Muscle Memory

by Michael Young

THE KEY TO UNLOCKING TIGHT MUSCLES

Muscle memory (proprioception) is the interaction between the brain and the nervous system. Proprioceptors (the nerve endings) tell the brain where your fingers, legs, hands, toes and feet are without your even seeing them. A great example of the proprioceptors at work is an individual who types without looking at the keyboard. When a person first starts to type, she has to concentrate very hard. Once the task is performed many times, it solidifies the muscle-memory patterns and can then be accomplished with little thought.

We train our bodies to do a task so many times, muscle memory is precisely patterned.

For example, at one time or another most of us have been driving and daydreaming only to “wake up” and realize we don’t really remember the last five miles on the road. We weren’t conscious of what we were doing, but the brain and muscle memory take over.

Another type of muscle memory is emotional muscle memory. A person can be traumatized due to verbal, physical or sexual abuse. The body stores this trauma and the muscles contract to protect us. In many cases the victim’s mind doesn’t remember the trauma, but the body does. That’s why many traumatized clients become emotional when receiving bodywork on a certain area. The client has no idea why he or she is emotional.

Repetitive-use muscle memory

There is another part of this muscle-memory mystery that many bodyworkers overlook. I call it repetitive-use muscle memory. Any time a person uses a muscle repeatedly the muscle will tighten. Any number of things can cause this to happen.

For example, runners overuse the muscles in their legs, while people who do a lot of typing overuse the muscles in their arms. People who lift weights often do so to excess, overusing muscles in the arm. Mountain climbers and skiers often use...
their muscles to excess. As bodyworkers, our profession leads us to overuse many of our muscles.

When an action is repeated for a long period, an array of problems can occur. Once a muscle is short and tight for an extended period of time, the muscle memory is lost. In other words, that muscle forgets what it is like to return to an elongated, relaxed state. The tightness becomes ingrained in the proprioceptors and the brain then thinks it is normal to hold that muscle tight, even though the person feels relaxed. It is as if the muscle has amnesia. At this point the muscle is so tight that there is a constant pull at the tendonous attachment sites.

When this happens in the extensors of the forearm, the diagnosis will be tennis elbow, or tendonitis. A diagnosis of golfer’s elbow is given when this happens in the flexors of the forearm. When the lateral three quadriceps muscles are tight (especially the rectus femoris), the diagnosis is patella tracking dysfunction. When the piriformis becomes tight from overuse, often it is called sciatica or piriformis syndrome. And when the muscles of the lower leg and foot become tight, it’s called plantar fasciitis. Pronation, carpal tunnel syndrome, hammertoes, high arches, flat feet, trigger finger, and tendonitis are all caused by the loss of muscle memory.

Since muscle memory can be lost due to contracting a muscle repeatedly (repetitive use), to restore muscle memory we must do the opposite. We accomplish this by stretching. Compression alone will do little (or nothing) to restore muscle memory. If you combine compression with a stretch, you will not only break up the resilient adhesions and scar tissue, you will also restore muscle memory.

Circulation is the key to all healing. The circulatory system has been referred to as the river of life. No healing will ever take place without blood flow. The blood brings oxygen, minerals, nutrients and vitamins to the entire body.

Restoring muscle memory

The blood also removes toxins from the body. Veins travel through every muscle. When a muscle becomes tight, muscle memory is lost and the circulation to that area of the body is hindered, resulting in inflammation. Nerves also travel through every muscle, and when a muscle tightens, the nerves can become entrapped, resulting in pain. During injury, the muscles in the area contract to help protect it. The longer the muscle remains tight, the more ingrained it becomes in the muscle memory. Scar tissue forms in the soft tissues after injuries or invasive surgeries. That scar tissue is resilient, and holds the muscle even tighter, adding to the loss of muscle memory.

I have spoken with thousands of therapists about muscle memory and scar tissue, and the roles they play in creating pain and inflammation in the body. Most of them agree that there are many techniques available to provide clients with temporary relief. Most also complain of the helplessness they feel when a client continues to return with the same complaints each session. I believe that one huge reason for this is that the muscle memory has never been addressed. There is no doubt that we, as bodyworkers, can break up scar tissue with the application of many techniques, but the muscle memory is still lost and scar tissue will reform.

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There have been many debates about the correct way to stretch. Many people believe that a stretch should be held between 30 seconds and three minutes in order to affect a benefit. When a person holds a muscle in a stretch for a long period, the muscle fibers tighten around the veins and nerves, entrapping them and cutting off circulation for as long as the stretch is held. The muscle can't relax and heal properly without blood. We all learned in massage school that muscles need oxygen in order to work properly.
At this point you may be asking yourself about yoga. Yoga has been around for hundreds of years. In yoga the stretches are held for several minutes. I believe that holding a stretch for a long period is fine when dealing with a healthy muscle. We are not talking about healthy muscles here. Instead we are talking about muscles that have been overused, are tight and have a loss of muscle memory.

By far the best stretching technique I have found for unhealthy muscles is Aaron Mattes' two-second stretch. When we hold the stretch for only two seconds we are actually helping to pump blood into the injured muscle. A rhythmic, two-second stretch will do wonders to restore muscle memory and bring a client permanent relief.

Babies don't develop problems like carpal tunnel syndrome, tendonitis, plantar fasciitis, sciatica, trigger finger or tennis elbow. The reason they don't is that their muscles are flexible, limber and loose. Repetitive use, stress, over-exercise, accidents and trauma cause the muscles to become tight and muscle memory to be lost. The answer: Stretch! Stretch! Stretch!—but hold each stretch for only two seconds. This is the key to restoring muscle memory.

For more information on Aaron Mattes' stretching system, visit www.stretchingusa.com.

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Michael Young, N.C.T.M.B., is an injury-and-rehabilitation therapist who has a private practice in Evergreen, Colorado. He is an author and the founder of Repetitive Use Injury Therapy (RUIT). He holds workshops across the United States, designed to train therapists in the Muscle Release Technique. For more information, visit www.mrtherapy.com.