**Sports Medicine** *by guest columnist Katie Adams*

# NeuroMuscular 101 – Be Pro-Active

What are the worst six words that I hear? "I Thought It Would Go Away!" People show up to my practice when it's already too late: the damage was done when they ran right through the warning signals. Perhaps it was a nagging ache on the outside knee, an Achilles tendon inflammation, or plantar fascitis that was ignored until pain forced the runner to stop out of frustration or fear of more permanent injury. Most joint pain starts from overuse in the muscular system, and recovery from severe pain often takes more than just rest and ice. Muscles undergoing intensive training need manual treatment, proper flexibility, and neuromuscular re-education. Runners with an understanding of this approach will train more efficiently and enjoy positive results in their performance.

NeuroMuscular Therapy (NMT) is an advanced, orthopedic massage therapy technique that addresses underlying causes of prolonged muscle pain. NMT practitioners are trained to evaluate the muscular system from a functional platform. Repetitive movements in any sport can overload specific muscle groups and cause soreness. A common misconception is that this soreness is caused by lactic acid accumulation. While this can be a contributing factor, most myofascial pain is sourced from an amalgamation of biochemical (nutritional deficiency, inflammation) and biomechanical (overuse, misuse) stress.

Biochemical distress begins in muscles with ischemia. Ischemia results when the oxygen supply to muscle tissue is inadequate for the required physiological demand. Fatigued muscles will shorten and contract, limiting their own ability to remove metabolic by-products generated by intense aerobic activity. One such by-product, a high calcium level, is pervasive in ischemic tissue and will cause continuous release of movement-stimulating neurotransmitters. The muscle becomes confused by these excessive stimulants and continues to contract. The result is a vicious circle of oxygen/nutrient deficiency, leaving the muscle prone to likely development of trigger points.

Trigger points are what most people call "knots." These taut, palpable fibers can cause pain, numbness, itching, burning, or fatigue sensations. They can drain everyday energy levels with low-grade discomfort or, depending on their severity, cause intense pain. Trigger points are how the nervous system gets the attention of an athlete. Think of them as a fire alarm. Then, act as a first responder and put them out!

All massage therapy can be beneficial for improving blood flow and assisting recovery. NMT more specifically targets trigger points and checks for associated adhesions that form in the fascia. When a muscle is mired down with trigger points, the intertwining fascia also shortens, leading to biomechanical stress on a neighboring joint. For example, long training runs will fatigue the quadriceps group. If the muscles are not given enough time to repair and stretching has been minimal, some fibers will stay shortened. The next run will demand the quads to fire on top of this tightness, and cumulatively they will start to feel sluggish, heavy, and tired. Ischemia has most likely initiated chemical over-stimulation, and some muscle fibers in the quad group may be harboring trigger points. Moving up the kinetic chain, the iliopsoas (hip flexors) may become irritated as a result of tight quads pulling the hips forward (the main quad attaches to the bony prominence on the front of the hip/pelvis). If satellite trigger points develop in the hip flexor, they can refer pain into the groin and/or low back. Suddenly, the low back may begin to ache when running uphill. At this point, most people would seek a physician's evaluation of the lower back. But what if the source is in the quadriceps? Time can be saved if muscle treatment is received when the first alarm goes off in the quads, and training might not be interrupted. NMT, when used as a training tool, will target trigger points to alleviate developing biomechanical strain on joints' structures.

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When providing treatment for an injury resulting from overuse, the work done on the massage table is only 30% of recovery. The other 70% is completed with stretching and strengthening exercises. Flexibility is crucial to the health of the musculoskeletal system. Once a muscle learns an incorrect movement pattern—whether from adaptation or compensation—it will continue to follow that pathway until re-educated. Muscle memory is strong willed; the nerve impulses that instruct muscles to fire will always follow the same directives until the conduit is consciously changed. NMT can stimulate a shortened muscle to release, but the muscle must be trained to hold proper length again. Stretching is the only efficient way toward muscle memory re-education, and it must begin immediately after NMT treatment.

If pain persists after trigger point therapy and stretching, a strength discrepancy could be overriding the repair system. Stretching is only marginally effective if movement afterwards defeats gains made toward improved flexibility. Training will plateau until these imbalances are corrected. Working with a trainer or physical therapist while receiving NMT will maximize results. This can be illustrated by a brief NMT client case summary:

A 45-year-old runner had a chief complaint of left lower back symptoms. The discomfort caused no neural pain in his extremities, but he could not run more than 5-miles without left lower back tightness and feelings of lethargy and heaviness in his right leg. He also had a history of repeated high left hamstring strain from collegiate sports. NMT treatment found ischemia and trigger points in the deep low back muscle (quadratus lumborum), but the scar tissue and adhesions from the old hamstring injuries ultimately caused the development of a faulty movement pattern. The right hip flexor had contracted to compensate for the shortened left hamstring. AIS performed on the right hip flexor and left hamstring helped restore equilibrium to the pelvis position, but it was not enough to correct the muscle memory. This client was immediately sent to the fitness floor to begin neuromuscular re-education. His trainer initiated a program starting with single leg step-ups to activate the left glutei. The nervous system had to learn to fire the left gluteus muscles without involvement from the right hip flexor. Weakness in the left glutei proved to be the source of the left low back pain.

NMT is an excellent resource and a sound choice for solving complex muscle pain patterns. When integrated into a training program that includes proper stretching, the results will be felt on the road. Healthy muscles lead to increased agility, improved speed, and a decreased risk of injury. Don't tough out pain; train smarter by including regular bodywork into your routine. Instead of thinking pain will go away, change your mantra to six new words: "Neuromuscular Therapy Keeps Pain From Starting!"



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