FASCIA: THE BODY'S SHOCK ABSORBER

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Special to PT Today

Impacts, falls, high velocity injuries and the various traumas of performance and life can create a shortening and thickening of the myofascial system. Trauma stimulates the body to generate additional connective tissue fibers as a form of compensation during the healing process.

Normally, these fibers later would be removed and replaced with healthy tissue at some rate by the natural processes the body uses. Often, however, the rate of assembly exceeds the rate of removal and the fibers build up. As a result of this buildup on the cellular level, the ground substance of the extracellular matrix solidifies.*

This also creates a dehydration of the ground substance creating electrical conductivity and a decrease in its ability to absorb shock. Trauma or malfunction of the fascia can set up the environment for poor cellular efficiency, necrosis, disease, pain and dysfunction throughout the body.

MOLECULAR STRUCTURE

Connective tissue is composed of collagen, elastin and the polysaccharide gel complex, or ground substance.* These form a threedimensional, interdependent system of strength, support, elasticity and cushion.

Collagen is a protein consisting of three polypeptide chains that line up to form fibrils in such a way as to ensure that there are no weak points that could give way under tension. Collagen fibers thus contribute strength to fascial tissue and guard against overextension.

Another protein, elastin, is intrinsically rubber-like. Its fibers are laid down in parallel with an excess length of collagen fibers in places where elasticity is required, such as skin and arteries. This combination adsorbs tensile forces. Tendons, specialized for pulling, mainly contain these elastocollagenous fibers.

The polysaccharide gel complex fills the space between fibers. Its main components are hyaluronic acid and proteoglycans. Hyaluronic acid is a highly viscous substance that lubricates the collagen, elastin and muscle fibers, allowing them to slide over each other with minimal friction. Proteoglycans are peptide chains that form the gel of the ground substance. This gel is extremely hydrophilic, allowing it to absorb the compressive forces of movement (cartilage, which acts as a shock absorber, contains water-rich gel).

As long as the forces are not too great the gel of the ground substance is designed to absorb shock and disperse it throughout the body. If fascia is restricted at the time of trauma, the forces cannot be dispersed properly and areas of the body are then subjected to an intolerable impact. The result is injury. The forces do not have to be enormous; a person who just does not have enough "give" can be severely injured.

This begins to explain the sports and performance injuries that reoccur despite extensive therapy and strengthening and flexibility programs. An athlete with fascial restrictions will not efficiently absorb the shocks of continued activity. The body then absorbs too much pressure in too small an area, and during performance the body keeps "breaking down."

This same effect takes place over time from the microtrauma of having discrepancies of leg length due to a torsioned pelvis. Each step sends imbalanced forces throughout the body. The body must compensate through muscular spasm and fascial restrictions, ultimately producing symptoms.

Myofascial release techniques are performed to reduce these symptoms. In addition to increased range of motion, the enormous pressure of the fascial restrictions are eliminated from pain-sensitive structures, alleviating symptoms and restoring the normal quantity and quality of motion and the body's ability to absorb shock.

Reference: Massage, Issue Number 44, July/August 1993