Under Pressure

Active trigger points can initiate a cycle of pain and dysfunction. These self-help techniques can help break it.

By Valerie DeLaune, LAc

Trigger points must be treated before conditioning exercises are effective. Although there are differing theories about the physiology of trigger point formation, researchers agree that there are palpable “nodes” and taut bands due to rigor (silent spasm) of the muscle fibers. Because fibers are already contracted, conditioning exercises can actually aggravate active trigger points, causing an escalating cycle of pain and dysfunction.

If a trigger point is active, it will refer pain or other sensations and limit range of motion. If a trigger point is latent, it may cause a decreased range of motion and weakness, but not pain. The more frequent and intense your patient’s pain, the greater the number of active trigger points they are likely to have. It is imperative that trigger points be inactivated before conditioning exercises are assigned.

How Do Trigger Points Form?

One of the prevailing theories surrounding the mechanism responsible for the formation of trigger points is the “integrated trigger point hypothesis.” If a trauma occurs, or there is a large increase in the motor end plate’s release of acetylcholine, an excessive amount of calcium can be released by the sarcomplasmatic reticulum. This causes a maximal contraction of a segment of muscle, leading to a maximal demand for energy and impairment of local circulation. If circulation is impaired, the calcium pump doesn’t get the fuel and oxygen it needs to pump calcium back into the sarcomplasmatic reticulum, so the muscle fiber stays contracted. Sensitizing substances are released, causing pain and stimulation of the autonomic nervous system, resulting in a positive feedback system with the motor nerve terminal releasing excessive acetylcholine—and so the sarcomere stays contracted.

Another prevailing theory is the “muscle spindle” hypothesis, which proposes that the cause of a trigger point is an inflamed muscle spindle. Pain receptors activate skeletal motor units during sustained overload of muscles via a spinal reflex pathway, which connects to the muscle spindle. As pain continues, sustained contraction and fatigue drive the skeletal motor units to exhaustion, and cause rigid of the extramuscular muscle fibers, forming the “tact band.” Because the muscle spindle itself has a poor blood supply, the inflammatory metabolites released will be concentrated inside the spindle and lead to sustained inflammation.

In a groundbreaking study, Shah et al were able to measure elevated biochemicals in and surrounding active trigger points, including inflammatory mediators, neuropeptides, catecholamines and cytokines (primarily sensitizing substances and immune system biochemicals). In addition, the pH of the samples was strongly acidic as compared to other areas of the body.

Within a few weeks, you will likely be able to start adding conditioning exercises to isometric compression and stretching exercises. References


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