

# Is There a Link Between Tight Calf Muscles and Foot Pain?

## Physical Therapy in Merrimack Valley for Foot

Serendipity is a fancy word for the idea that sometimes things happen unexpectedly. And the results of the event have a positive effect on us or benefit us in some special way. Sometimes surgeons discover things serendipitously.

For example, surgically lengthening the gastrocnemius (calf) muscle in patients with diabetes helps heal foot ulcers. That discovery pointed out the association between abnormal foot positioning, altered biomechanics, and foot pain all linked to a tight calf muscle.

Armed with that information, surgeons started taking a closer look at patients with chronic, persistent foot pain. They tried lengthening the gastrocnemius muscle and found good outcomes with it. As a result, more studies have been done to look at the effect of gastrocnemius lengthening on the ankle joint, foot arch, position of the hindfoot, and joint range of motion.

Specific diagnoses have now been treated with good results using the gastrocnemius lengthening procedure. Conditions such as plantar fasciitis (bottom of the foot pain and fascial tightness), metatarsalgia (toe joint pain), fallen arches, foot arthritis, and tendon problems have all responded well to gastrocnemius lengthening.

In this article, surgeons from Michigan State University review the results of the studies done so far using this technique for foot and ankle problems. They also present their own treatment approach to gastrocnemius contracture (tight or fixed muscle).

They recognize that an inflexible gastrocnemius muscle can pull so hard on the bones that it deforms the normal or natural shape of the foot and ankle. Their method is to evaluate patients and place them in a management group based on symptoms, diagnosis, and biomechanical structures present at the time of the exam.

For example, type 1 contracture refers to patients who have a weakened ligamentous support of the arches. The diagnosis is often plantar fasciitis, metatarsalgia, Achilles pain, or painful arches. Type 2 gastrocnemius contracture describes a patient with a collapsed forefoot and/or bunion.

Type 3 contracture results in a collapse of the midfoot with midfoot arthritis. Type 4 is a collapse of the hindfoot affecting the spring ligament in the middle arch of the foot. And type 5 is a tilted ankle linked with deltoid ligament problems and ankle arthritis. Each type is featured in the article with either a photograph of the foot and ankle or corresponding X-ray.

By releasing the gastrocnemius muscle and its tendon (the Achilles tendon, the foot and ankle can return to a more normal midline position. Foot pain is relieved at last. Release of pull on the bony structures makes it possible to restore normal arch shape, structure, and function. They suggest that arch collapse in its more advanced stages can't be restored without the gastrocnemius release procedure.

The authors point out that there are a few downsides to the procedure. It can cause some calf weakness but this is only temporary. The gastrocnemius is a large muscle that can quickly recover with full return of strength.

Damage to the sural nerve is also possible. The sural nerve goes through the gastrocnemius muscle down to the foot. One other risk with this surgery is an unsightly scar because it is done with an open incision.

Future studies will be done in the area of gastrocnemius lengthening. The focus will be two-fold: 1) accomplishing the operation endoscopically (long, thin needle with a tiny TV camera on the end) with a very small incision and 2) finding out what types of foot problems can best benefit by this procedure.

Reference: John G. Anderson, et al. Treatment of Recalcitrant Foot Pain with Gastrocnemius Muscle Lengthening. In *Current Orthopaedics Practice*. May/June 2010. Vol. 21. No. 3. Pp. 251-257.