ValleyOrtho Rehabilitation Playbook Series

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Diagnosis: Plantar Fasciitis

The intent of this information is to inform the treating clinician on the evidence-based considerations to be used as a guideline regarding the diagnosis noted above. This is not a substitute for appropriate clinical decision making, but a supplement to that effect. If at any time a clinician feels uncertain about a given phase discrepancy or patient presentation they are strongly encouraged to discuss this with the referring physician and his/her team.

Therapeutic Activity Progression Disclaimer: Progression to the next phase should be strongly based on meeting clinical criteria (not solely based on the timeframes) and in collaboration with the referring physician. Exercise prescription should be clinically directed by pain and performance absent of detrimental movement patterns with respect to proper biomechanics of the spine, hip, knee and ankle.

*Patient needs to express discernable improvement in symptoms in 6 weeks. IF NOT, patient should maintain their follow up with MD. If resolving with PT, patient should continue with treatment as necessary and request a script update.
*Cortisone shot is an option after 6 weeks.

***Communication from Therapist to Surgical Team*:** When a treating therapist feels the need to reach out to Dr. Armstrong, or a member of his team, at any point for any reason they are strongly encouraged to do so. All concerns are not explicitly written and clinical judgement is paramount. Below is a handful of reasons and suggested methods of contact to promote communication:

Urgent Red Flag Communication: the patient is in clinic and an action is required as directed by referring staff office
Preferred Contact Method: 1. Immediate Office Call. 2. If no response use Perfect Serve (PS) SBAR text message to "Admit/Consult" to MD, PA, Use patient name & DOB in subject and in the body of the text.

Administrative Needs
- Rehabilitation Prescription needed or prescription change requests
- Appointment needed with the physician office, or medication refill

Preferred Contact Method: 1. Create Athena Patient Case Request (include your clinic location) 2. Phone call to ATC / MA

Other Patient Concerns During Clinic Hours M-TH 9-5pm F 9-3pm
- Abnormal pain, comorbidities or complications that may prevent attainment of established discharge criteria.
- Patient is noncompliant with rehabilitation process.
- Adverse work or home practices negatively impacting recovery.
- Patient expresses discontent or concerns with the current POC established by PT and/or by MD/PA

Contact Method: Office or PS Phone call to MD &/or PA

Preferred Updates before checkup visits with MD/PA
During Clinic Hours M-TH 9-5pm F 9-3pm
- Info regarding adherence/participation in rehabilitation process.
- Progress and trending nature of the patient's rehab course.

Patient may benefit from more conservative management and PT Diagnostics before follow up with MD at 6 weeks.
Preferred Contact Method: 1. Use PS Chat (informal) Text to MD and/or PA. Use patient name & DOB in subject and body of text.
2. Complete a Progress note.

Plantar Fasciitis Diagnostic

- Risk factors[8,10,13,17]
  - ☐ Most common ages 30-60 years old
  - ☐ Limited dorsiflexion
  - ☐ Running
  - ☐ Prolonged weightbearing at work
  - ☐ Obesity
  - ☐ Diabetes
  - ☐ Recent trauma

- Clinical Presentation[8,10,17]
  - ☐ Stabbing non-radiating plantar medial heel pain
  - ☐ Pain is worse in the morning and end of day
  - ☐ Pain with initial steps after rest
  - ☐ Tenderness to palpation of the plantar medial heel, calcaneal tuberosity
  - ☐ Positive Windlass test
  - ☐ Negative Tarsal Tunnel tests ☐ Limited dorsiflexion PROM

- Imaging[1,8,10]
  - ☐ Not indicated for initial diagnosis
  - ☐ Imaging used only to rule out if not advancing as expected at 6 weeks or suspecting tear at intake

- Examination[2,6,8,10,13,17]
  - ☐ Point tenderness of plantar medial heel and calcaneal tuberosity
  - ☐ Pain reproduction with passive great toe extension (and <60 degrees)
  - ☐ Compare bilateral dorsiflexion PROM, limited on involved side, with knee extended (<20 degrees) and knee flexed (<25 degrees)
  - ☐ Compare bilateral hamstring flexibility, limited on involved side
  - ☐ Foot posture and foot biomechanics (pronation, navicular drop> 10mm)
  - ☐ Compensatory gait pattern and footwear

PHASE 1: 0-6 weeks

GOALS

- Reduce morning pain severity
- Improve dorsiflexion PROM to within 5 degrees of uninvolved side
- Consistent proper stretching
- Modify aggravating activities successfully

The following Interventions are listed in order of higher to lower levels of evidence:

Activity modification[8,10,17]

- Decrease cyclical loading of the plantar fascia
- Avoid activities that aggravate pain (allow up to 4/10 pain, return to baseline within 12-24 hours)
- Avoid complete rest to avoid further weakening of tissue capacity
- Reduce prolonged standing
- Avoid high impact activities
- Avoid walking barefoot or in unsupportive shoes
- Reduce morning pain with slippers/footwear at bedside, ankle/toe AROM exercises, heat use

Daily stretching[2,4,8,9,10,14,16,17]

- Windlass test position for dorsiflexion and great toe extension
- Gastrocnemius and soleus stretching
- Hamstring stretching

Manual therapy[3,9,10,11,14]

- Soft tissue mobilization of the plantar fascia, gastrocnemius, soleus
- Foot and ankle joint mobilizations
- Trigger point therapy
- Rolling ball under foot (ice not necessary or beneficial)
- Impairment based at hip and knee

Dry needling[5,9,10]

- Gastrocnemius, soleus, plantar muscles

Taping[7,9,10,15]

- Low Dye Technique
- KT tape

Night Splints[1,8,10,15]

Therapeutic exercises, Neuromuscular re-education[10,12]

- Strengthen foot and ankle musculature, intrinsic exercises

Footwear[6,13,15,17]

- Higher heel drop shoes (8-10 mm drop)
- Examples: Brooks Ghost, Hoka Bondi, Brooks Adrenaline, Nike Pegasus

Low level laser[8,9,17]

Shock Wave Therapy[8,9,17]

Orthotics, heel cups[1,8,10,15,17,19]

- Custom or prefabricated

Weeks 0-6 Goals

1. If discernable positive change is met with plantar fasciitis treatment, continue to Phase 2 Progressions on page 5.
2. Find a positive treatment path for symptom reduction and function improvement. Continue to phase 2 when able.
3. Exhaust treatment options to find discernable change by 6 wks.
4. Prior to MD follow up at 6 weeks; Identify / treat differential diagnoses as appropriate (Examples pages 3-4) when there is lack of discernable change with plantar fasciitis focused treatment.
5. If no Change >25% is found prepare for MD hand off with treatment options from page 5.

Treatable Differential Diagnosis for Source of Pain

- **Posterior Tibial Tendon Dysfunction**

Diagnostic Flags:

☐ Gradual onset of posterior and medial ankle/foot pain most commonly due to overuse

☐ Single leg heel raise (+) pain, decreased endurance, or unable to perform

☐ May present with foot pronation

Treatment Approach Recommendations:

☐ Reduce pain through activity modification to reduce strain on tendon

☐ Avoid high impact, uneven surfaces, aggressive stretching

☐ Medial longitudinal arch support to reduce tendon load and correct flat foot with orthotics and/or proper footwear

☐ Manual therapy of lower leg and foot

☐ Isometric to Isotonic exercises

☐ High repetition eccentric strengthening of posterior tibialis, inversion strengthening, slow calf raises, soleus strengthening, foot doming, calf stretching, single leg balance training, glute strengthening, gait training

- **Tarsal Tunnel Syndrome/Posterior Tibial Nerve Neuralgia**

Diagnostic Flags:

☐ Burning, tingling, numbness, pain and tenderness in the medial plantar region and/or posteromedial ankle, worse with WB

☐ Idiopathic, repetitive stress activities (running, excessive walking or standing), trauma (dislocation, fracture, over stretch), obesity, systemic diseases that cause inflammation (Diabetes, arthritis), space occupying mass, pes planus

☐ Pain with forced eversion and dorsiflexion, (+) Tinel's sign, sensory deficits in posterior tibial nerve distribution

Treatment Approach Recommendations:

☐ Orthotics, taping, footwear for medial arch support

Treatment Approach Recommendations Continued:

☐ Taping to correct foot mechanics
☐ Nerve mobilization exercises
☐ Posterior tibialis strengthening NWB →WB
☐ Impairment-based strengthening and stretching of the LE chain, such as calf, foot intrinsics, ankle inversion, SL balance

• Medial Calcaneal Nerve Entrapment

Diagnostic Flags:

☐ Sharp pain, burning, tingling sensation in the medial plantar region, worse at night and after WB activity (standing, walking, running ↑ pain), not first step in the morning like plantar fasciitis
☐ Excessive pronation, tight footwear, tight muscle/fascia causes nerve compression near the calcaneus – ID nerve compression sites
☐ Tenderness at the medial calcaneus, (+) Tinel's sign, provoked with dorsiflexion-eversion and plantar flexion-inversion

Treatment Approach Recommendations:

☐ Heel cups, taping, orthotics to offload the medial heel and correct foot biomechanics
☐ Stretch abductor hallucis
☐ Improve ankle mobility with manual therapy
☐ Nerve mobilization exercises and taping to reduce nerve tension
☐ Strengthen foot intrinsics, calf stretching, ankle stabilization exercises

• S1 nerve irritation

Diagnostic Flags:

☐ Lateral plantar pain, along with pain, numbness, and/or tingling extending from the lumbar region
☐ History of L5-S1 disc herniation, spinal stenosis, spondylolisthesis

Treatment Approach Recommendations:

☐ Avoid high-impact activities, excessive bending/twisting/lifting, prolonged sitting

Treatment Approach Recommendations Continued:

☐ Potential weakness in plantar flexion (difficulty walking on toes, difficulty performing SL heel raise)
☐ (+) SLR, decreased Achilles reflex
☐ Relieve lumbar pressure with centralization exercises, manual therapy
☐ Core strengthening, nerve mobilization exercises, calf strengthening, hamstring/piriformis/glute stretching, posture re-training, lifting body mechanics

• Faulty loading mechanics at trunk/hip

Diagnostic Flags:

☐ Proximal muscle weakness, postural instability contribute to altered loading mechanics at the heel
☐ Heel pain worse with prolonged activity or specific loading patterns, not first steps WB after rest like plantar fasciitis
☐ Identify biomechanical deficits in the LE chain
☐ Knee valgus and pes planus observed in stance, gait, SL squat
☐ Weakness in hip abductors, hip external rotators
☐ Excessive hip adduction and hip internal rotation
☐ Potential contralateral pelvic drop and lateral trunk lean

Treatment Approach Recommendations:

☐ Strengthen core, quads, hip abduction, hip external rotation, foot intrinsics, posterior tibialis, anterior tibialis, ankle inversion, ankle eversion, with gradual loading for tissue capacity
☐ Neuromuscular re-education for movement retraining and mechanical loading
☐ Orthotics with arch support, taping to correct pronation

If No Discernible Progress with PT in 6 Weeks of Care:

In situations where Improvements < 25% after 6 weeks of PT, Dr. Armstrong will be able to offer advanced treatment options for continued symptoms:

- PRP Injections
- Cortisone Injections
- Ultra-Low Dose Radiation
- Shockwave therapy referral

Differential Diagnosis list with non PT management[1,8]

- **Heel Fat Pad Atrophy**
  - ☐ Plantar aspect of calcaneus
- **Heel Contusion**
  - ☐ Due to direct fall on heel
- **Achilles Tendinitis**
  - ☐ Posterior calcaneal pain
- **Calcaneal Fracture**
  - ☐ Acute fracture: due to trauma, pain with weightbearing
  - ☐ Stress fracture: insidious onset of pain due to repetitive loading
- **Full/partial tear of plantar fascia**
  - ☐ Sudden plantar heel pain and ecchymosis, may require imaging
  - ☐ Immobilize after acute tear happens at initial visit when necessary
- **Neuropathy**
  - ☐ Diabetic, Alcoholic, Vitamin deficiency

PHASE 2: 6-12 weeks: *Discernable progress with Plantar Fasciitis care And/Or Differential Diagnosis Care*

GOALS

- Progress strengthening exercises
- Improve functional mobility scores
- Return to modified occupational and recreational activities
- Achieve pain free ambulation for ADLs
- Independence with consistent HEP
- Normalize gait pattern

PHASE 3: 12+ weeks

GOALS

- Return to full pre-injury activity level
- Maintain flexibility and strength gains
- Prevent recurrence with continued HEP

Functional Outcome Measures[10,13]

- Visual Analog Scale (VAS)
- Functional Foot Index (FFI)
- Lower Extremity Functional Score (LEFS)
- Single leg stance, single leg heel raises

Plantar Fasciitis Playbook Resources:

1. Armstrong, N. (n.d.). *Expert opinion and consultation.*
2. Bolívar, Y. A., Munuera, P. V., & Padillo, J. P. (2013). Relationship Between Tightness of the Posterior Muscles of the Lower Limb and Plantar Fasciitis. Foot & Ankle International, 34(1), 42-48. https://doi.org/10.1177/1071100712459173
3. Cleland, J. A., Abbott, J. H., Kidd, M. O., Stockwell, S., Cheney, S., Gerrard, D. F., & Flynn, T. W. (2009). Manual Physical Therapy and Exercise Versus Electrophysical Agents and Exercise in the Management of Plantar Heel Pain: A Multicenter Randomized Clinical Trial. Journal of Orthopaedic & Sports Physical Therapy, 39(8), 573-585. https://doi.org/10.2519/jospt.2009.3036
4. Digiovanni, B. F., Nawoczenski, D. A., Malay, D. P., Graci, P. A., Williams, T. T., Wilding, G. E., & Baumhauer, J. F. (2006). Plantar Fascia - Specific Stretching Exercise Improves Outcomes in Patients with Chronic Plantar Fasciitis. The Journal of Bone & Joint Surgery, 88(8), 1775–1781. https://doi.org/10.2106/jbjs.e.01281
5. Dunning, J., Butts, R., Henry, N., Mourad, F., Brannon, A., Rodriguez, H., Young, I., Arias-Buría, J. L., & Fernández-de-las-Peñas, C. (2018). Electrical dry needling as an adjunct to exercise, manual therapy and ultrasound for plantar fasciitis: A multi-center randomized clinical trial.PLOS ONE, 13(10), e0205405. https://doi.org/10.1371/journal.pone.0205405
6. Franettovich, M. M., van, Adele, Kerr, G., & Hurn, S. E. (2025). Immediate Effects of Footwear Design on In-Shoe Plantar Pressures, Impact Forces and Comfort in Women With Plantar Heel Pain. Journal of Foot and Ankle Research, 18(2). https://doi.org/10.1002/jfa2.70055
7. García-Gomariz C, Hernández-Guillén D, Nieto-Gil P, Blasco-García C, Alcahuz-Griñán M, Blasco JM. Effects of Kinesiotape versus Low-Dye Tape on Pain and Comfort Measures in Patients with Plantar Fasciitis: A Randomized Clinical Trial. Life (Basel). 2024 Feb 12;14(2):249. doi: 10.3390/life14020249. PMID: 38398758; PMCID: PMC10890258
8. Goff JD, Crawford R. Diagnosis and treatment of plantar fasciitis. Am Fam Physician. 2011 Sept 15;84(6):676-82. PMID: 21916393
9. Guimarães JS, Arcanjo FL, Leporace G, et al. Effects of therapeutic interventions on pain due to plantar fasciitis: a systematic review and meta-analysis. Clin Rehabil. 2023;37: 727–746
10. Koc TA Jr, Bise CG, Neville C, Carreira D, Martin RL, McDonough CM. Heel Pain - Plantar Fasciitis: Revision 2023. J Orthop Sports Phys Ther. 2023 Dec;53(12):CPG1 - CPG39. doi: 10.2519/jospt.2023.0303. PMID: 38037331
11. Lilly Shiny Preethi J, Reena G, Angeline R, Venkatesh N, Soundararajan K. Myofascial trigger point release therapy in the management of plantar heel pain. Indian J Public Health Res Devel. 2020;11: 1376–1381
12. Osborne JWA, Menz HB, Whittaker GA, Landorf KB. Development of a foot and ankle strengthening program for the treatment of plantar heel pain: a Delphi consensus study. J Foot Ankle Res. 2023 Oct 3;16(1):67. doi: 10.1186/s13047-023-00668-2. PMID: 37789375; PMCID: PMC10546707
13. Park, Se-Yeon et al. Potential for foot dysfunction and plantar fasciitis according to the shape of the foot arch in young adults. Journal of exercise rehabilitation. 2018; 14(3): 497-502

14. Renan-Ordine, R., Alburquerque-SendÍn, F., Rodrigues De Souza, D. P., Cleland, J. A., & Fernández-de-las-PeÑas, C. (2011). Effectiveness of Myofascial Trigger Point Manual
15. Schuitema D, Greve C, Postema K, Dekker R, Hijmans JM. Effectiveness of mechanical treatment for plantar fasciitis: a systematic review. J Sport Rehabil. 2019;657–674
16. Siriphorn A, Eksakulkla S. Calf stretching and plantar fascia-specific stretching for plantar fasciitis: a systematic review and meta-analysis.J Bodyw Mov Ther. 2020;24: 222–232
17. Tedeschi R. Plantar Fasciopathy: a comprehensive, evidence-based guide for diagnosis and treatment. J Sports Med Phys Fitness. 2026 Jan;66(1):92-96. doi:10.23736/S0022-4707.25.16993-4. PMID: 4198680
18. Wang W, Jiang W, Tang C, Zhang X, Xiang J. Clinical efficacy of low-level laser therapy in plantar fasciitis: a systematic review and meta-analysis. Medicine (Baltimore). 2019;98:e14088.
19. Whittaker GA, Munteanu SE, Menz HB, Tan JM, Rabusin CL, Landorf KB. Foot orthoses for plantar heel pain: a systematic review and meta-analysis. Br J Sports Med. 2018;52: 322–328

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