Relieving Plantar Fasciitis

- What is Plantar Fasciitis and What Generally Causes it?
- Bodyreading & Assessment for Misalignments that are Contributing to the Symptoms
- Making a Treatment Plan for Clients
- Treatment Demonstration
- Giving Homework: Examples of At Home Self Care for Plantar Fasciitis

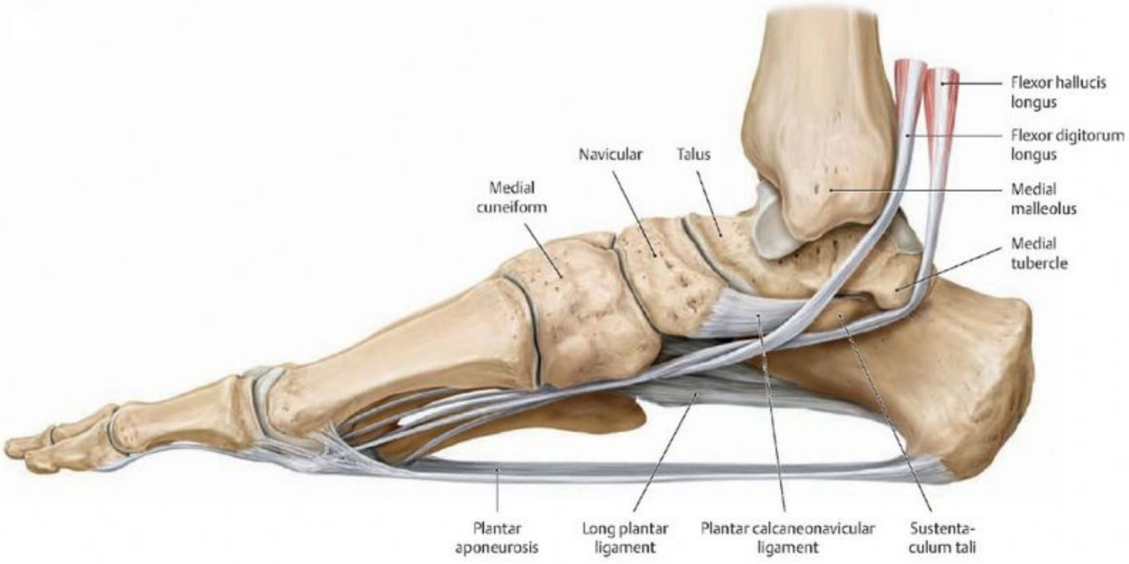
Note: these reference slides will be available in the course after the webinar

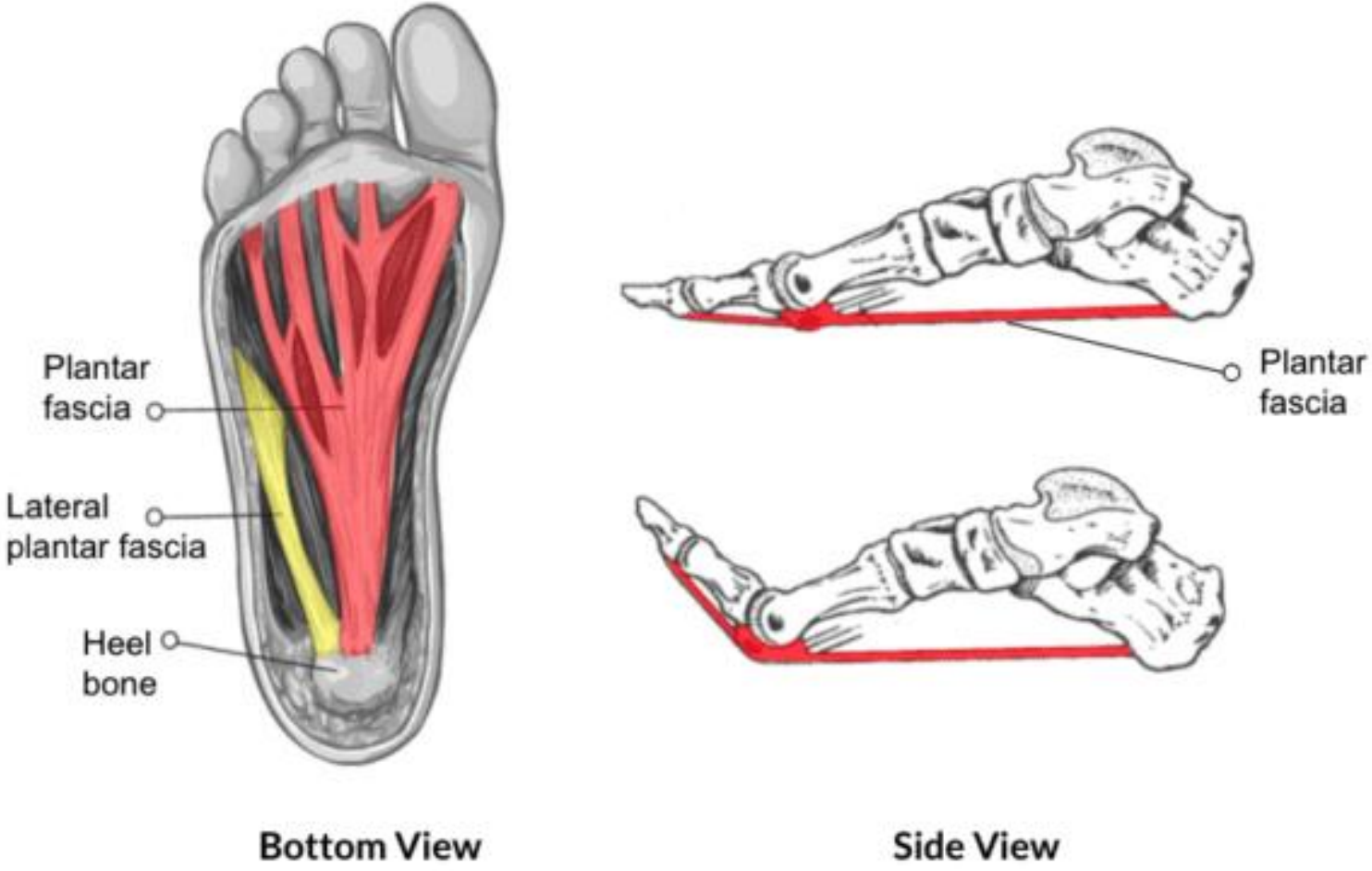
Relieving Plantar Fasciitis

- What is Plantar Fasciitis and What Generally Causes it?

So, what is plantar fasciitis specifically?

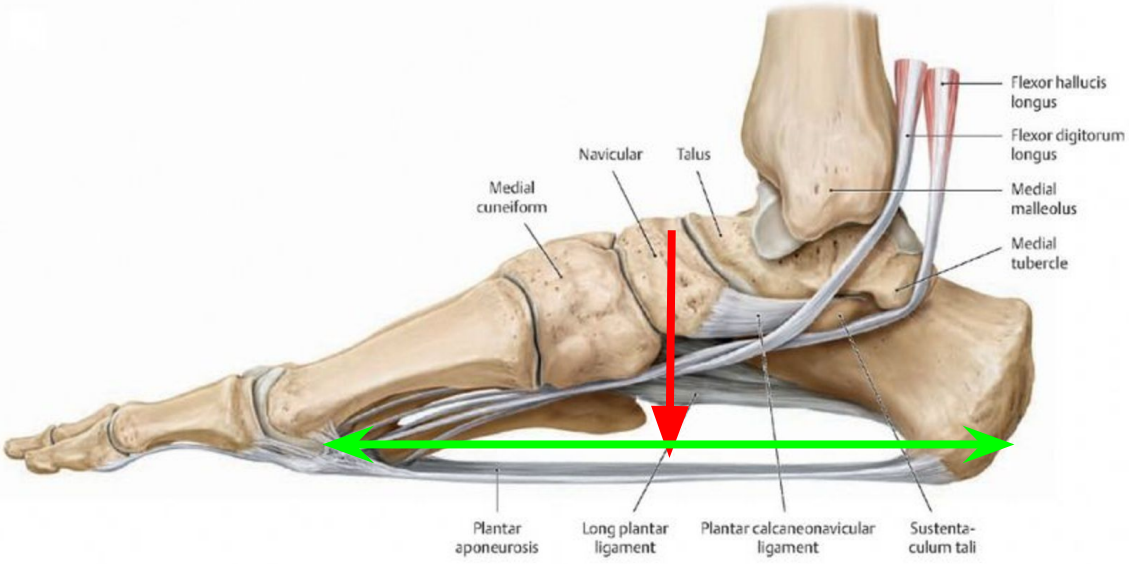
- **The plantar fascia (also called the plantar aponeurosis) is a complex layer of thick fascia that connects the calcaneus to the distal heads of the metatarsals**




Plantar fascia
Lateral plantar fascia
Heel bone
Plantar fascia
Bottom View
Side View

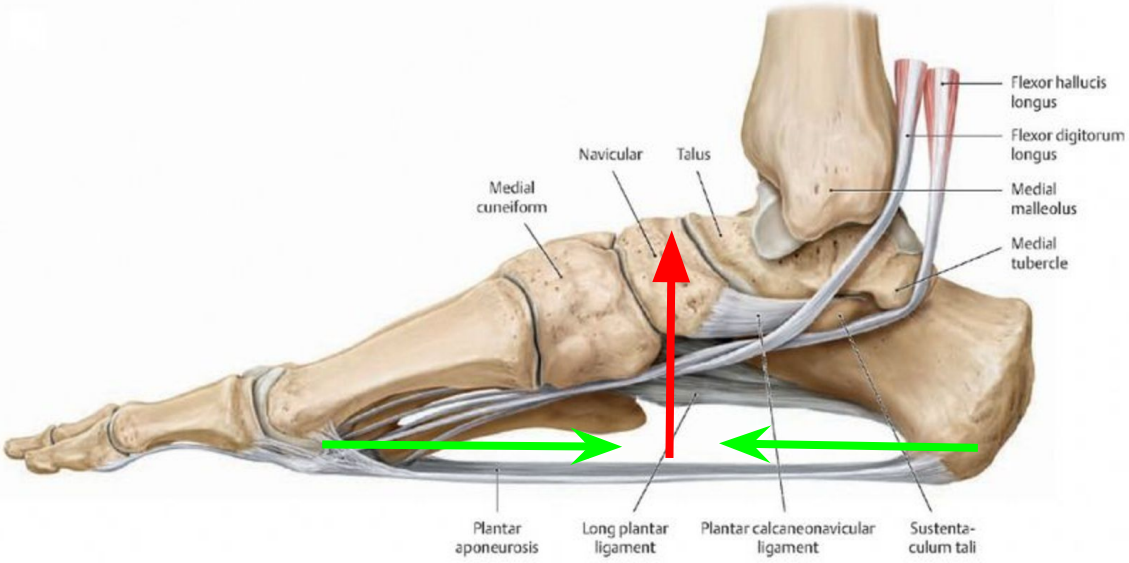
So, what is plantar fasciitis specifically?

- **When you put weight on a foot, the plantar fascia stretches to allow the arch to compress downward, creating a “coiled spring” that is ready to provide energy to propel you forward when transferring weight to the opposite foot**



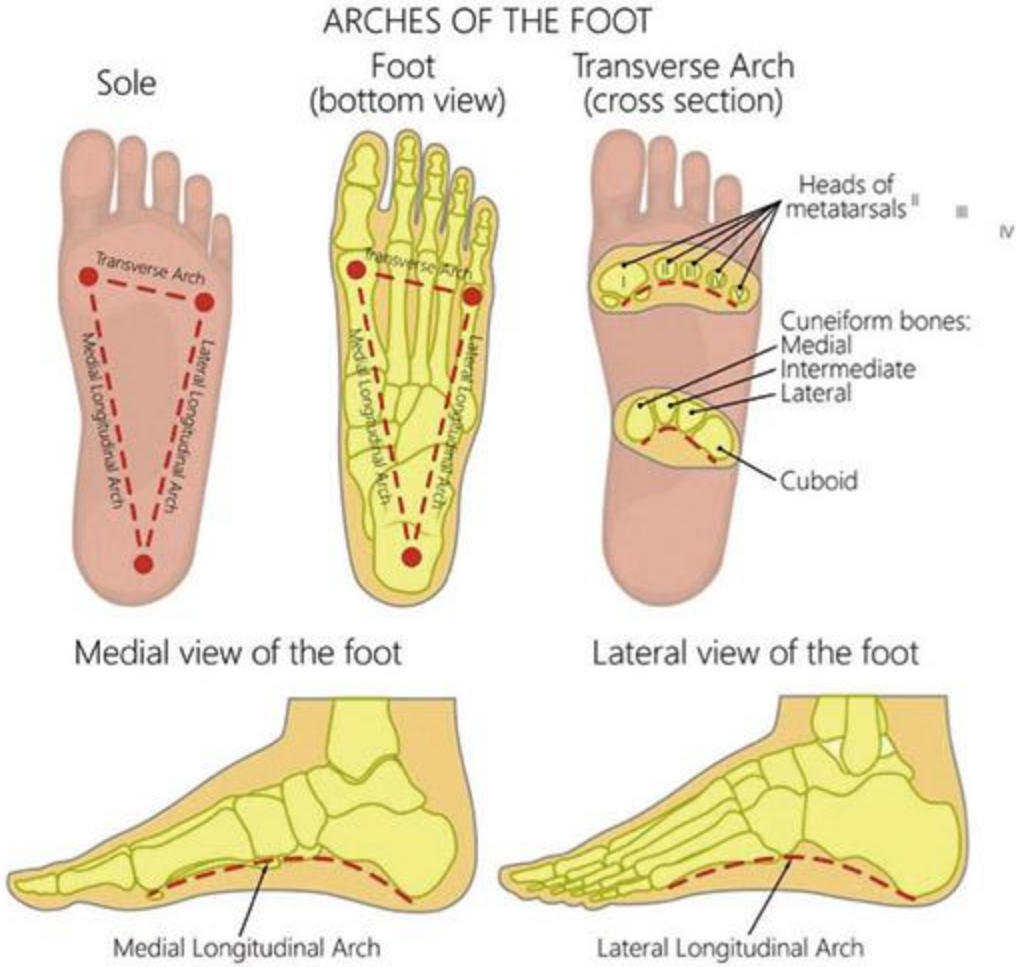
So, what is plantar fasciitis specifically?

- **As your foot leaves the ground to allow the leg to swing forwards, the “coiled spring” of the plantar fascia wants to return to its neutral shape, allowing the arch to lift back up, giving kinetic energy to the step**



We actually have 3 arches, not just 1

- **The main arch is the medial longitudinal arch (the one most people think of)**
- **There is also a smaller lateral longitudinal arch on the lateral side of the foot**
- **And there is an even smaller transverse arch between the “met heads”**
- **Each of these arches is designed to stretch, collapse slightly, and return, providing “coiled spring” energy to propel us forward, as well as sideways**
- **Each arch has its own plantar aponeurosis supporting it**


ARCHES OF THE FOOT
Sole
Foot
(bottom view)
Transverse Arch
(cross section)
Transverse Arch
Medial Longitudinal Arch
Lateral Longitudinal Arch
Heads of
metatarsals
I
II
III
IV
V
Cuneiform bones:
Medial
Intermediate
Lateral
Cuboid
Medial view of the foot
Lateral view of the foot
Medial Longitudinal Arch
Lateral Longitudinal Arch

In a healthy foot, the plantar fascia can take nearly endless steps daily without injury

- **As long as the joints in the toes, foot, ankle, knee, and hip have both healthy stability and healthy mobility, the plantar fascia is built to take as many steps as you could ever take**

- **Each step stretches and releases the plantar fascia as it is designed to do by nature**

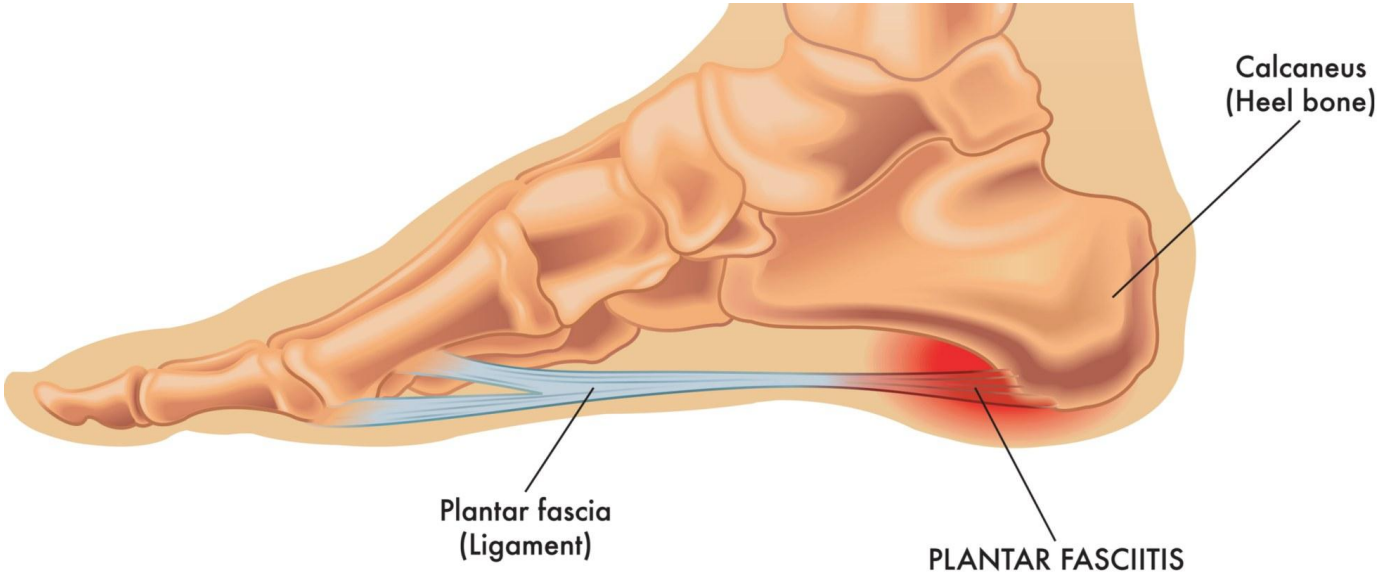
- **The plantar fascia's natural elasticity could theoretically do this forever without injury**

However, many factors can prevent the plantar fascia from being able to return to neutral

- **If there are restrictions in the natural movement of the ankle, and arch, especially if the arch isn't returning "up" to a neutral position, each step keeps the plantar fascia stretched, without relief, throughout the day**
- **This constant tension on the plantar fascia can result in tiny micro tears forming in it throughout the day**
- **Our body tries to heal these micro tears when we sleep at night, but due to tightness in the calves, it heals in a shortened position with the foot pointed**
- **When we go to take our first steps in the morning, the tears are met with immediate stretching pressure…and tear right back open again, all at once! OUCH**

Plantar fasciitis is cyclic inflammation

- **Plantar fasciitis generally shows up as pain at the heel attachment of the structure, but can also present as pain at the distal attachments, or even in the middle of the structure**



Like any structure in the body that doesn't have lots of direct blood flow, healing takes a lot longer

- **The plantar fascia, like other "white" structures in the body such as tendons and ligaments, has blood vessels, but much fewer compared to other tissue types**
- **Since blood flow is how the body heals, structures with fewer blood vessels take a lot longer to heal, making them *very* prone to cyclic re-injury if activities aren't modified**
- **Given the relative impossibility of completely staying off of our feet, plantar fasciitis can be particularly "sticky" and very difficult to relieve for the long term just through massage**
- **Massage can get the process started, but you'll want to let clients know that they absolutely need to be doing their homework (we'll discuss plenty of self-care homework exercises and modifications later…)**

In general, plantar fasciitis pairs with fallen arches

- **While plantar fasciitis *can* show up in clients with high arches (defined as arches that don't allow a stretch of the arch when weight is put on them), people with high arches are more prone to issues further up the body such as shin splints, knee pain, hip pain, and low back pain**

- **With low or completely flat arches, the plantar fascia is held in a constant over-stretch, making it prone to those micro tears that build up to cyclic inflammation**

- **There can be genetic "predispositions" to low arches (hypermobility for instance), but in general, arches fall due to improper alignment, injury, overuse, ill fitting shoes, and a combination of other environmental factors (walking on concrete…)**

- **The good news is that while the shape of the bones cannot be affected baring surgery, the arch is formed by soft tissue elements including ligaments, fascia, tendons, and muscle that can be worked on to improve the shape of the arches and lift them back towards neutral**

Environmental Factors & Activities that Can Contribute that Might need to be Avoided or Lessened

- **Concrete (or other non-giving ground or flooring) that a client stands on for long periods or walks/runs on daily**
- **Shoes that are too small either in length or width**
- **Stiff dress shoes, or other stiff bottom shoes like cleats**
- **High heels**
- **Walking in bare feet at home**
- **High impact activities that involve repetitive landing on the feet**
- **Walking or running long distances**

Other Factors that Can Contribute that may need additional forms of long term support

- **Genetic hypermobility (needs long term strength and stability training)**
- **Autoimmune disorders such as psoriatic arthritis, MS, and others (needs proper medication to prevent attacks)**
- **Strokes or other medical conditions that can attack nerves (neuropathy in one or both feet needs to be treated as best as can be in order to improve the secondary plantar fasciitis symptoms)**
- **Missing or extra bones in the feet (will likely need and benefit from long term arch support with orthotics)**

Avoiding or Modifying Factors: Start with the least needed and rebuild slowly over weeks to months

- **It is totally possible to relieve plantar fasciitis in the long term in a way that allow a 100% return to normal activities…but only by taking a real break from them and slowly reintroducing them**

- **Encourage clients to cut down to only 10-20% of normal activities that cause the condition for the first week (or stop altogether that still causes pain)**

- **If they can do 10-20% of the activities without pain, they can slowly build back up to 100% over a minimum of 4 weeks (can take up to 16 weeks)**

Bracing Helps

- **Since the plantar fascia will take longer to heal than a muscle injury, bracing methods can be very helpful to break the cycle to allow the structure time to heal**

- **This is similar to other structural injuries such as bone breaks, ligament or tendon tears, etc**

- **These can include any or all of the following:**
  - **Using arch supports**
  - **Using kinesio and athletic taping**
  - **Wearing night braces to hold the foot at 90 degrees while sleeping to prevent healing in a foot pointed alignment**

With a combination of reduced activities, bracing, and proper self-care total relief of symptoms is possible

- **Explaining the difference between plantar fascia and muscle can help clients understand why they *really need* to make real short to medium term changes**
- **The bracing is meant to be a crutch that the client slowly reduces need for until they no longer need to use them at all (or rarely)**
- **If they properly take the time to slowly rebuild proper alignment, stability, and mobility, they should be able to continue 100% of activities (and probably even improve on their “best”) without relapse (or with only rare relapses that can be resolved very quickly)**
- **It is *very* important for them to understand that even if they feel amazing and without symptoms after a massage, that without practicing their homework, the symptoms will likely return just as bad within a few days**

Relieving Plantar Fasciitis

- Bodyreading & Assessment for Misalignments that are Contributing to the Symptoms

First, Let's Discuss Ideal Efficient Foot & Ankle Alignments

- **When properly aligned, the feet and knees should point forward in space while upright with the ankle, knee, and hip joints on a plumb line in gravity**
- **The ankle should be able to hinge without the knee or hip rotating to compensate for a lack of mobility**
- **The talar-calcaneal joint (also called the subtalar joint) should have good mobility to allow the calcaneus to evert and invert when shifting weight from one foot to the other foot**
- **The 3rd important most structure to look at is the big toe and whether the client can properly roll through it while walking/running**

Ideal Efficient Foot & Ankle Alignments (cont)

- **Ideally, feet point forward in the direction a person is walking, jogging, or sprinting**
- **Toes should continue in the same line as the metatarsals and have mobility to extend back to keep contact and balance with the floor as the heel lifts into the next step**
- **The foot arch can take many forms but should act as a shock absorber in walking and running. It should be able to compress on impact then spring back as weight shifts off the foot.**
- **The tibialis posterior muscle is most responsible for this spring action in the foot arch and needs to be both strong enough and flexible enough to both lengthen when the arch compresses and shorten to spring the arch back into shape.**

When the ankle moves correctly the knees and hips move efficiently and easily - or vice versa…

- **When the ankle and foot joints and structures are misaligned or lacking proper mobility (or stability) the knees, hips, and lumbar spine overcompensate resulting in long term wear and tear issues**
- **Ankle sprains (one of the most common injuries) can cause the ankle joint to inefficiently compensate by hinging along a diagonal instead of straight back towards the knee**
- **This causes the natural forward motion of walking and running to become diagonal “speed skating” movements instead**
- **These diagonal movements place extra wear and tear twisting on the knees and hips, as well as a loss of proper arch spring**
- **Over the long term this can lead to plantar fasciitis, as well as bunions, cartilage loss in the knees, meniscus tearing in the knees, hypertonic hip external rotators, and a host of other potential issues**

Biomechanics of walking and running

- **When walking or running, and we shift our weight from one foot to the other, the most efficient way to balance the skeleton is for the foot on the ground to be on the midline of the body**
- **To allow this to happen properly, the foot on the ground everts in the subtalar joint while the hip joint adducts**
- **This allows the upper body to “float” forward without have to shift side to side or tilt**
- **The knee should NOT really have to change the relationship of the lower and upper leg alignment to each other as this can place wear and tear stress on the ligaments, meniscuses, and cartilage**

Biomechanics of walking and running after injury

- **After an injury such as an ankle sprain, the body loses the ability to evert the foot without pain and compensates to protect the ankle from having to evert or invert resulting in improper ankle hinging, torque on the knee, and usually external rotation of the hip joint**

- **Over time, these compensations get “baked” into the fascia and nervous system, and become “normal” leading to a host of potential injuries including plantar fasciitis, shin splints, knee issue, hip issue, low back issues, and more**

- **If the compensations impact the foot arches’ ability to collapse and return to shape, they can collapse entirely leading to flat feet and plantar fasciitis**

Example of Classic Inefficient Compensation in Gait (demonstrate on camera)

- **External hip rotation leading to walking on the lateral arches which makes the medial arches “fall in”**
- **Instead of rolling through the foot, we land on the outside of it, fall in, and push off like a speed skater rather than roll through the big toe**
- **This can show up on one side or the other or both (show examples)**

Balance Testing a Client

- **Have a client stand on one foot, shift weight to put that foot on the midline, then lift the opposite knee to waist height**

- **Inefficiencies, over mobilizations, and over stabilizations will show up in any of the following ways:**
  - **Tipping of the upper body to the side**
  - **Hiking of the hip on the side lifting the knee**
  - **Lack of balance ability in the foot**
  - **Rolling to the outside arch of the foot**
  - **Curling of the toes**

- **Ideally, a healthy person should be able to hold this position without much effort for at least a minute for long term health**

- **Often one side is less capable than the other for this test**

Relieving Plantar Fasciitis

- Making a Treatment Plan for Clients & Treatment Demonstration

Common Goals for Plantar Fasciitis Sessions

- **Fascially separate anterior, lateral, and posterior compartments in the lower leg so that they can function independently**
- **Lift one or both arches towards a more neutral position by stretching the top of the feet**
- **Free the talar-calcaneal joint to allow for proper sliding**
- **Align the calcaneus to be in line with tibia vertically**
- **With calcaneus aligned in a neutral position, work towards the two met heads being perpendicular to the vertical plumb midline of the body**
- **Free up the ankle joint to allow for useful hinging that has decent ROM without causing the knee and hip to rotate internally or externally**

Special Goals for Plantar Fasciitis Sessions

- **For hypermobile clients, giving single leg balance exercises that will help the intrinsic foot muscles strengthen and better stabilize the foot**
- **For hypomobile clients, working to soften and stretch the intrinsic foot muscles to allow for more shock absorption**
- **With a noticeably externally rotated lower leg, freeing the 2nd head of biceps femoris and also any fascial adhesions to the gastroc and hamstring tendons where they cross at the knee**

Consider Swapping some “Table Time” for more time to explain the condition and give homework practices

- **While the hands-on treatments *are* important, the client’s understanding of the condition and the need to make significant short and medium term lifestyle changes is *equally, if not more important***

- **Be willing to spend less time on the table and more time explaining the anatomy involved, talking through their daily habits to look for contributing factors, and spend time to make sure they have a solid grasp of self care practices to do on their own at home**

- **For a normal 60 minute session, I’d give at least 10 minutes of this over to the above**

Proposed Treatment Sequence: 50 minutes, mostly on the lower leg, 30 minutes in prone, 20 minutes in supine

- **Undrape both lower legs up to the knee**
- **First, try to align the legs so that they are parallel to the midline of the body and the ankle, knee, and hip joints land on a line that would be a plumb line if the client were standing**
- **Visually assess if the lower leg is internally or externally rotated on one or both sides**
- **Visually assess if the ankle(s) “fall in” ie show inversion, or in rarer cases eversion**

Proposed Treatment Sequence: 50 minutes, mostly on the lower leg, 30 minutes in prone, 20 minutes in supine

Prone Sequence (cont)

- **Starting at the foot, draw fascial lines through the medial arch, lateral arch, and transverse arch of the foot using the forearm or soft fist**

- **Using a knuckle, draw a fascial stroke from the front of the calcaneus down through the space between the 4th & 5th metatarsals to help free up the outside arch**

Proposed Treatment Sequence: 50 minutes, mostly on the lower leg, 30 minutes in prone, 20 minutes in supine

Prone Sequence (cont)

- **Starting at the medial condyle of the tibia, draw a fascial stroke down towards ankle along the edge of the tibia aiming for release of tibialis posterior using thumb or elbow**
- **Draw a line parallel to this starting slightly away from the tibia**
- **Continue to draw lines from knee to ankle moving in an arc from inside of the knee to outside feeling for any adhesions and taking extra time on these to allow them to melt and release (should be roughly 5-6 lines)**

Proposed Treatment Sequence: 50 minutes, mostly on the lower leg, 30 minutes in prone, 20 minutes in supine

Prone Sequence (cont)

- **If the lower leg is externally rotated, apply release to 2nd head of biceps femoris**

- **Repeat fascial stroke from front of calcaneus through 4th & 5th metatarsals, going deeper this time to contact and release abductor digiti minimi**

- **Repeat entire sequence on the other leg**

Table Test 1: Can the Ankle Joint Hinge Well?

- **With client lying in supine, attempt to hinge the ankle towards the knee**
- **In a healthy joint, there should be decent mobility including the ability to hinge the foot past perpendicular to the table…*without affecting the knee or hip in any way***
- **In most people, this joint is not mobile enough for this and will result in the knee internally rotating towards the other knee**
- **This can help you to see why long term stress on the knee structures is a danger**

Table Test 2: Can the Subtalar Joint Hinge Well?

- **With client lying in supine, attempt to evert and invert the foot in relation to the tibia**

- **In a healthy joint, there should be decent mobility including the ability to evert the foot 15-20 degrees past neutral…*without affecting the knee or hip in any way***

- **In most people, this joint is not mobile enough for this and will also result in the knee internally rotating towards the other knee**

Proposed Treatment Sequence: 50 minutes, mostly on the lower leg, 30 minutes in prone, 20 minutes in supine

Supine Sequence

- **Have the client turn over, sliding bolster higher and under knees**
- **Perform the 2 Table Tests (see slides above) for the ankle and subtalar joints to identify and confirm their restrictions**
- **Using the foot as a lever to keep leg in place, use fascial release strokes from knee to ankle starting at top of tibialis anterior where it meets the shin**

Proposed Treatment Sequence: 50 minutes, mostly on the lower leg, 30 minutes in prone, 20 minutes in supine

Supine Sequence (cont)

- **Work up from ankle to head of the fibula using fascial release strokes on peroneus brevis and longus**
- **Both of the lateral compartment muscles are likely fascially “cemented” to the fibula due to older inversion ankle sprains**
- **Use cross fiber friction down through each to help soften adhesions and free the muscles from the anterior and posterior compartment musculature**

Proposed Treatment Sequence: 50 minutes, mostly on the lower leg, 30 minutes in prone, 20 minutes in supine

Supine Sequence (cont)

- **Use cross fiber friction on the anterior retinaculum asking client to flex and extend their toes and ankle to help the anterior tendons move freely through the sheaths of the retinaculum**

- **Mobilize the calcaneus and talus by sliding the calcaneus medially and laterally and hinging the ankle towards and away from the knee**

Proposed Treatment Sequence: 50 minutes, mostly on the lower leg, 30 minutes in prone, 20 minutes in supine

Supine Sequence (cont)

- **For fallen arch clients, stretch the top of the foot while blocking the ankle joint from extending**
- **Fascially release abductor hallucis and flexor hallucis brevis**
- **On clients with bunions or forming bunions (big toe pointing laterally towards other toes instead of on same line as metatarsal), stretch extensor hallucis longus**

Proposed Treatment Sequence: 50 minutes, mostly on the lower leg, 30 minutes in prone, 20 minutes in supine

Supine Sequence (cont)

- **Spread the toes by placing fingers between all of them at same time (this may feel intense and take a minute to just get used to for many clients)**
- **Stretch and mobilize the big toe while rolling the rest of the spread toes**
- **Gently traction the leg holding the foot and ankle in as close to neutral as they allow**
- **Repeat 2 Table Tests to see if ankle and subtalar joint mobility has improved**
- **Repeat entire sequence on other leg**

Relieving Plantar Fasciitis

- Giving Homework: Examples of At Home Self Care for Plantar Fasciitis

Client Homework Practices (demonstrate each)

- **Sitting figure 4 self release for tibialis posterior (best for clients with plantar fasciitis to do before taking first steps in morning)**
- **Standing slow squats with feet in neutral (as opposed to standard gym squat with feet spread and pointing slightly out)**
- **Weight shifting exercise to stabilize the intrinsic foot muscles and mobilize the big toes**

Client Homework Practices (explain each)

- **Kinesio taping as bracing to support foot while healing (great example video link) - daily while symptoms persist and at least 1 week after they stop**

- **Night bracing to keep foot flexed while sleeping and as micro tears heal - daily while symptoms persist and at least 1 week after they stop (product link)**

- **Arch supports may help, as well as making sure to wear shoes while at home rather than walk around in bare feet**

Relieving Plantar Fasciitis

- Q & A
- How to download slides, get your certificates, when video will be available
- Our upcoming 2 day live workshop