

Evidence in Action

Treating Heel Cord and Calf Pain, Part I: When the Evidence Says “Do XYZ”

By Makani Lew, DC

A 50-YEAR-OLD FEMALE HAS LEFT posterior heel (retrocalcaneal) pain and tight calves. Heel pain on palpation was 8/10 on the numeric rating scale (NRS) and 5/10 during stretching. Pain and minor swelling was just medial to the Achilles tendon, 1 inch above its calcaneal insertion. Onset was gradual. Her ADLs included three to four hours of driving, six to eight hours of standing and two to four hours of sitting. Physical activity (3-5x/week) included light aerobic classes, walking and upper-body weights.

Most days of the week, she used a classic Achilles program (Kisner, 2011; Maffulli, 2003) that had worked before with calf pain/plantar fasciitis:

- 1) *Stretch*: Runner’s wall ankle stretch – ankle dorsiflexion – knee straight (gastrocnemius), knee bent (soleus) (10-second hold, multiple times/day).
- 2) *Prolonged Stretch*: Nighttime dorsal dorsiflexor brace.
- 3) *Strengthen and Stretch*: Midrange squats (10x); midrange lunges (10x each leg).
- 4) *Coordinate and Mobilize*: ABCs with foot in the air.
- 5) *Coordinate and Mobilize*: Towel pulls with heel on floor (slide/pull in all directions).
- 6) *Mobilize*: Self-foot and self-ankle mobilizations (with hands and a percussive massager).
- 7) *Self-Massage Lower-Limb Sore Spots*: Thera-Band Roller Massager, “peanut” trigger point massage (a “peanut” is two tennis balls or lacrosse balls taped together), foam-roll.

She added several loaded eccentric and concentric lower-leg contractions. Eccentric loading tops the treatment list suggested for chronic Achilles tendon issues. The first three focused on the plantar flexors of the posterior lower leg (gastrocnemius/soleus, flexor hallucis longus, flexor digitorum longus and the tibialis posterior). The fourth focused on the anterior lower-leg dorsiflexors (tibialis anterior, peroneals). Each was done at 30-second intervals, one round of all four.

- 1) *Strengthen and Stretch*: Lower heels off a 5-inch step (resisted eccentric ankle dorsiflexion)

(posterior lower leg).

- 2) *Strengthen and Stretch*: Single-leg squats lowering opposite leg off a 5-inch step (resisted eccentric ankle dorsiflexion) (posterior lower leg).
- 3) *Strengthen and Stretch*: Up on tip toes (concentric ankle plantar flexion, aka calf raises) (posterior lower leg).
- 4) *Strengthen and Stretch*: Rapid toe ups (concentric ankle dorsiflexion, aka reverse calf raises) (anterior lower leg).

Continuing to be frustrated by pain, the patient saw a chiropractor. Her pain had become worse in the morning or after sitting. A sharp posterior left-heel pain (6/10) resulted from leading with her uninvolved (right) foot going downstairs. Standing on tip toes made her leg and heel hurt for hours. Her left knee had begun to hurt. She stopped doing aerobics, stopped walking and began to gain weight.

What Was Happening?

Evidence-based medicine (EBM) uses current evidence to support diagnosis and treatment decisions in concert with the EBM Triad: (Cochrane, website 2016)

- 1) *Best External Research Evidence*: Current and high-quality, evidence-based medical research.
- 2) *Patient Values and Expectations*: Patient’s needs/beliefs.
- 3) *Doctor Clinical Expertise (Doctor’s Gestalt)*: Medical discernment from experience or sense. (See Figure 1: Modified EBM Triad)

All three components must be considered.

Was the Achilles (gastrocnemius/soleus) actually the issue? It was anatomically logical to look at the Achilles as the pain source. But chasing the victim (pain source) instead of the criminal (pain cause) often does not work, especially in musculoskeletal care.

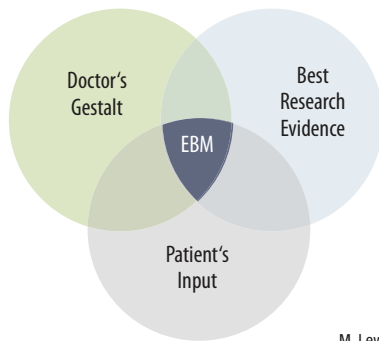
The Physical Examination

A chiropractic evaluation showed the following:

Posture/Gait: Knee: Mild genu valgum and

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FIGURE 1. MODIFIED EBM TRIAD



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FIGURE 2. ANKLE/FOOT EVALUATION



recurvatum (supported by medical X-rays taken three months prior). Foot/ankle weight bearing: Fick's Angle (foot flare) 15 degrees bilateral. On gait, however, the left foot flared out more by 5 degrees. There was no obvious Achilles bowing, calcaneus deviation. The arches were apparently normal and without evidence of pronation.

Inspection/Palpation: Slight swelling and tenderness (6/10) noted medial to the left Achilles-calcaneus insertion. Pressure on muscles caused tenderness deep in the posterior medial aspect of the left calf (6/10), inferior to the pes anserine (insertion point of the sartorius, gracilis and semitendinosus) (5/10) and at the medial knee-joint line (2/10). There was no tenderness to palpation in the plantar fascia. Brush/Sweep/Wipe Test demonstrated evidence of slight swelling in the anterior aspect of the knee.

Range of Motion (ROM): Active and passive ranges of motion of the hip, thigh and ankle measured above expected normal ranges. Loaded ankle dorsiflexion (runner's wall stretch) was painless but felt slightly tight. The loaded dorsiflexion with knee straight was 40 degrees and 45 degrees with knee bent. Both were painless but tight. The knee could fully extend and flex, although she stated that flexion made her knee feel "full." In spite of this patient's flexibility, all lower-limb muscles were palpably hypertonic. The greatest tightness was in the inner thigh during a combination of passive hip abduction and flexion.

Muscle Strength: Demonstrated slight weakness in all muscles of the involved limb (4/5).

Orthopedic Evaluation: Meniscus tests (Thessaly's and McMurray's) caused mild apprehension but no significant clicking or pain.

Capsule/ACL Tests: External rotation Slocum's Test (Anterior Drawer with external rotation of the tibia added) caused knee pain (3/10). Mild anteromedial rotary instability (AMRI) was noted.

Knee valgus/varus pressure caused no pain. Calf squeeze (Thompson Test) demonstrated normal ankle plantar flexion. Ankle anterior drawer tests at different amounts of plantar flexion caused no pain and showed no laxity. Tinel's Tap to the medial tarsal tunnel was negative. Repetitive standing "toe ups" caused anterior shin discomfort and fatigue within 30 seconds (30 lifts). Repetitive single-leg heel raises were difficult beyond five lifts and caused the area of pain medial to the Achilles to recur (3/10) and caused discomfort in the posterior medial calf. The right heel went up higher than the left.

Joint Mobility Testing: The lower-limb joints were tested for pain or aberrant movements by applying overpressure in different neutral and end-range positions. Overpressure in all directions of the involved knee showed greater movement compared with the other knee. Positions that caused hip discomfort were: medial hip scouring (hip flexed to 90 degrees while the doctor pushes the femur into the hip socket anterior-to-posterior and medial-to-lateral). The most significant knee pain was caused in a squat: medial (joint line and below the pes anserine) and posterior knee pain. The knee pain (inferior to the pes anserine) was made worse if the tibia/foot was externally rotated and then loaded. Positions of relief for the hip included traction of the femur at the hip socket superior-to-inferior with some added internal rotation. The knee position of relief was superior-to-inferior traction of the tibia while the tibia was held in internal rotation. These positions were used to determine the direction of mobilization done by the chiropractic physician. (See Figure 2: Ankle/Foot Evaluation)

In the next issue of *ACA News*, Part II of this article will show how the doctor's expertise and patient preferences brought a successful conclusion to this case. ■