

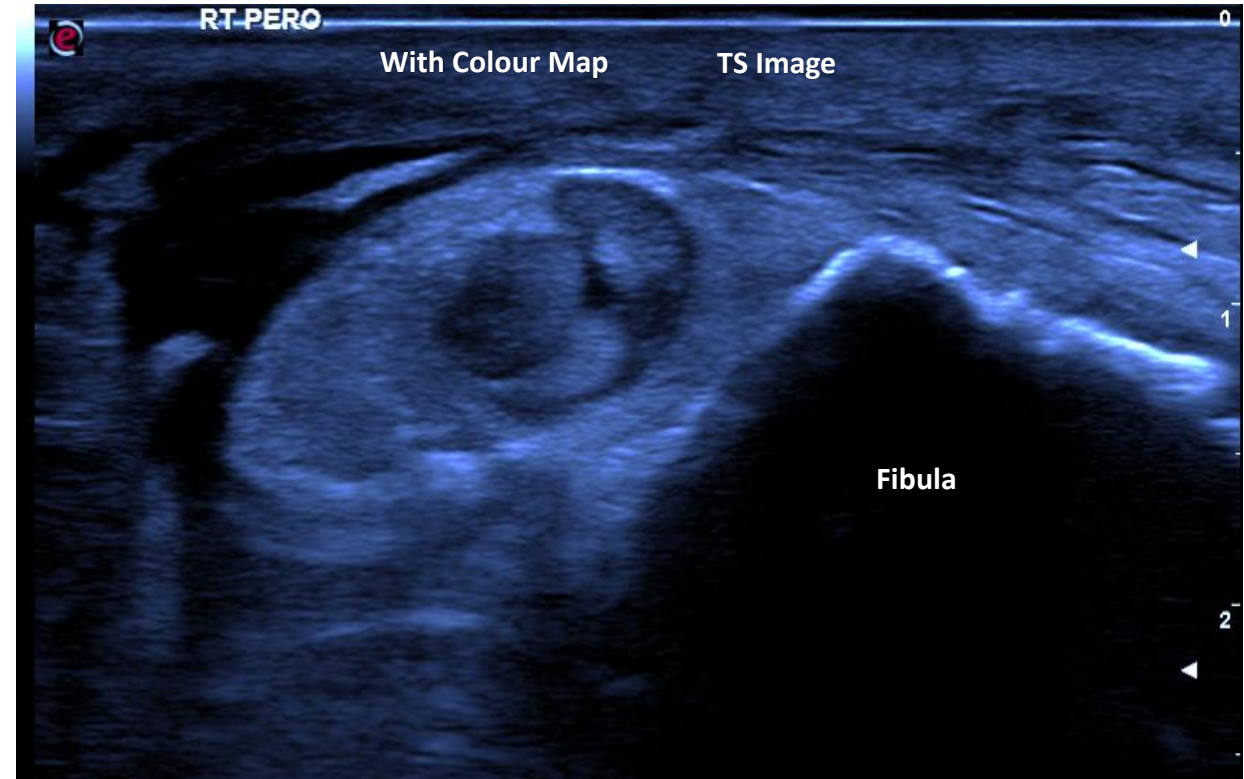
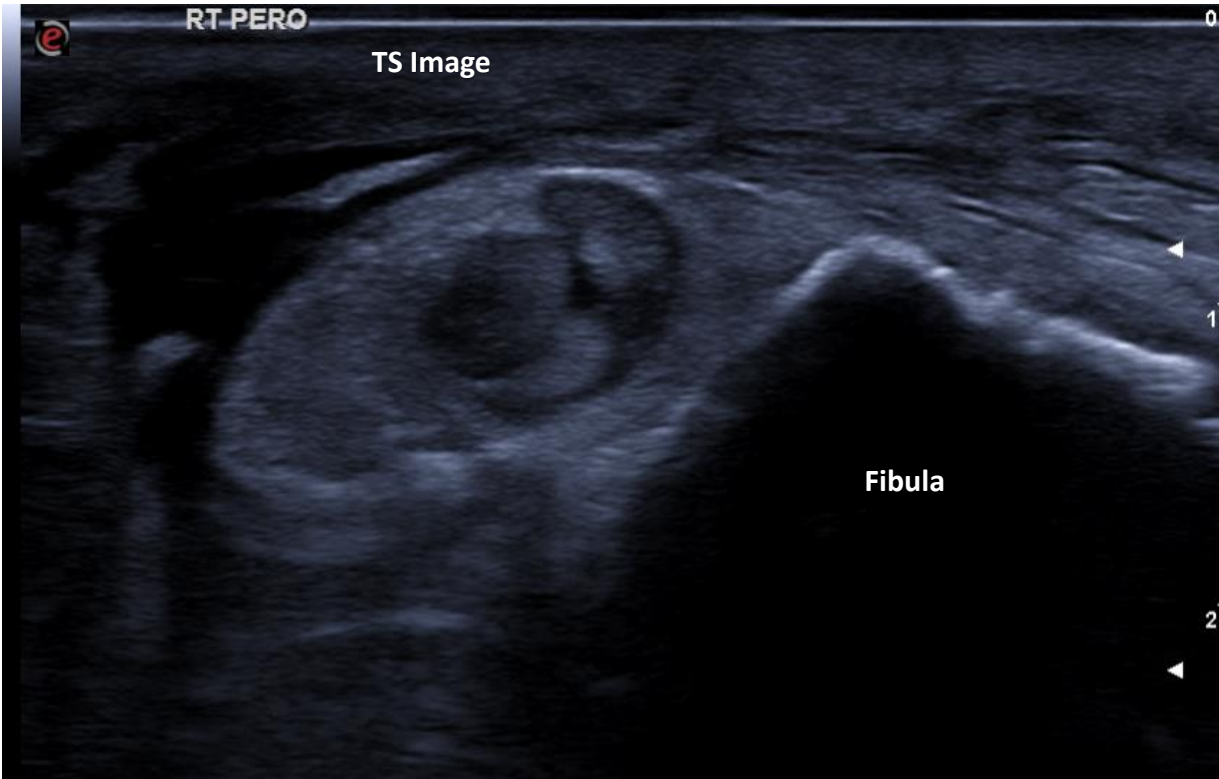
## A&E Clinical Information:

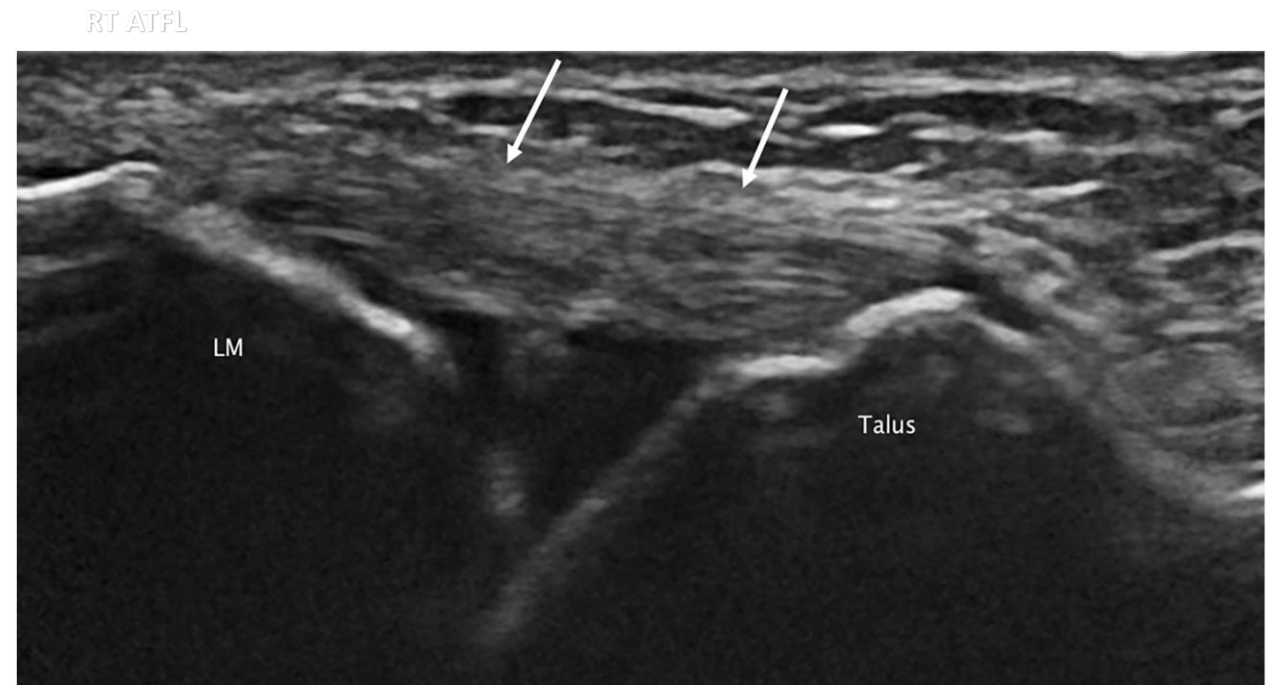
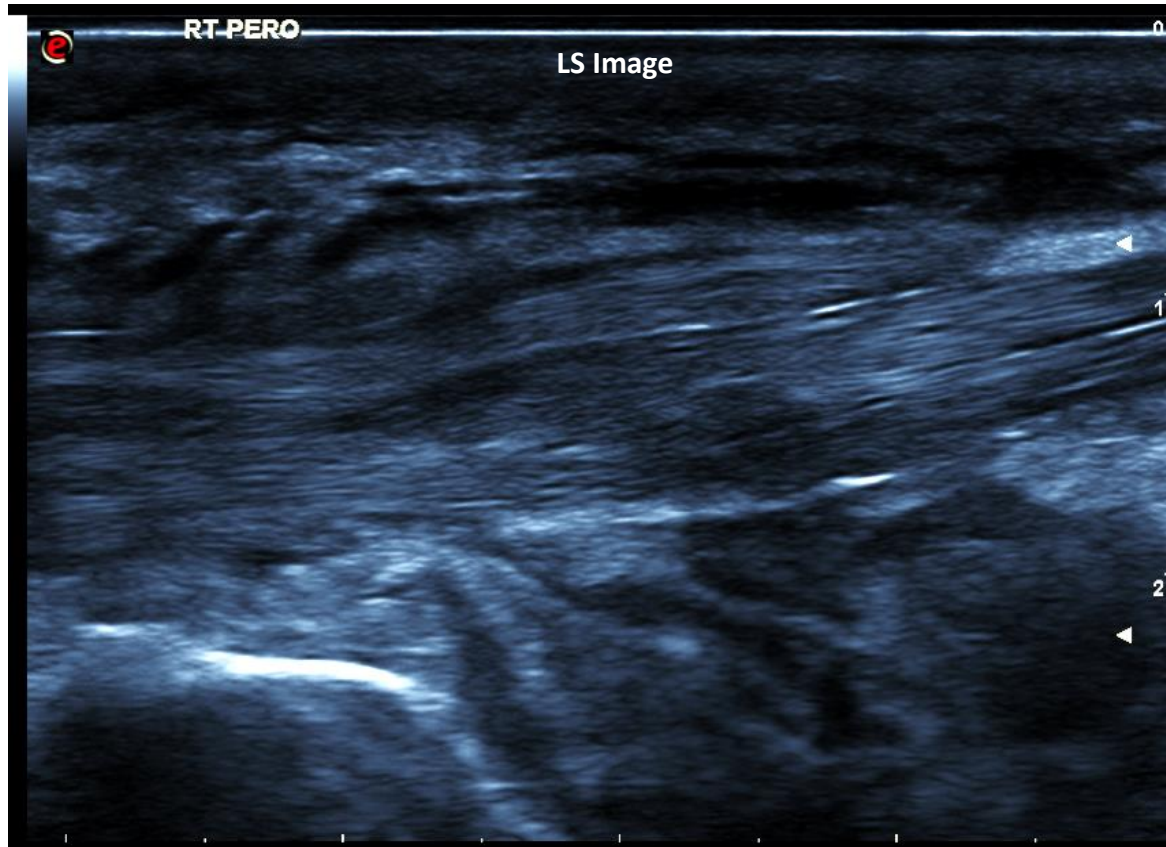
- 77 y/o male. Suffered inversion injury to right ankle today. Moderate ankle and foot swelling noted with only partial weight bearing on affected side possible. No deformity to the ankle.
- X-rays: no abnormality detected. Positive Anterior Drawer test and palpable tenderness over lateral ankle.
- Grade II ankle sprain (anterior talofibular ligament) suspected. Discharged on crutches to avoid weight bearing prior to fracture clinic appointment 24 hours later.
- Orthopaedics agreed with preliminary diagnosis and arranged outpatient physiotherapy rehabilitation to reduce pain and swelling, restore ROM, strength and proprioception.

## 3 months later:

- Presented to GP with ongoing pain focused around the posterior aspect of the lateral malleolus despite improvement in ankle stability and range of movement. Referral for ultrasound was made.
- On examination, mild ecchymosis remained along lateral ankle and foot with pitting oedema in lower leg, ankle and foot.
- No neurological symptoms and good pulses in foot/ankle.

# Images





Do not progress to next slide until you have attempted to write your own report.

At the mid to distal peroneus brevis tendon, there is an intrasubstance longitudinal fissure, extending distally to the retromalleolar groove. In transverse, this is demonstrated as an abnormal C-shape appearance to the peroneus brevis, enveloping the adjacent peroneus longus tendon. Normal appearances to the tendon distal and proximal to the tear. Appearances are consistent with a longitudinal split of the peroneus brevis tendon.

There is also an abrupt discontinuity to the overlying superior peroneal retinaculum which is suspended in a small to moderate effusion, suggestive of an associated rupture.

Conversely, the ATFL is intact, demonstrating a normal parallel fibrillar pattern throughout. The remaining ankle tendons and ligaments are unremarkable.

## **Impression**

- Longitudinal split of the peroneus brevis tendon
- Suspected associated rupture of the superior peroneal retinaculum

# BMUS Pathophysiology and Mechanism of Injury

Most peroneal tears are chronic with the peroneus brevis tearing over time due to repetitive mechanical microtrauma, typically against interface with the distal fibula tip further exacerbated by compression from the overlying peroneus longus tendon.

Whilst this can manifest as lateral ankle pain, often identification of an attrition type split of the peroneus brevis is asymptomatic or not the origin of the pain.<sup>1</sup>

However, in line with this case study, many occur as a consequence of a traumatic episode, commonly via an inversion mechanism of injury.

The mechanism of ankle inversion can often lead to injury to the superior peroneal retinaculum, sometimes even in isolation from the peroneal complex.<sup>2</sup>

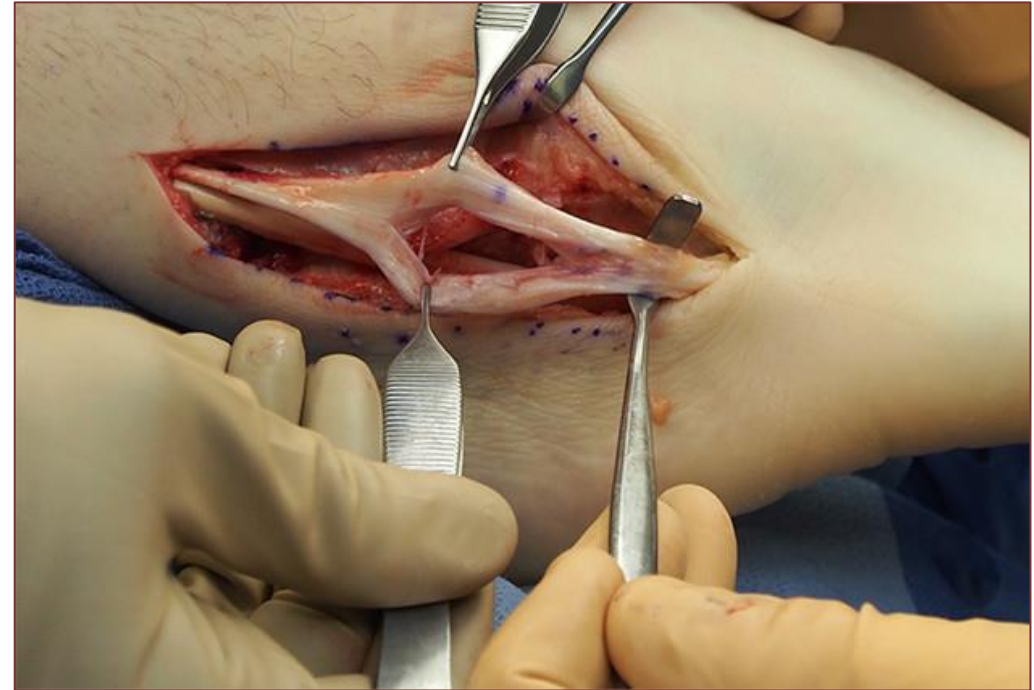


Figure 1: [Example of a split of peroneus brevis](#)  
Natalie Danna and James Brodsky CC by 4.0

## Clinical Assessment

Symptoms can include pain, swelling, and erythema at the lateral ankle, often exacerbated by activity. Pain with resisted eversion and tenderness to palpation are common but may also present with reactive tendinopathy.<sup>2</sup>

## Imaging

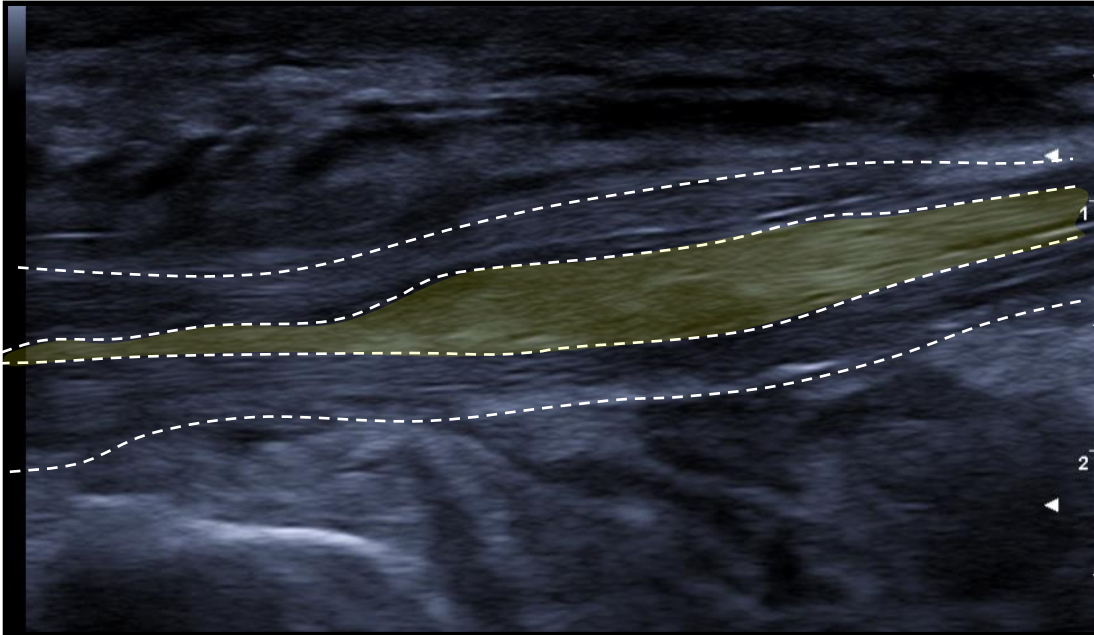
Ultrasound is considered to have high sensitivity and specificity for peroneus brevis split, reported at 100% and 85% respectively<sup>3</sup> vs MRI which has demonstrated sensitivities of 83% and 75% specificity.<sup>4</sup>

Typical ultrasound appearances include:

- In longitudinal view, the split peroneus brevis can be seen as two hemi-tendons surrounding the peroneus longus tendon<sup>4</sup> (Figure 2).
- In transverse, this can be demonstrated as a C-shaped brevis tendon with a focal discontinuity (Figure 3).<sup>5</sup>
- With an associated superior retinaculum injury, passive eversion-inversion stress manoeuvre may demonstrate the peroneal tendons sublux through a defect in the retinaculum or beneath it.<sup>4</sup>

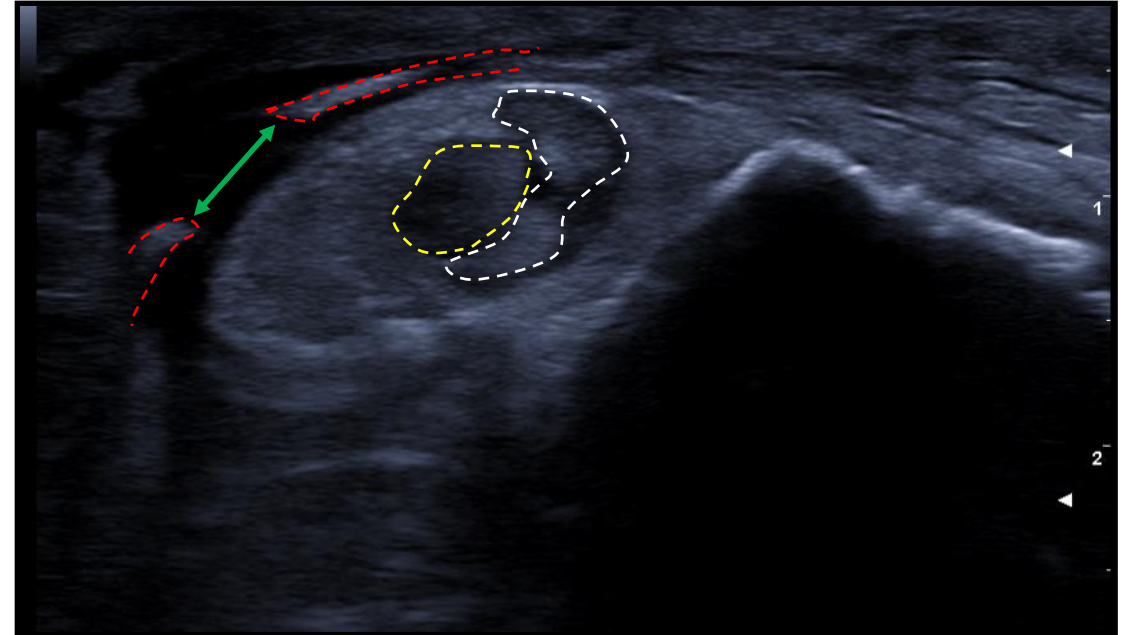
Ankle radiographs may occasionally be undertaken to exclude an underlying osseous cause.<sup>1</sup>

## Case Study Images Revisited



**Figure 2:** Longitudinal view of the mid to distal peroneal tendons.

Note the hemi-tendon appearance of the peroneus brevis tendon (white dotted outline) with the peroneus longus tendon (yellow shading) seen within the fissure created through the process of the longitudinal split of the peroneus brevis tendon.



**Figure 3:** Short axis view of the peroneal tendons at the level of the retromalleolus.

The torn peroneus brevis tendon (white dotted outline) has a C-shape appearance and is seen enveloping the peroneus longus tendon (yellow dotted outline). Note the tear cleft (green arrow) within the superior peroneal retinaculum (red dotted outline) which is suspended within a small effusion.



**Non-operative/conservative treatment** is a common management choice.

- A typical rehabilitation programme may incorporate ankle immobilisation and activity modification to offload the tendon and a period of physiotherapy to maintain the range of motion, encourage lymphatic drainage, improve/re-establish proprioception and stabilise the ankle and protect from further injury.<sup>6</sup>

However, a failure to progress may call for **surgical intervention**.

- **Debridement with tubularisation** (removing the torn and degenerative fibres and using a running intratendinous suture to restore its architecture) is recommended for those tears affecting less than 50% of the cross sectional area of the tendon.
- In those cases which affect an area greater than 50%, debridement with tubularisation is less successful due to the increased risk of excessive scarring with adherence to the surrounding sheath and/or peroneus longus tendon. Therefore, **resection of the damaged tendon with tenodesis** to the adjacent peroneus longus tendon (side by side suture to the intact peroneal longus tendon) is usually more appropriate.<sup>1</sup>

Click [here](#) for more information on treatment.

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2. Molini L, Bianchi S. US in peroneal tendon tear. *Journal of Ultrasound*. 2014;17(2):125–34.
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4. Taljanovic MS, Alcala JN, Gimber LH, Rieke JD, Chilvers MM, Latt LD. High-resolution US and MR imaging of peroneal tendon injuries—erratum. *RadioGraphics*. 2015;35(2):651–.
5. Jacobson J. *Fundamentals of Musculoskeletal Ultrasound*. Elsevier Science; 2018.
6. Chauhan B, Panchal P, Szabo E, Wilkins T. Split peroneus brevis tendon: An unusual cause of ankle pain and instability. *The Journal of the American Board of Family Medicine*. 2014;27(2):297–302.