

Therapeutic Muscle Stretching: Background and Principles

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In the treatment of patients with biomechanical faults, with or without articular restrictions, it may be necessary to assess and treat the surrounding soft tissue structures that may limit or initiate motion around these articulations. Without adequate mobility and flexibility of the muscles and fascia, there cannot be normal functioning of these joints.

For example, if a sprinter cannot fully extend the knee joint in a normal stride, he is disadvantaged since the stride length and speed (efficiency) will be significantly reduced.

In these individuals, muscle stretching techniques have been shown to successfully facilitate elongation in these tissues.¹ This is due, in part, to the mechanics of the technique itself, and to the active participation of the patient in therapy. The net result is a fairly rapid increase in range of motion (ROM), resolution of trigger points, a reduction of perceived pain during the treatment, and greater compliance by a better informed patient.

Stretching is usually divided into therapeutic stretching and self-stretching. Controlled, correctly positioned stretching is beneficial. But uncontrolled stretching of muscles and other structures may do damage by causing hypermobility and/or pathological instability.² Hypermobility will be addressed in an upcoming article.

Most athletes and people who exercise perform their self-stretching with tremendous forces applied over long lever arms, which is not always beneficial. Additionally, activities such as: gymnastics, yoga, diving, karate, ballet and jazzercise also pose the high hazard of stretching damage.

Also, many "popular" stretching books and videos, produced for the layman, do not take into consideration overstretching or articular biomechanics, and the reader/viewer may do more damage than good. Improper stretching often causes overstretching of normal functional tissues, while the shortened structures may not be adequately stretched.

The basis of muscle stretching techniques resulted from observations made in the late 19th century by British neurologist, C.S. Sherrington. From electromyographic tracings, he observed that a strong isometric muscular contraction is closely followed by a relaxation phase of similar proportion.

In addition, he observed that a contraction of an antagonist inhibits the agonist's contraction and vice versa. This reflex occurs at a spinal cord level and was described by Sherrington as "reciprocal inhibition".

These principles form a common basis for Therapeutic Muscle Stretching (TMS) as well as the technique of Proprioceptive Neurologic Facilitation (PNF). However, beyond these basic principles, these techniques clearly differ in their application and the intended result. TMS is far more

applicable with regard to the typical chiropractic practice. In the next article I will discuss Lewit and Janda's clinical studies with regard to TMS and postural faults.

References

1. Ekstand, J. Soccer Injuries and Their Prevention, Linkoping, 1982.
2. Evjenth, O.; and Hamberg, J. Muscle Stretching in Manual Therapy, Volume 1, Alftra Rehab, Alftra, Sweden, 1985.

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