Dynamic Chiropractic

SOFT TISSUE / TRIGGER POINTS

Muscle Tightness

Warren Hammer, MS, DC, DABCO

While chiropractors are extremely skilled in the analysis and treatment of articular dysfunction, I fear that sometimes we neglect the subject of muscular dysfunction. One of the most overlooked aspects of muscular dysfunction, especially in chronic patients, is muscular tightness. Without determining whether there are tight muscles, prescribing strengthening exercises and using sophisticated machines like Cybex will perpetuate both the articular and muscular dysfunction. Neglect of muscle tightness may be a principle reason for recidivism in our back patients.

By tight muscles, I am referring to Janda's[1,2] description of shortened connective tissue and fascia rather than reflex spasm, muscular trigger points, myofascial pain, or upper motor spasticity. According to Sherrington's law of reciprocal innervation, a tight (overactive) muscle will inhibit its antagonist. Therefore the body will be composed of combinations of tight and weak muscles creating a muscle imbalance adversely affecting the normal patterns of movement. Strengthening tight muscles will have the effect of increasing the tightness and perpetuating the antagonistic weakness.

Jull and Janda[2] describe a "pelvic crossed syndrome" in which there are shortened and tight hip flexors (iliopsoas), lumbar erector spinae, and associated weakened antagonists (gluteus maximus, medius and minimus and abdominals). A patient with the above pattern was given exercises which included strengthening of her abdominals. Her back condition exacerbated. EMG testing showed that the tight overactive back extensors were working in all movements even when they should have been inactive during a slow curling up from the supine position. The overactivation of these back extensors were producing a "functional ankylosis" blocking normal intersegmental motion. This patient had been treated by spinal manipulation "with only a temporary effect." The patient's condition improved by stretching of the extensors. Often the weakened antagonistic muscles will automatically strengthen after the associated tight muscles are lengthened.

Often a tightened psoas will be responsible for chronically weakened abdominals, and abdominal exercises in this case will often overactivate the already overactive tight psoas muscle perpetuating the problem of muscle imbalance. The tight psoas will cause an anterior pelvic tilt, increased lumbar lordosis, and a "slightly flexed position of the hip."[2] The hamstrings may tighten to compensate for the forward pelic tilt or they may tighten to compensate for the weakened glutei which are inhibited due to the tightened iliopsoas. Hip extension would be limited due to a tightened psoas, and the presence of an inhibited antagonistic gluteus maximus would create a poor quality of hip extension because the contralateral lumbar erector spinae and ipsilateral hamstrings would have to become overactive and eventually tight to perform the necessary hip extension[3] instead of the gluteus maximus (primary hip extensor).

For chronic shortened muscles, Jull[2] recommends a postfacilitation stretch technique in which the patient's muscle is strongly resisted for about 10 seconds to activate the maximum number of motor units, followed by a vigorous stretch for 10 seconds. The patient is also instructed to stretch at home.

In conclusion, it is obvious that before strengthening exercises are prescribed, the tight muscles which may be the cause of the weak muscles must initially be stretched. The patient who exercises the weak inhibited muscle caused by an antagonistic tight muscle will actually be compensating for the weak muscle by performing "trick" movements which use the already tightened muscles. Tight muscles eventually become weaker and exercising them would only make them tighter. In the early stages of muscle rehabilitation, the quality of motion ("understanding and awareness of both the feeling of muscle activity and the exercise")[2] is more important than just increasing strength. These muscle imbalances must be considered in the overall analysis of structural problems. Often a spinal adjustment will normalize the surrounding muscle tension, but a chronic shortened muscle due to proliferation of hypertrophic connective tissue will require local treatment.

References

1. Janda V: Muscles and cervicogenic pain syndrome. In Grant R: Physical Therapy of the Cervical and Thoracic Spine. Churchill Livingstone, New York, 1988.

2. Jull G, Janda V: Muscles and motor control in low back pain: assessment and management. In Twomey LT, Taylor JR: Physical Therapy of the Low Back. Churchill Livingstone, New York, 1987.

3. Liebenson C: Active muscular relaxation techniques, Part II: clinical application. JMPT 13(1):2-6, 1990.

Warren Hammer, M.S., D.C., DABCO
Norwalk, Connecticut

Dr. Hammer will conduct his next soft tissue seminar on March 13-14, 1993, in Raleigh, North Carolina.

Dr. Hammer's book, Functional Soft Tissue Examination and Treatment by Manual Methods: The Extremities, is now available. Please see the Preferred Reading and Viewing list on page xx, Part #T-126 to order your copy.