of recurrence.

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## Exercise 1:

Lean forward against a wall with one knee straight and heel on the ground. Your other knee is bent. Your heel cord and foot arch stretch as you lean. Hold for 10 seconds, relax and straighten up. Repeat 20 times for each sore heel.



## Exercise 2:

In the second exercise, you lean forward onto a countertop, spreading your feet apart with one foot in front of the other. Flex your knees and squat down, keeping your heels on the ground as long as possible. Your heel cords and foot arches will stretch as the heels come up in the stretch. Hold for 10 seconds, relax and straighten up. Repeat 20 times.

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<b>PHYSICAL PROFILE</b>																																	
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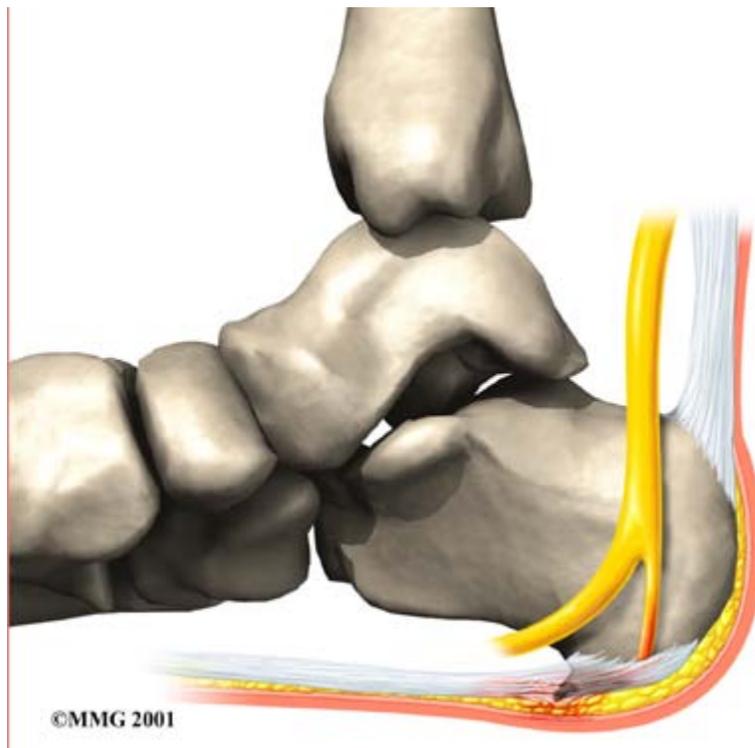
DA FORM 3349, MAY 86

REPLACES DA FORM 5302-R (TEST) DATED FEB 84 AND DA FORM 3349 DATED 1 JUN 80, WHICH ARE OBSOLETE

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# Madigan Army Medical Center Musculoskeletal Treatment Guidelines

## PATIENT INFORMATION



### Introduction

*Plantar fasciitis* is a painful condition affecting the bottom of the foot. It is a common cause of heel pain and is sometimes called a "heel spur." Plantar fasciitis can come from a number of underlying causes. Finding the precise reason for the heel pain is sometimes difficult. Even so, several options are available for treatment.

This guide will help you understand

- how plantar fasciitis develops
- how the condition causes problems
- what can be done for your pain

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### Anatomy

Where is the plantar fascia, and what does it do?

The *plantar fascia* is a structure that runs from the front of the heel bone (*calcaneus*) to the ball of the foot. This dense strip of tissue helps to support the arch of the foot by acting similar to the string on an archer's bow.

As you can imagine, when the foot is on the ground a tremendous amount of force (the full weight of the body) is concentrated on the plantar fascia. This force stretches the plantar fascia as the arch of the foot tries to flatten from the weight of your body--just like the string on a bow is stretched by the force of the bow trying to straighten. This leads to stress on the plantar fascia where it attaches to the heel bone. Small tears of the fascia can result. These tears are normally repaired by the body.

As this process of injury and repair repeats itself over and over again, a bone spur (a pointed outgrowth of the bone) sometimes forms as the body's response to try to firmly attach the fascia to the heel bone. This appears on an X-ray of the foot as a heel spur.

### Causes

How does plantar fasciitis develop?

Heel pain probably comes from several causes. In some cases the heel spur can be so big it causes pain itself, but this is rare. The chronic inflammation of the fascia itself may be the source of pain in many cases. (This condition is probably most accurately called plantar fasciitis.) As we age, the very important fat pad that makes up the fleshy portion of the heel becomes thinner and degenerates. This can lead to inadequate padding on the heel and chronic pain in this area.

Some physicians feel that the small nerves that travel under the plantar fascia on their way to the forefoot become irritated and may contribute to the pain. In many cases, the actual source of the painful heel will never be clearly defined without doubt.

### Symptoms

What does plantar fasciitis feel like?

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Clinical Practice and Referral Guidelines Administrator

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The symptoms of plantar fasciitis include pain in the center of the heel when weight is placed on the foot. This is usually most pronounced in the morning when the foot is first placed on the floor.

### Diagnosis

How do doctors diagnose the condition?

The diagnosis of plantar fasciitis is generally made during the history and physical examination. There are several conditions that can cause heel pain, and plantar fasciitis must be distinguished from these conditions.

An X-ray may be ordered to rule out a stress fracture of the heel bone and to see if a bone spur is present that is large enough to cause problems. Laboratory investigation may be necessary in some cases to rule out a *systemic illness* causing the heel pain, such as rheumatoid arthritis, Reiter's syndrome, or ankylosing spondylitis. These are diseases that affect the entire body but may show up at first as pain in the heel.

### Treatment

What can be done for my pain?

#### Nonsurgical Treatment

Most patients get better with the help of nonsurgical treatments. Stretches for the calf muscles on the back of the lower leg take tension off the plantar fascia.

A night splint can be worn while you sleep. The night splint keeps your foot from bending downward, and it places a mild stretch on the calf muscles and the plantar fascia. People seem to get better, faster when using a night splint, and they report having less heel pain when placing their sore foot on the ground in the morning.

Supporting the arch with a well-fitted arch support, or *orthotic*, may also help reduce pressure on the plantar fascia. Also, placing a special type of insert into the shoe, called a *heel cup*, can reduce the pressure on the sore area and add padding to a heel that has lost some of the fat pad through degeneration.

Shock wave therapy is a newer form of nonsurgical treatment. It uses a machine to generate shock wave pulses to the sore area. Patients generally receive the treatment once each week for up to three weeks. It is not known exactly why it works for plantar fasciitis, but recent studies

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indicate that this form of treatment can help ease pain, while improving range of motion and function.

Anti-inflammatory medications are sometimes used to decrease the inflammation in the fascia and reduce your pain. An injection of cortisone into the area of the fascia is effective. Cortisone should be used sparingly since it may contribute to the process of degeneration of the fat pad, actually making the problem worse.

### Surgery

Surgery is a last resort in the treatment of heel pain. Physicians have developed many procedures in the last one hundred years to try to cure heel pain. Most procedures that are commonly used today focus on several areas:

- remove the bone spur (if one is present)
- release the plantar fascia
- release pressure on the small nerves in the area

Usually the procedure is done through a small incision on the inside edge of the foot, although some surgeons now perform this type of surgery using an *endoscope*. An endoscope is a small TV camera that can be inserted into a joint or under the skin to allow the surgeon to see the structures involved in the surgery. By using the endoscope, a surgeon can complete the surgery with a smaller incision and presumably less damage to normal tissues. It is unclear whether an endoscopic procedure for this condition is better than the traditional small incision.

Surgery usually involves identifying the area where the plantar fascia attaches to the heel and releasing the fascia partially from the bone. If a small spur is present this is removed. The small nerves that travel under the plantar fascia are identified and released from anything that seems to be causing pressure on the nerves. This surgery can usually be done on an outpatient basis, meaning you can leave the hospital the same day.

### Rehabilitation

What should I expect after treatment?

#### Nonsurgical Rehabilitation

Patients with plantar fasciitis are commonly prescribed physical therapy. Therapists design exercises to improve flexibility in the calf muscles and the plantar fascia.

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Treatments directed to the painful area help control pain and swelling. Examples include ultrasound, ice packs, and soft-tissue massage. Therapy sessions sometimes include *iontophoresis*, which uses a mild electrical current to "push" anti-inflammatory medicine to the sore area.

A customized foot orthotic may be designed to support the arch of the foot and to help cushion the heel. Or your therapist may recommend you use a heel cup.

Ideas are offered for you to use at home, such as doing your stretches for the calf muscles and the plantar fascia. You may also be fit with a night splint to wear while you sleep. As mentioned earlier, the night splint is designed to put a gentle stretch on the calf muscles and plantar fascia as you sleep.

#### **After Surgery**

It will take several weeks before the tissues are well healed. The incision is protected with a bandage or dressing for about one week after surgery. You will probably use crutches briefly, and a physical therapist may be consulted to help you learn to use your crutches.

The stitches are generally removed in ten to fourteen days. However, if your surgeon used sutures that dissolve, you won't need to have the stitches taken out. You should be released to full activity in about six weeks.

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## Musculoskeletal Treatment Guidelines

### Input was provided by:

- Occupational Therapy Clinic
- Physical Therapy Clinic
- Orthopedic Clinic
- Family Practice Clinic
- Okubo Clinic
- 555 Engineers
- 1<sup>st</sup> Brigade
- 3<sup>rd</sup> Brigade
- 62<sup>nd</sup> Medical Brigade

### POC:

- Outcome Management

### References:

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- Lillegard, Rucker. (1999). The Handbook of Sports Medicine. A symptom-oriented approach, 2<sup>nd</sup> Edition. Butterworth-Heinemann Medical: Burlington, MA.
- Baechle, Thomas, Earle, Roger. (2000) Essentials of Strength Training and Conditioning, 2<sup>nd</sup> Edition. Human Kinetics Pub: Champaign, IL
- Schenck, Robert, Jr. et al. (1999). Athletic Training and Sports Medicine, 3<sup>rd</sup> Edition. American Academy of Orthopedics: Tucson, AZ.