

Treatment of Plantar Fascia Pain With Joint Mobilizations and Positional Release Therapy: A Case Study

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Plantar fasciitis is a term used to describe inflammation that originates at the medial calcaneal tubercle^{1,2} and most often affects the athletic and sedentary populations.³⁻⁵ Accounting for 15% of all adult foot complaints,

plantar fasciitis has been asserted as the most common foot injury treated by clinicians.⁶ Plantar fasciitis is more often a degenerative or noninflammatory condition and is more appropriately termed plantar fasciosis in most cases.⁷ The diagnosis of this condition is typically made based on the patient history and clinical examination.^{2,3,5} The signs and symptoms most commonly associated with the condition are an insidious onset, palpable pain on the plantar surface of the foot near the medial calcaneal tubercle,^{3,6,8-10} and pain with the first steps in the morning, after periods of inactivity, and with prolonged

weight bearing.^{3,6,8-10} Common risk factors associated with plantar fascia pain are a decrease in talocrural dorsiflexion and subtalar eversion,^{3,5,6,10,11} poor footwear,^{6,10,11} pes planus,¹⁰ tight Achilles tendon complex,^{8,10} obesity,^{3,5,6,11} and overuse.^{3,5,8,10}

Plantar fasciitis treatment has traditionally been directed to eliminate inflammation, support the longitudinal arch, and stretch tissue. Conservative therapy typically includes rest, cryotherapy, nonsteroidal anti-inflammatory drugs (NSAIDs), orthotics, night splints, tape application, intrinsic/extrinsic foot muscle strengthening, and static stretching of the plantar fascia;^{1,4,6} however, most evidence only supports transient effectiveness of these treatments.^{3,8,10,12} Complete resolution of plantar fasciitis symptoms has been reported to take six to 12 months.¹³ The limited effectiveness of local treatments in many cases supports the potential need for using a holistic approach to improve patient outcomes.¹⁴ To provide a more successful treatment, a regional interdependence (RI) perspective should be used in the evaluation of the condition.¹⁵ Within this perspective, the clinician considers multiple body systems (i.e., musculoskeletal, biopsychosocial, neurophysiological, and somatovisceral) and/

KEY POINTS

- ▶ A regional interdependence perspective should be used in the evaluation of plantar fascia patients.
- ▶ Collecting patient outcomes helped guide clinical decision-making throughout the rehabilitation process.
- ▶ A deficit in the arthrokinematics of the talocrural and subtalar joint must be considered as a possible mechanism causing mechanical stress of the plantar fascia and pain.
- ▶ A combined intervention of joint mobilizations and positional release therapy can successfully treat plantar fascia cases.

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or regional body segments that may be contributing to the pain sensation.¹⁵ The RI perspective allows the clinician to assess other areas of dysfunction that may be the root cause of the patient's present complaint and address all areas of patient disablement. The clinician, however, must also use the appropriate outcome measures to assess patient improvement and validate the efficacy of the treatment interventions. The purpose of this case report is to highlight the use of a RI approach in the examination, classification, and treatment of a diagnosed case of plantar fasciitis, combined with the use of multidimensional outcome instruments to assess the effectiveness of care.

Case Report

A 20-year-old football tight end reported pain on the plantar surface of his right foot during practice. The patient reported an insidious onset and rated his pain a 6 out of 10 on the Numeric Rating Scale (NRS).¹⁶ The patient reported pain on the medial calcaneal tubercle but did not report any other tenderness to palpation. The patient did not report any previous injury to this area and visible signs of inflammation and deformity were not present. Based on the location of pain, the patient was initially diagnosed with plantar fasciitis. The injury was initially treated with an arch tape with padding adhered to the painful area, which the patient wore during practice. The patient also received the following interventions once daily before practice: therapeutic nonthermal ultrasound (3 MHz/.8 W/cm²/50%) applied for 5 min to the plantar fascia, intrinsic foot musculature strengthening that included marble pick-ups, and 3–5 min of effleurage massage applied to the plantar surface of the foot.

While receiving the aforementioned treatment, the patient's pain remained a consistent 6 out of 10 on the NRS scale, which was recorded daily before treatment.

No other outcomes measures besides the NRS scales were used initially to document patient progress. The patient continued to participate while receiving this care and his pain remained consistent until it reached its greatest intensity (8 out of 10 on the NRS) during a football game two weeks after the initial injury. At that time, the sports medicine staff instructed the patient to wear a walking boot for two days until he could be evaluated by the team's orthopedic physician. During this exam, the physician diagnosed the patient with plantar fasciitis, discontinued the use of the walking boot, and instructed him to continue with his current therapy program without activity restriction.

After four weeks of the aforementioned treatment interventions, the patient continued to be symptomatic. At that point, the patient was reevaluated by a consulting Certified Athletic Trainer. At this time, the patient reported 2 out of 10 pain in the morning and when walking, and 4 out of 10 pain during practice. No observable signs of edema, ecchymosis, or erythema were noted. Visual observation of the Achilles tendon alignment indicated a neutral position. Palpable tender points were noted on the plantar surface of the medial calcaneal tubercle and in the medial head of the gastrocnemius. The clinician used clinical practice guidelines reported by Martin et al.⁶ as she evaluated the patient's range of motion. Goniometric measurements were recorded for active range of motion of the talocrural and subtalar joints and deficits were noted (Table 1). Arthrokinematic hypomobility was further identified with the use of talocrural and subtalar accessory glide testing.¹⁷ Manual muscle tests of the lower extremity musculature were performed and no deficits (pain or weakness) were noted. Tinel's sign, the dorsiflexion-eversion test, Feiss line, and the Windlass test were each negative during this exam.¹⁸

The Selective Functional Movement Assessment (SFMA) was then used to determine dysfunctional

TABLE 1 CLINICIAN-BASED OUTCOME: ACTIVE RANGE OF MOTION

Joint Motion Involved Side	Initial Exam: Day 1	Discharge Exam: Day 8	Joint Motion Uninvolved Side
Dorsiflexion	5°	10°	12°
Plantar flexion	Not tested	Not tested	Not tested
Inversion	10°	15°	14°
Eversion	2°	4°	5°