SPORTS MEDICINE AUSTRALIA

Plantar Fasciitis

A guide to prevention and management

For further information contact

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www.sma.org.au • www.smartplay.com.au

References

For a full list of references, contact Sports Medicine Australia.

Acknowledgements

Sports Medicine Australia wishes to thank the sports medicine practitioners and SMA state branches who provided expert feedback in the development of this fact sheet.

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Plantar Fasciitis (or fasciopathy) is a condition of pain and tissue damage at the attachment of the plantar fascia to the underside of the calcaneus (heel bone).

Anatomy

The plantar fascia is a band of connective tissue that runs along the sole from the heel to the ball of the foot. One of its main roles is to keep the bones and joints in position and enables us to push off from the ground. Bruising or overstretching this ligament can cause inflammation and heel pain. In many cases, plantar fasciitis is associated with a heel spur. Surprisingly, the spur itself does not cause pain, and may often be found in the other foot without symptoms.

Risk

- **Certain sports.** Activities that place a lot of stress on the heel bone and attached tissue, i.e. running, dance and aerobics.
- **Flat-footed or high arches.** People with flat feet may have reduced shock absorption, increasing strain on the plantar fascia. High arched feet have tighter plantar tissue, leading to similar effects.
- **Middle-aged or older.** Heel pain tends to be more common with ageing as muscles supporting the arch of the foot become weaker, putting stress on the plantar fascia.
- **Overweight.** Weight places a greater mechanical load on the plantar fascia. There is evidence that overweight and inactivity lead to chemical damage to the plantar fascia, with a worsening of pain.
- **Pregnancy.** Weight gain, swelling and hormonal changes that accompany pregnancy may lead to mechanical overload of the plantar fascia.
- **Being on your feet.** People with occupations that require a lot of walking or standing on hard surfaces may suffer plantar fascia pain.
- **Wearing shoes with poor arch support or stiff soles.** Poorly designed shoes may contribute to problems.

Prevention

- Maintaining a healthy weight to minimise the stress on the plantar fascia.
- Choosing supportive shoes. Avoiding stiletto heels and shoes with excessively low heels. Buying shoes with a low to moderate heel, good arch support and absorption. Not going barefoot, especially on hard surfaces.
- Not wearing worn-out runners. Replacing old runners before they stop supporting and cushioning the feet. If a sport involves a lot of running, replacing shoes after about 650 kilometres of use.
- Starting activity slowly. Warming up before starting any activity or sport, and starting a new exercise program slowly.
- Undertaking training prior to competition to ensure readiness to play.
- Allowing adequate recovery time between workouts or training sessions.
- Checking the sporting environment for hazards.
- Drinking water before, during and after play.
- Avoiding activities that cause pain.

Signs and symptoms

Pain is usually felt on the underside of the heel, and is often most intense with the first steps of the day or after rest. It is commonly associated with long periods of weight bearing or sudden changes in weight bearing or activity.

You may experience:

- Sharp pain in the inside part of the bottom of the heel, which may feel like a knife sticking into the bottom of the foot.
- Heel pain that tends to be worse with the first few steps after awakening, when climbing stairs or when standing on tiptoe.
- Heel pain after long periods of standing or after getting up from a seated position.
- Heel pain after, but not usually during, exercise.
- Mild swelling in the heel.

Immediate management

Initial treatment includes gentle stretching of the Achilles tendon and plantar fascia, weight loss, taping, arch support and heel lifts. Difficult cases may be referred for physiotherapy. Physiotherapy includes myofascial release and scar tissue breakdown of the plantar fascia, and supervised stretching. A strengthening program for the calf muscles and small muscles of the foot is important. Be aware that this may increase soreness initially, but persistence should be rewarding.

Care should be taken to wear supportive and stable shoes. Patients should avoid open-back shoes, sandals, 'flip-flops', and any shoes without raised heels. A podiatrist can assist with plantar fasciitis and other foot and lower limb problems.

Treatment

For most people, the condition improves spontaneously within a year. Treatments that may help control symptoms include:

- **Night splints.** A sports medicine professional may recommend wearing a splint fitted to the calf and foot while sleeping. This holds the plantar fascia and Achilles tendon in a lengthened position overnight.
- **Orthotics.** A sports medicine professional may prescribe off-the-shelf or custom-fitted arch supports (orthotics) to help distribute pressure to the feet more evenly, and to stimulate the small foot muscles.
- **Physiotherapy.** A physiotherapist can give instruction on a series of exercises to stretch the plantar fascia and Achilles tendon and to strengthen lower leg muscles, which stabilises the ankle and heel. A physiotherapist may also instruct how to apply athletic taping to support the bottom of the foot.
- **Medication, injection and surgery.** These measures are for the most persistent cases, and do not replace the need for the treatment methods detailed above.

Rehabilitation and return to play

Aims of rehabilitation

- Decrease initial pain and inflammation.
- Identify biomechanical dysfunction.
- Improve flexibility.
- Strengthen the plantar fascia.
- Return to full fitness.
- Injury prevention.

Reducing pain and inflammation

- **Reduce activities that cause pain.** Maintain fitness by swimming or cycling. Take the opportunity to work on upper body strength.
- **Taping gives excellent support while allowing the foot to heal.** If taping is effective then it is likely that orthotics will also be effective in correcting foot biomechanics and helping to prevent the injury returning once normal training has resumed.
- **Apply cold therapy.** Ice massage for 10 minutes to the site of pain – several times a day if possible. A frozen drink bottle used like a rolling pin is an easy way of performing ice massage.

Return to play

- Follow the advice given by a sports medicine professional.
- After a week of no pain running can be started again.
- This should be a gradual process. If pain is felt at any time then go back a step.
- Running time should be gradually increased.
- Apply tape to the foot to support it for the first few runs, especially if orthotics are not being worn.
- Ensure the correct shoes for your type of running style or sport are worn.
- After every training session apply ice for about 10 minutes.
- Stretch properly before each training session and after. Hold stretches for about 30 seconds and repeat five times.