

Plantar Fasciitis

Quick Reference Guide for Physical therapist

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Anatomy and Biomechanics^{1,4,5,6,7}

- White dense, fibrous connective tissue
- Originates from the medial tubercle of the calcaneus and inserts into the dorsal aspect of each proximal phalanx
- Blends with the paratenon of the Achilles tendon
- Provides truss support that maintains the stiffness of the foot
- Windlass mechanism = when metatarsophalangeal joints are extended, the distance from the calcaneus to the metatarsals shorten, which elevates medial longitudinal arch. The plantar fascia becomes taut in this position.

Pathophysiology^{1,2,3}

- Repetitive strain exerted on the plantar fascia causes microtrauma, which ultimately produces fibrosis and collagen necrosis
- Degenerative changes, not inflammatory changes despite the nomenclature

Risk Factors^{4,8,9,10,18}

- Limited ankle dorsiflexion
- High body mass index
- Running
- Pes cavus
- Pes planus
- Forefoot varus
- Poor Footwear
- Excessive pronation
- Leg length discrepancies
- Tight hamstrings, gastrocnemius, soleus, and Achilles tendon
- Occupations that require weight bearing on hard surfaces for a prolonged time

Differential Diagnosis^{1,11,12, 18}

- Fat pad atrophy
- Spondyloarthritis
- Proximal plantar fibroma
- Calcaneal bone bruise
- Inferior calcaneal bursitis
- S1 nerve root impingement
- Tarsal tunnel syndrome
- Plantar fascia rupture

Evaluation and Assessment^{3,7,13}

- ↑ pain in the morning with first step, after inactivity, when barefoot, and after prolonged weight bearing
- Pain localized to heel and/or medial band of plantar fascia
- Gait assessment (excessive pronation)
- Forefoot/rearfoot alignment
- Pes planus/cavus (check for equinus if cavus is present)
- Strength
- Gastrocnemius, soleus, and plantar fascia flexibility
- Palpation
- Check footwear and inserts

Intervention^{13,14,15,16,17,18}

- Reduce activity/rest
- Low dye taping can be used for immediate pain relief
- Suggest OTC or custom shoe inserts
- Stretch plantar fascia, soleus, and gastrocnemius vigorously
- Strengthen extrinsic muscles that control pronation and influence joint loading
 - High load unilateral calf raises with a towel placed under the toes may result in a quicker improvement in pain and function

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