

## Soft Tissue Considerations: Optimizing Soft Tissue Health

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How many of you have experienced a nagging injury or have been plagued by muscular tightness, thus derailing you from the progress you were making in the gym? I often pose this question to people who regularly train and to fellow personal trainers. Usually, the responses consist of: “yes”, “I just fight through it” or “I just try to stretch it out”, and last but not least “I take a handful of Naproxen with my pre-workout shake”.

Many trainees and trainers don't know where the pain originates, nor do they know how to address the muscular tightness. These aren't phantom pains. You know, the transient pains suffered by people, namely primadonna professional athletes, to avoid work, or playing the positions they've been assigned to. While the topic has been covered and recapped by multiple health and fitness professionals over the years, some people are still unsure what purpose of doing soft tissue work actually serves.

Let's first understand the mechanism of injury. Pain, both intermittent and chronic, develops within the muscles, tendons, and the fascia (epimysium) that covers them. The epimysium is the sheath that envelops the bundles of muscle fibers within the muscles and is connected to the smaller fascial structures the perimysium, which surround the fasciculus, and the endomysium, which surrounds individual fibers. All of these structures, and the muscles they surround, are continuous with the tendon that is connected to the bone. If great enough, the pain originating within the muscle may impede proper movement, which reduces performance. These injuries, termed myofascial injuries, are cumulative in nature, meaning that the muscles have been exposed to a load or stimulus repeatedly. These injuries, unlike muscular strains - which are acute injuries from overexertion, are analogous to overuse orthopedic injuries, such as stress fractures.

Resistance exercise, including the use of body weight exercises, machines, and free weights, serves as a training stimulus to induce responses that are conducive to strength gains. Many novices fall victim to the common misconception that performing the exercise directly induces strength gains. Josh or (insert the name of any reputable coach, trainer, or physical therapist here) will tell you that the stimulus indirectly brings about gains in strength. Strength and hypertrophy are dependent upon the complete repair of the contractile proteins actin and myosin that are “torn” during resistance training. Ideally, the contractile proteins will become stronger via recovery; however, if recovery is inadequate, the muscle will become weaker and cause pain.

So what options do overworked muscles have? Take a flight to Cabo and relax for a week? I think not. These adhesions don't need to relax, they need to release! Myofascial release, often self administered, is a therapeutic treatment that uses gentle pressure and stretching to facilitate the release of fascial restrictions, often caused by repetitive use (1). Self myofascial release can be carried out by using a foam roller, PVC piping, a foam pool float, tennis, lacrosse, and soft balls. The use of each depends on the nature of the person's overuse injury and their soft tissue quality. Please note that self myofascial release is not appropriate for acute injuries, such as strains and ruptures.

In addition to ironing out nagging adhesions, some benefits of self myofascial release include: improving soft tissue and musculotendinous extensibility, relieving soreness, and indirectly addressing muscular imbalances and improving joint range of motion.

*When should I perform self myofascial release?*

The National Academy of Sports Medicine recommends that the afflicted areas within the muscle be exposed for periods that are no longer than 1-2 minutes (2). If the area is too tender, a much shorter duration may suffice, however, if the individual still finds the pain and pressure to be unbearable, medical treatment may be necessary. Continuing to roll when pain is present activates the muscle spindles, intrafusal muscle fibers that detect a muscle's length, which may cause more pain. However, rolling for shorter durations may autogenically inhibit the muscle spindles and stimulate the Golgi tendon organs, a proprioceptor that is located near the myotendinous junction which is attached to the extrafusal fibers. GTOs detect tension within the muscle and if the tension is too great, they will relax the muscle and help regulate fascial receptors (2). The National Academy of Sports Medicine also suggests that the proper Draw-In position is used, thus providing stability within the lumbo-pelvic-hip-complex during the execution of foam rolling exercises.

Foam rolling should be performed regularly and serve as an invaluable adjunct to a resistance training program. Duration of the holds, volume, frequency, and the amount of body contact with the floor, during the exercises, depend on a myriad of variables, including one's current soft tissue quality, muscular imbalances, training program, goals, occupation or sport, and injury and training history.

While anecdotal reports may circulate in the gym suggesting improved workouts and less pain, please know that myofascial release have provided relief to those suffering from adult idiopathic scoliosis, carpal tunnel syndrome, and plantar fasciitis (1, 3, 5). It should be noted that foam rollers alone, will not improve flexibility (4), however, an appropriate stretching program in conjunction with self myofascial release will improve flexibility and soft tissue extensibility (5).

*Blame it on the alcohol.*

Alcohol, an anecdotal nighttime sleep remedy, libido booster, and stress reliever, does not help improve soft tissue quality. Alcohol has been known to inhibit protein synthesis, which is necessary for the reparation of the torn contractile proteins, actin and myosin, thus delaying recovery between workouts. Also, alcohol exacerbates the inflammatory process following injury. So we can say when it comes to the health of your soft tissue, alcohol is "No bueno."

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5. Kuhar S, Subhash K, Chitra J. Effective of myofascial release in treatment of plantar fasciitis: A RCT. Indian Journal of Physiotherapy and Occupational Therapy. 2007;1:3.

Joe Giandonato is a Philadelphia-area healthcare professional and personal trainer, he holds an M.S. in Exercise Science and has nearly a decade of personal training experience. Presently, he trains clients at Broad Street Fitness in Philadelphia, PA, before and after his day job as an office grunt. He is also pursuing a MBA and is a certified as a Performance Enhancement Specialist (PES) through the National Academy of Sports Medicine. He spent a week in Cabo last summer, learning about all of alcohol's detrimental effects, especially its effects on soft tissue quality.