

Key Clinical Findings of Heel Pain/Plantar Fasciitis

- Plantar medial heel pain: most noticeable with initial steps after a period of inactivity but also worse following prolonged weight bearing (B)
- Heel pain precipitated by a recent increase in weight-bearing activity (B)
- Reproduction of the reported heel pain with palpation/provocation of the proximal insertion of the plantar fascia (B)
- Positive windlass test (B)
- Negative tarsal tunnel tests as well as other signs of peripheral nerve entrapment to include lower-limb tension and sensation tests (B)
- Negative examination findings suggesting lumbopelvic region referred or radiating pain, to include reports of low back pain, provocation of lumbar and pelvic girdle structures, lower-limb nerve tension, and neurological status examination (F)



Measures to Assess Level of Functioning, Presence of Associated Physical Impairments to Address With Treatment, and Response to Treatment

- A self-report outcome measure, such as the Foot and Ankle Ability Measure (A)
- Visual analog scale to assess pain with initial steps after a period of inactivity (B)
- Active and passive talocrural dorsiflexion range of motion (B)
- Foot Posture Index-6 score (C)
- Body mass index in nonathletic individuals (B)
- Lower-quarter musculoskeletal and biomechanical assessment, to include the following required elements of gait (F):
 - First metatarsophalangeal joint range of motion and accessory mobility to attain 65° of extension at preswing
 - Rearfoot/talocalcaneal range of motion and accessory mobility to attain 4° to 6° of eversion at loading response
 - Tibialis posterior strength and movement coordination to control mid-tarsal joint motion at loading response
 - Fibularis longus strength and movement coordination to control mid-tarsal joint motion at terminal stance
 - Talocrural dorsiflexion range of motion, accessory mobility, and gastrocnemius/soleus muscle length and tissue mobility to attain 10° of dorsiflexion at terminal stance
 - Gastrocnemius/soleus strength and movement coordination to control tibial advancement at midstance and propulsion at terminal stance
 - Knee joint and thigh muscle flexibility to attain 0° of extension at terminal stance and 60° of flexion at initial swing
 - Quadriceps femoris strength and movement coordination to control knee flexion at loading response
 - Hip joint mobility and muscle flexibility to attain 10° of extension at terminal stance
 - Trunk, buttock, and thigh strength and movement coordination to control lower-limb internal rotation at loading response and hip abduction at loading response and midstance



Figure continues on page 2.

FIGURE. Heel pain/plantar fasciitis evaluation/intervention decision-making model. A, guidelines based on strong evidence; B, guidelines based on moderate evidence; C, guidelines based on weak evidence; E, guidelines based on theoretical/foundational evidence; F, guidelines based on expert opinion.

Interventions – Targeted to Directly Address Plantar Fascia–Related Physical Impairments

- Therapeutic exercises (A)
 - Plantar fascia stretching
 - Gastrocnemius/soleus stretching
- Manual therapy (A)
 - Joint mobilization to improve identified restrictions in joint mobility of the lower extremity, with an emphasis on improving talocrural dorsiflexion
 - Soft tissue mobilization of the plantar fascia
 - Soft tissue mobilization of gastrocnemius and soleus myofascia, specifically targeting trigger points and areas of soft tissue restriction
- Taping (A)
 - Application of antipronation taping
- Patient education and counseling (E)
 - Address/discuss strategies to modify relevant weight-bearing loads during occupational, recreational, or daily activities
 - Address/discuss footwear options to mitigate commonly occurring weight-loading stresses
 - Address/discuss strategies to gain or maintain optimal lean body mass, especially in nonathletic individuals with a high body mass index
- Foot orthoses (A)
 - Use of over-the-counter/prefabricated or custom foot orthoses that support the medial arch and/or provide cushion to the heel region, especially in individuals who exhibit Foot Posture Index-6 scores indicating excessive pronation, demonstrate lower-quarter strength and movement coordination deficits, and/or positively respond to antipronation taping
 - Use of an over-the-counter heel cushion, footwear modification that provides heel cushioning, and/or orthotic strategies that incorporate heel cushioning, especially in individuals with decreased shock-absorption capacity, indicated by a Foot Posture Index-6 score that indicates excessive supination and/or coexisting lower-quarter strength and movement coordination deficits
- Night splints (A)
 - As appropriate, depending on the response to other interventions, utilization of night splints for a 1- to 3-month period
- Physical agents (C)
 - Application of iontophoresis, low-level laser, or phonophoresis for individuals who present with acute pain, proceeding with the interventions noted above as the pain diminishes and those other interventions are tolerated

Interventions – Targeted to Directly Address Lower-Limb Physical Impairments Potentially Associated With the Individual's Heel Pain/Plantar Fasciitis, With the Primary Focus of Reducing Walking and Running Gait Abnormalities, as Well as Relevant and Lower-Quarter Musculoskeletal/Biomechanical Assessment Findings

- Manual therapy (F)
 - Joint mobilization and manual stretching procedures to restore normal first metatarsophalangeal joint, tarsometatarsal joints, talocalcaneal, talocrural, knee, and hip mobility
 - Soft tissue mobilization and manual stretching procedures to restore normal muscle length to the calf, thigh, and hip myofascia, primarily required at terminal stance
- Therapeutic exercises and neuromuscular re-education (F)
 - Strengthening and training of the muscles that work eccentrically to control mid-tarsal pronation (tibialis posterior and fibularis longus), ankle plantar flexion (tibialis anterior), knee flexion (quadriceps femoris), hip adduction (gluteus medius), and lower-limb internal rotation (hip external rotators) at loading response, to lessen the individual's pronatory tendencies and improve the individual's ability to attenuate and absorb weight-bearing forces

FIGURE (CONTINUED). Heel pain/plantar fasciitis evaluation/intervention decision-making model. A, guidelines based on strong evidence; B, guidelines based on moderate evidence; C, guidelines based on weak evidence; E, guidelines based on theoretical/foundational evidence; F, guidelines based on expert opinion.