Dynamic Chiropractic

SOFT TISSUE / TRIGGER POINTS

The Effects of Human Touch on Soft Tissues

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Research to date on the effect of soft tissue technique on the involved tissue is scarce and has been based primarily on the clinical observations of its authors.

> Cyriax stated that friction massage should be directed only across the fibers (transverse friction). He wrote that deep transverse frictions restore mobility to muscle in the same ways as manipulation frees a joint. He claimed that friction had a four-fold effect: traumatic hyperemia, therapeutic movement, increased tissue perfusion, and mechanoreceptor stimulation.[1]

> Barne's describes his myofascial technique: "the gentle tractioning forces applied to the fascial restrictions will elicit heat, a vasomotor response that increases blood flow to the affected area, enhance lymphatic drainage of toxic metabolic wastes, realign fascial planes, and most important, reset the soft tissue proprioceptive sensory mechanism."[2]

> Lewit uses what he calls a barrier technique where he applies a constant pressure against blocked tissue. He states that the "blockage" applied to a joint caused by a restrictive barrier in which a springing or giving away is lost, equally applies to soft tissues and muscles.[3]

> Leahy feels that active release technique releases the adhesions that form in muscles that are injured.[4] Active release pressure is exerted along the muscle plane.

> Counterstrain technique where a contact is made on soft tissue for 90 seconds is explained by the works of I.M. Koor, PhD and others. The overall effect is that of neuromuscular and proprioceptive re-education (resetting the gamma) to normalize background muscle tone and thus articular biomechanical function.[5]

While the above descriptions are useful, the exact mechanism of what is happening as we touch our patients in a variety of ways is still speculative. Deep friction may have a different effect on tissue than light traction or pressure. There is possibly a common thread underlying all types of pressure or traction on soft tissues.

An area of research that may be related to the effect of manual treatment on soft tissues comes under the heading of mechanical loading. Mechanical loading refers to tension produced by weight or static stretching. According to Frank and Hart,[6] "There is abundant experimental evidence suggesting that both the form and function of musculoskeletal soft tissues are influenced by mechanical loading." They state that "cells are the true transducers of load and cells in muscle, tendon, ligament, skin, and cartilage respond to load by increasing matrix synthesis, increasing metabolic activity, increasing their replication rates, and modifying their production of matrix components." Gillard et al.,[7] demonstrated

cell-mediated changes in the amount of glycosaminoglycan (GAG) by altering compressive and tensile loading on different areas of a tendon. Slack et al.,[8] caused cyclic tensile loading of isolated embryonic chick tendons in vitro and found that the fibroblasts increased their synthesis of proteins, GAGs, and DNA. Vogel et al.,[9] performed an experiment that indicates that the type of load may influence tissues differently. They found that compression of tendons caused greater production by fibroblasts of large proteoglycans than tensile stress on fibroblasts.

In recent years there have been many experiments on the effects of mechanical loading on soft tissues. The present day descriptions of the effect of soft tissue techniques presently in vogue is only touching the surface. Clearly, our effect is taking place on a cellular level.

References

1. Cyriax J, Coldham, M. Textbook of Orthopaedic Medicine, Vol.2, Treatment by Manipulation, Massage & Injection. London: Bailliere Teidall, 1984: 8-9.

2. Barnes JT. Myofascial Release: A Comprehensive Evaluatory and Treatment Approach, 3rd ed. Paoli: Pennsylvania: MFR Seminars, 1990: 18.

3. Lewit K. Manipulative Therapy in Rehabilitation of the Locomotor System, 2nd ed. London: Butterworth, 1991: 11.

4. Leahy M, Mock LE. Altered biomechanics of the shoulder and the subscapularis. Chir Sports Med 1991; 5: 62-69.

5. Roth GB. Counterstrain: Positional Release Therapy, Study Guide for Course Work in Counterstrain. Toronto, Ontario: Wellness Institute, 1993.

6. Frank CB, Hart DA: Cellular response to loading. In: Leadbetter WB, Buckwalter JA, Gordon SL: Sports-Induced Inflammation: Clinical and Basic Science Concepts. Park Ridge, IL: American Academy of Orthopedic Surgeons, 1990.

7. Gillard GC, Reilly HC, Bell-Booth PG, Flint MH: The influence of mechanical forces on the glycosaminoglycan content of the rabbit flexor digitorum profundus tendon. Connective Tissue Research 1979; 7: 37-46.

8. Slack C, Flint MH, Thompson BM. The effect of tensional load on isolated embryonic chick tendons in organ culture. Connect Tissue Res 1984; 12: 229-247.

9. Vogel KG, Keller EJ, Lenhoff RJ, Campbell K, Koob TJ: Protoglycan synthesis of fibroblast

cultures initiated from regions of adult bovine tendon subjected to different mechanical forces. Europ. J. of Cell Biology 1986; 41: 102-112.

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Editor's Note: Dr. Hammer will be conducting his next Subluxation Myopathology (SM) seminars in Toronto, Canada on April 29-30 and Seattle, Washington on May 20-21. You may call 1-800-359-2289 to register.

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