

## Trigger Points Revealed: Keeping Muscles Functioning Properly

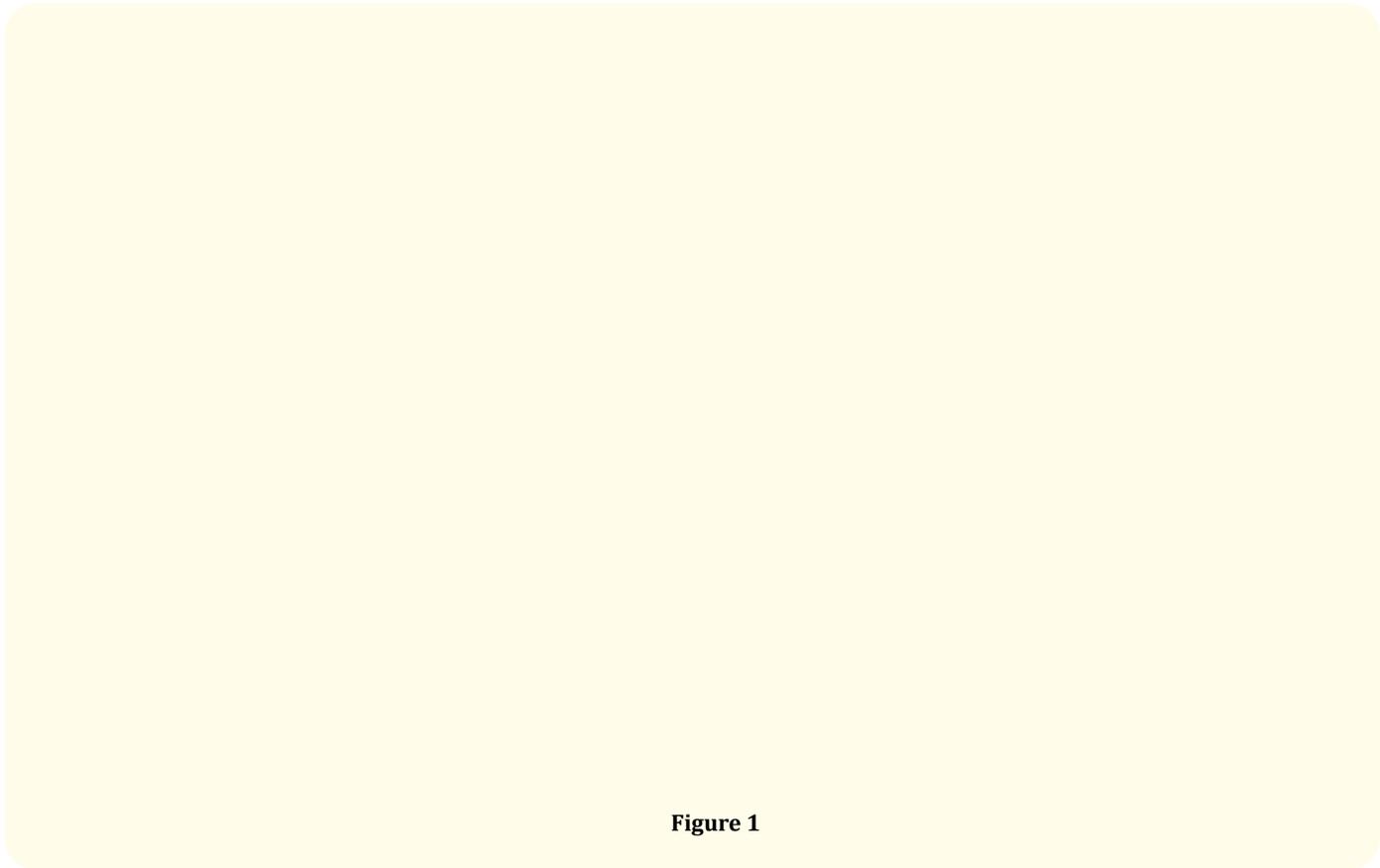
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**Received:** September 19, 2019; **Published:** September 27, 2019

**DOI:** 10.31080/ASOR.2019.02.0104



**Figure 1**

### Myofascial trigger points

One of the major keys to muscles functioning properly and preventing injuries.

### Muscles need 3 things for optimal performance

- To function properly: Includes, but not limited to nutrition, hydration, sleep, addressing both active and latent trigger points, and handling both mental and emotional stress.
- To be strengthened: Strengthening routines help keep muscles, tendons, ligaments, and joints strong and stabilized.
- To be mobilized: Yoga or any other mobility routine to keep muscles flexible, pliable, and moving the way they are intended to.

Dr. Janet Travell defines a trigger point as “a hyperirritable spot in a skeletal muscle that is associated with a hypersensitive palpable nodule in a taut band. The spot is tender when pressed and can give rise to characteristic referred pain, motor dysfunction, and autonomic phenomena.” I have found that trigger points are responsible with interfering with muscle memory. Due to the build up of lactic acid and other waste products produced from a muscle when a muscle contraction occurs, blood flow and oxygen are reduced to the muscle, which causes trigger points to form. Trigger points are what most people think of as “knots” that they feel within a muscle. Think of a dam that restricts water flow. Trigger points are the “dams” within a muscle where blood flow is reduced and multiple little pools of lactic acid and other waste products of a muscle build up. Trigger points not only affect the muscles themselves by restricting blood flow and shortening the muscle fibers, they put strain on tendons, ligaments, and joints. Trigger points put limitations on strengthening and mobilization routines, as well as making us more prone to injuries and delaying the healing process. It’s hard to strengthen and mobilize a muscle that isn’t functioning correctly. Over the years, I’ve found there are multiple locations within each muscle group where the trigger points seem to develop. This can cause multiple trigger points within a muscle group. There are two types of trigger points: active and latent trigger points.

Active trigger points produce debilitating pain. They hurt when you press on them and cause referred pain. Referred pain is when you press on a trigger point and you feel pain in another area (e. g: a trigger point in the scalene muscle can refer pain to the front of the shoulder, between the shoulder blades, the back of the arm, and sometimes can even be felt in the wrist and hand).

Latent trigger points are not usually felt until you press on them. These are usually felt localized and don’t cause the referred pain pattern. They may persist for years after recovery from an old injury. Think of an old sprained ankle injury that “healed on its own”. They restrict movement, distorted muscle movement patterns, and cause stiffness and weakness of the affected muscle. Latent trigger points make us more prone to reinjury.

When addressing the trigger points, it’s important to not only address what’s causing the trigger point to develop in the first place (if you can), but also treat both the active and latent trigger

points. Just like a connect the dot puzzle, you have to connect all the dots to solve the puzzle. The same goes for trigger points. You have to address all of the trigger points to retrain the muscle fully. Sometimes you will even find more latent trigger points than active. As you address each trigger point, bringing the muscle through each range of motion will help to retrain the muscle to function in the way that it’s intended to. This will restore full blood flow to the muscle, which will flush away the lactic acid and other waste products that the muscle produces. It will bring in fresh glucose, oxygen, and protein needed for the muscle to function properly. Full recovery is only possible when you not only treat the muscle group that’s affected, but also treat the opposing muscle groups as well to create balance. Just like when we get our car tires rotated. Whatever you do to one side you should do to the other as well. It is important to encompass all of our bodies muscle groups as a whole instead of as individual muscle groups (e. g: when addressing trigger points in the Iliopsoas, each of the Quadriceps muscles, Sartorius, and all of the Adductor muscles; it is also important to address all of the Gluteal muscles, Iliotibial band, Tensor fasciae latae, the Piriformis, Quadratus lumborum, and each of the hamstring muscles). This will help create balance and will have all of the muscle groups working together instead of against each other. Otherwise, there will be compensation within the muscle groups that will affect not only the muscles themselves, but will also put the tendons, ligaments, and joints at risk for injury.

### Factors that lead to the development of trigger points are, but not limited to

- Repetitive overuse injuries: (Moving our bodies in the same pattern). By doing so, it builds up even more lactic acid, creates fatigue within the muscle, and then trigger points develop. It’s very important to cross train or mix up the way we use our muscles. This way our muscles will not get used to the same movements. Rest is also key. Think baseball pitchers or any sport where repetition occurs, mousing, typing etc.
- Maintenance tip: Baseball pitchers, as well as other sports where repetition occurs, can cross train as well as roll out on a lacrosse ball, a tennis ball, or roller after they pitch or play. You can move the mouse closer to you at your desk/try alternating hands and lower your keyboard, so that your shoulders are down. These are just a few examples of ways to keep up with preventing trigger points from developing or getting worse.

- Sustained lifting: Lifting heavy weight produces more micro tears and lactic acid build up within the muscle. Think of weight lifters, police officers who wear body armor, moving boxes, etc. (e. g:using proper body mechanics and addressing the trigger points right after you work out or get out of work, will help flush out the lactic acid and help make the muscles recover faster and function better).
  - Poor posture: With poor posture certain muscles are in an elongated position and others are in a shortened position. Sitting at a desk for a prolonged period of time, looking at a computer screen, slouching, looking down at a cell phone are all examples. Making adjustments to your posture will help your muscles function better and can help prevent trigger points from forming (e.g: getting up from your desk every hour to walk around, placing your computer screen so that way you're not looking up or down, sitting up straight in your chair, and taking a break from looking at the cell phone). For most of us this can prove to be very difficult, but the benefits can be life changing.
  - Muscle clenching due to mental/emotional stress: Muscles tighten up when exposed to the adrenaline and cortisol released by stress. Trigger points then develop. Finding ways to deal with both mental and emotional stress are key. Incorporating relaxing and enjoyable activities can provide significant help for the minor day to day living, however seeking professional help can at times be essential for overall well being.
  - Direct injury such as a blow, strain, break, or tear: Think sports injuries. When injured, muscles go into a protective spasm. With the protective spasm, muscles tighten and shorten to protect us from further damage. With the protective spasm multiple trigger points develop. These are usually unavoidable and is essential to break up the cycle as soon as possible otherwise the muscle will take on the shortened muscle memory. With a blow or a strain, it's important to treat the trigger points as soon as possible to speed up recovery time and prevent more serious injuries from developing. With a break or
  - tear, after being surgically repaired and are ready to be treated; addressing the trigger points will speed up the recovery process and aid the joint, ligaments, or tendons to heal properly. Until the break or tear is ready to be worked on, addressing the trigger points around the injury will actually speed up the healing time. It will indirectly create more blood flow to the injured area.
  - Vitamin/mineral deficiencies: Muscles that lack calcium, magnesium, B12, B6, potassium, Vitamin D, as well as other nutrients and proper nutritional food can all affect the muscles and the way they function. Seeking out a professional to help manage vitamin/mineral and other nutritional needs to help maintain your muscle health is key.
  - Sleep Disturbances: During sleep, blood glucose gets stored in the muscle as muscle glycogen. Human growth hormone (HGH) is one of the primary compounds that allows the muscles to recover and grow and use the amino acids in the protein we eat. when we sleep, the body enters a maintenance mode and floods the bloodstream with HGH. If your sleep gets disturbed, your muscles can not recover and grow effectively and muscle mass may actually decrease. Another side effect is a propensity for trigger point development. A great mattress, sleeping with one pillow, and a low intensity activity before bed are key to experiencing refreshing sleep. Lack of sleep also has a significant effect on our mental and emotional state.
  - Dehydration: Muscle fascia (including our kidneys) are comprised of 79% water. The less hydrated we are the stiffer we become and the muscle fibers shorten up. This is the most common trigger for cramping. Dehydration can cause trigger points to develop quickly. Tip: Hydrate well before playing a sport or activity to prevent dehydration. If hydrated well, muscles will perform better, longer, and run a less risk of injury. It is much easier to maintain good hydration from the start than it is to try to add hydration as you go.
  - Joint/Disc disorders: With joint/disc disorders you will always find the trigger points associated with them. Sometimes trigger points are responsible for causing them to develop in the first place. In some cases joint disorders are non reversible, however addressing the trigger points associated with them will help decrease pain and help with better mobility. There are some joint/disc disorders that can be corrected by addressing the trigger points associated with the joint/disc, manual adjustments, or by surgery. By addressing the trigger points around the joint or disc will help speed up recovery time and take pressure off the joint/disc as its healing.
  - Autoimmune diseases: Our body's own immune system attacks itself by attacking healthy muscle tissue, which results in inflammation, swelling, pain, and eventually weakening. With Autoimmune diseases, I've found that there are active trigger points in multiple muscle groups. Addressing the trigger points can help with pain management. Even though we can't change autoimmune diseases, we can help our muscles have a better quality of function.
- Once our muscles are once again functioning properly, strength and mobility routines will be enhanced, and the risk for injury will be greatly reduced. Properly functioning muscles not only help the muscles themselves, but help to maintain healthy tendons, ligaments, and take the pressure off of our joints. It's imperative to

have all 3 aspects (muscles functioning properly, strengthening programs, and mobilization routines) for muscles to fully perform efficiently. It's highly beneficial to have a great health care team to oversee not only our muscle health, but our overall health as well. Overall tip: Rolling out on a tennis ball, lacrosse ball, or foam roller before bed to help loosen our muscles up is key before we sleep. The trick is to position the ball/roller on each trigger point and move through full range of motion, or whatever range your body will allow. Making sure to roll out both sides of our bodies to create balance. This helps to undo what we do during the day. If laying on the floor is not an option, use the wall or a chair and put the ball in a sock. This way it will keep the ball from moving. In life we can't control everything, however the more changes we can make, the better our muscles will feel and function, and will be able to perform at an optimal level [1-3].

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**Volume 2 Issue 10 October 2019**

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