

# myofascial techniques

BY TIL LUCHAU



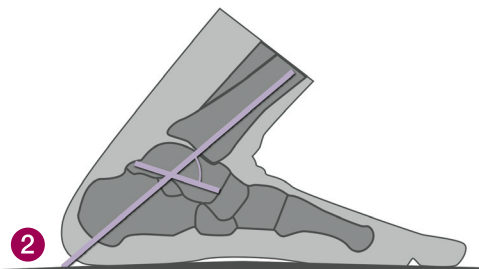
There is a continuous line of connection from the gastrocnemius/soleus to the plantar fascia (whose fibrous aponeuroses are shown here in salmon). A lack of resilience anywhere in the chain will restrict ankle dorsiflexion, and may contribute to Achilles tendon irritation or plantar fasciitis. *Image courtesy Primal Pictures. Used with permission.*

# WORKING WITH ANKLE MOBILITY, PART I

Ankles bend, ankles straighten.

Why is this important? Try walking without bending your ankles. If you've ever attempted to walk with ski boots on, you'll recognize the awkwardness and overall stiffness that comes with a loss of ankle motion.

Ankles bend in two sagittal directions—plantarflexion (from Latin *plantaris flectere* or “sole bent”), and dorsiflexion (bent toward the dorsal or upper side of the foot). While plantarflexion gives a powerful push-off to each stride and adds spring to a jump, the complementary motion of dorsiflexion is at least as important. Squatting, kneeling, lunging, running, and landing from a jump all require dorsiflexion, as do many other crucial functions related to our ability to get around and function freely. Dorsiflexion, when lost, limits more than just ankle movement—it limits our overall mobility and adaptability.



Dorsiflexion angle. *Image courtesy Advanced-Trainings.com.*

There are two main types of structural restrictions that can limit standing dorsiflexion.<sup>1</sup> We'll refer to them as Type 1 and Type 2:

**Type 1.** Dorsiflexion will be limited if the soft-tissue structures on the posterior side of the leg and foot resist lengthening. These structures include the gastrocnemius, soleus, superficial and deep fascias, the long toe flexors, and the plantar fascia.

**Type 2.** Inelastic connective tissues joining the tibia and fibula (such as the extensor retinacula, interosseous membrane, and the tibiofibular ligaments) can prevent these two bones from normal widening around the wedge-shaped talus (more about this in Part 2).

These two types of restrictions can occur together, but often one type will be the primary or most obvious restriction. In general, Type 2 is more common when there is very limited dorsiflexion (as in the person on the right of Image 3), though this is variable.



In the Dorsiflexion Test, look for the degree of dorsiflexion possible before the heels lift off the floor. Leaning forward at the hips (as the person on the right is doing), or lifting the arms forward for balance, are both signs of limited dorsiflexion. *Image courtesy Advanced-Trainings.com.*

In this first of two articles, I'll begin by discussing ways to help the soft tissues on the back of the lower limb be as long and responsive as possible (in other words, ways to work with a Type 1 restriction). We'll examine a Type 2 restriction—a fixed relationship between the tibia and fibula—in Part 2.

### DORSIFLEXION TEST

We can assess the amount of dorsiflexion available, and identify the primary type of restriction, by asking our client to do a deep knee bend. Look at the angle of the lower leg in relationship to the foot (Images 2 and 3, page 111). How deep can the knee bend go before the available dorsiflexion is used up and the heels have to come off the ground?

In general, the more dorsiflexion, the better, even for people with frontal plane ankle instabilities, such as pronation, supination, or a tendency toward ankle sprains. (Having greater adaptability in the sagittal plane can reduce the lateral forces that cause ankle turns or overpronation.)

Once you've assessed the amount of dorsiflexion, you'll need to determine where to work. Your client will usually be able to direct you toward the predominant restriction. At the full limit of dorsiflexion, ask: "What stops you from going farther? Where exactly do you feel that?" The most common answers are a stretch in the back of the calf, sometimes including the plantar fascia (Type 1 restriction); or, a jamming, crunching, or pinching at the anterior fold of the ankle (indicating a Type 2 restriction).<sup>2</sup> Let's look at two techniques that will help address the first type of restriction—shortness in the posterior of the leg and foot.

### THE SOFT FIST

Both of the techniques to address Type 1 restriction use the practitioner's "soft fist" as a tool. This has several advantages over using a palm,



In the Gastrocnemius Technique, use a soft fist combined with assisted dorsiflexion via the practitioner's leg to address Type 1 restriction. *Image courtesy Advanced-Trainings.com.*

fingers, or other parts of the hand traditionally used in massage therapy:

- Once you're accustomed to using a soft fist, you'll find that it can give you greater specificity with particular structures and tissue layers.
- By keeping your wrist aligned with the metacarpals of your hand, you can transmit pressure with almost no muscular effort.
- The neutral position of the wrist keeps the carpal tunnel open, preventing the neurovascular compression that can accompany frequent or habitual wrist extension.

The keys to a sensitive, comfortable soft fist are to keep your wrist straight, your hand open, and let the knuckles of the middle fingers do the work.

### GASTROCNEMIUS/ SOLEUS TECHNIQUE

As the strongest and largest muscle group on the back of the leg, the

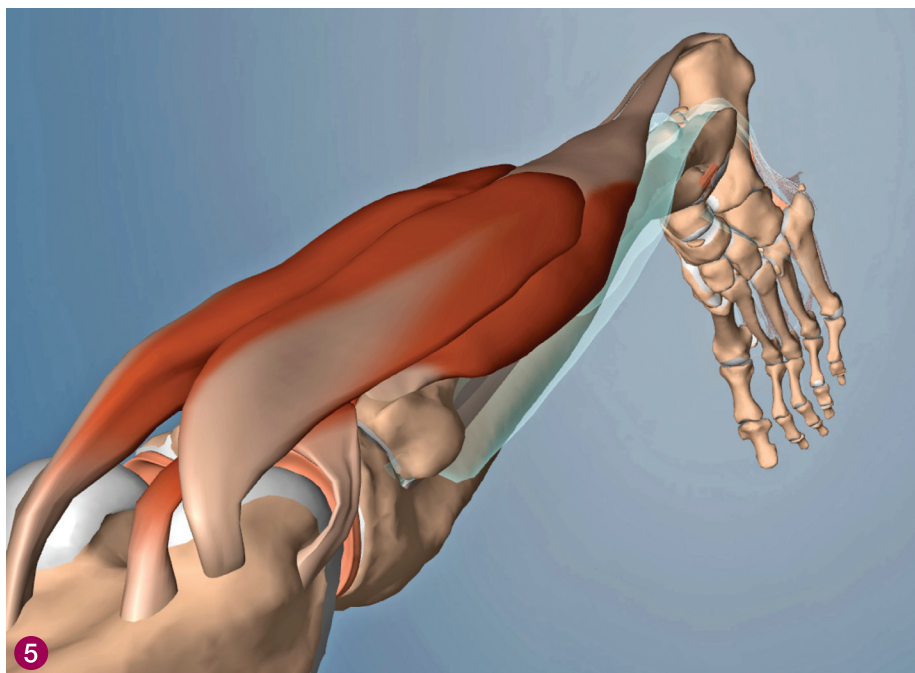
gastrocnemius/soleus complex is a logical place to work when you see limited dorsiflexion. Injuries or strains of the gastrocnemius and soleus are common, especially with activities such as racquet sports, basketball, skiing, and running. Tissue shortening that results from injury, or simply normal use, can reduce the ankle's ability to dorsiflex.

With your client prone and with his or her feet off the end of your table, use your soft fist to anchor the stocking-like outer layers of fascia (the superficial and crural fascias). Work one layer at a time, releasing each one before going deeper. Ask your client for slow, deliberate ankle movement (plantar and dorsiflexion). Use the lengthening effects of dorsiflexion to release any shortened or tighter lines of tissue (Image 4) as you apply a slight cephalad (headward) resistance to the tissues under your touch.

Although your touch will slide slightly, let your client's active ankle



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Use the Gastrocnemius Technique all the way to the gastrocnemii origins on the posterior side of the distal femur. Also visible in this view are the peroneus longus and brevis (transparent), which, like the gastrocnemii, can also limit dorsiflexion. *Image courtesy Primal Pictures. Used with permission.*

dorsiflexion initiate and pace your movement. Once you've felt the outer layers lengthen, feel into the deeper Achilles tendon and the conjoined heads of the gastrocnemius and soleus itself. Continue the active movement as you gradually work deeper on each pass. Check in frequently with your client about pace and depth. As postural muscles that are always engaged when standing, the gastrocnemius complex can be particularly tender, especially at deeper levels.

Since the long toe flexors can also restrict dorsiflexion, ask for active toe extension in combination with dorsiflexion. This combination of movements will increase the effects of this technique by lengthening the deepest structures in the calf.

As long as your client is comfortable and able to relax into the work, you can also add an additional measure of

passive gastrocnemius stretch with your leg (Image 4). Use your soft fist or gentle finger pressure to work all the way to the proximal origins of the medial and lateral gastrocnemius heads on the posterior femur (Image 5), being cautious around the nerves in the popliteal fossa at the back of the knee.

### PLANTAR FASCIA TECHNIQUE

The sole of the foot has alternating layers of broad connective tissue strata, short strong muscles, and long cord-like tendons and ligaments. Shortness in any of these layers can limit dorsiflexion through their collective continuity with the gastrocnemius/soleus complex (Image 1, page 110). The plantar fascia is a strong, fibrous layer covering the entire sole, lying

superficial to the short toe flexors and just deep to the subcutaneous fat of the heel. Plantar fasciitis is a common inflammatory condition of this layer. It is characterized by heel and mid-foot pain, most often with point tenderness at the plantar fascia's insertion on the distal and inferior surfaces of the calcaneus. Contributive factors include improper foot and leg biomechanics, overuse, and fascial shortness in the calf or hamstrings.

Direct work with the plantar surface of the foot, including the plantar fascia, is indicated when clients report a stretch or pain in the sole with the Dorsiflexion Test. Local plantar pain, cramping, and stiffness are also indications for using this technique, as is plantar fasciitis.

Because plantar fasciitis involves tissue inflammation, avoid working directly on the most painful areas (usually the proximal attachments on the calcaneus). Instead, lengthen, release, and ease the entire plantar surface around the points of greatest tenderness. Recalcitrant, or stubborn, plantar fasciitis is treated surgically by "releasing" (partially severing) the plantar fascia, with the aim of relieving the strain on the inflamed attachments. Our intention is similar, even though our methods are different—instead of severing the fascia, feel for a lengthening release in both of the techniques described here. In combination with hamstring or peroneal work, clients often show tangible improvement in the degree of plantar tenderness within one or two sessions. A longer series of sessions is often necessary for chronic sufferers, as well as regular stretching, a change in usage patterns, and improved biomechanics (via methods like orthotics, structural integration, movement instruction, or improved footwear).



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To work with the plantar fascia, we use the middle knuckles of a soft fist (Image 6). As in the Gastrocnemius Technique, start with superficial layers, releasing first the skin, then the subcutaneous layers, and then the plantar fascia. Use active or passive toe extension to move the tissue layers under your touch. Be sensitive, thorough, and slow—remember, you’re working with your client’s nervous system, as well as the connective tissue, so be sure to allow time to breathe, release, and relax into the work.

In the next installment, our focus will be the second type of dorsiflexion restriction, a deeper fixation of the tibia and fibula around the talus. The techniques covered in this article will serve as ideal preparation for the deeper work I’ll describe in Part 2. **m&b**

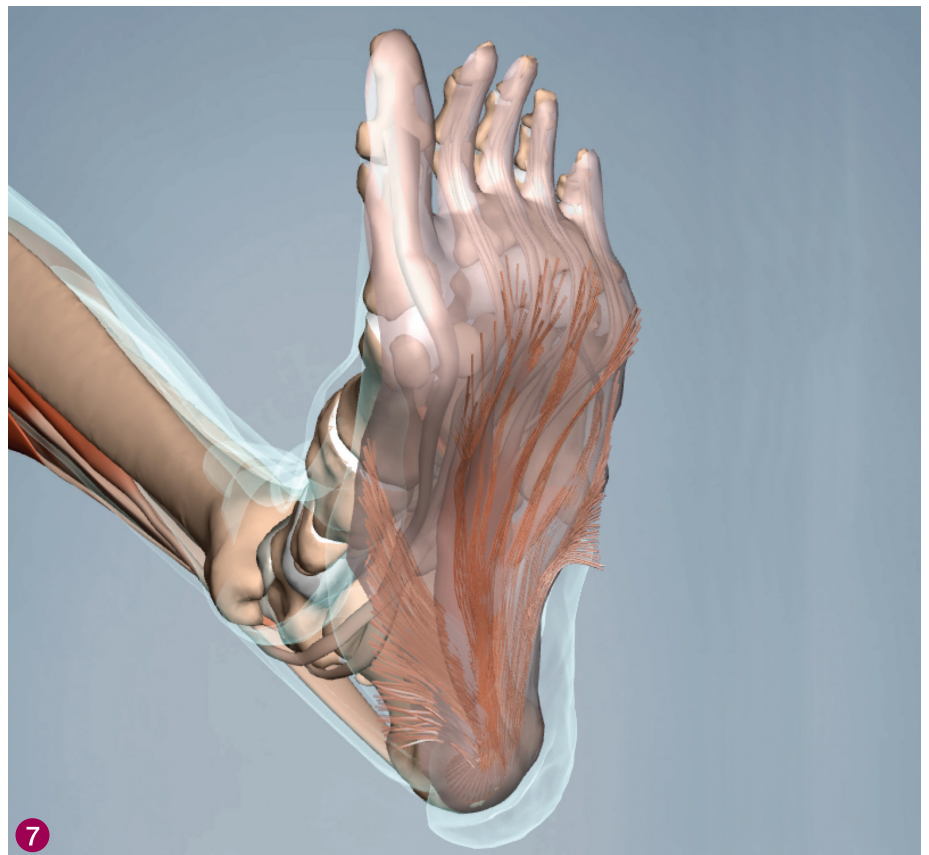
**6** *Til Luchau is a member of the Advanced-Trainings.com faculty, which offers distance learning and in-person seminars throughout the United States and abroad. He is also a Certified Advanced Rolfer and teaches for the Rolf Institute. Contact him via [info@advanced-trainings.com](mailto:info@advanced-trainings.com) and Advanced-Trainings.com’s Facebook page.*

## NOTES

1. The contributing causes of both types of restrictions can include soft-tissue shortening, hardening, or scarring from overuse, postural habit, surgery, or injury, as well as from neurological conditions such as cerebral palsy. The contractures from these conditions will usually respond well to the work presented in these articles. Restrictions from joint abnormalities or bone spurs are also possible, and although the work described here may be helpful, additional measures and care by other professionals is usually indicated.
2. Sometimes clients will report a straining or cramping in the front of the shin, instead of a stretching in back or jamming sensation in front. If they seem to be referring to the tibialis anterior area, this is usually related to a Type 2 restriction. If the more lateral peroneals seem to be the source of the sensation, those will usually respond to direct work at the site of discomfort, as the peroneals themselves can contribute to limited dorsiflexion (see Image 5).



The Plantar Fascia Technique combines the soft fist with active or passive toe extension. In plantar fasciitis, avoid direct pressure on the most tender areas so as not to further aggravate the inflammation. Instead, lengthen and release the tissue distal to the inflamed points. *Image courtesy Advanced-Trainings.com.*



The plantar fascia is a broad layer of tough connective tissue covering the sole of the foot. Within it are bands of mostly longitudinal fibers (the plantar aponeuroses, in salmon). The proximal end of the plantar fascia lies deep to the thick calcaneal fat pad (transparent). *Image courtesy Primal Pictures. Used with Permission.*