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Volume 9 Issue 3

Spotlight on The Equine Touch

Fascinating Fascia: Facts and FRiction, Part 2

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Part 1 focused on what fascia is and its functions. Part 2's focus is on fascial changes, dysfunction, and pathology.

To understand how fascia can be involved in function and dysfunction, we have to look at the microstructure of the fascia.

PREVENTION AND REHABILITATION

Prevention

Keeping the soft tissue in a healthy state is the best prevention for horse and human alike. Stopping the moving train once it is in this vicious cycle can be extremely hard work. When we have more systems involved and more victims from compensation, it is always harder to find out the primary problem, the criminal, and address it.

Just as movement requires life, so life requires movement. Physical activity is essential to good health. Actively working on improving our posture (by exercise or learning good postural habits) is a great strategy for longevity and good health.

Incorporating stretching exercises can be helpful, because with sensible stretching we can keep soft tissue elastic and pliable, while at the same time improving range of motion in joints.

Prevention for our horses includes the above, as well as taking good care of their feet – we know that feet greatly affect the horse's posture and movement. Too long, poorly balanced, or unhealthy feet can put the whole body into jeopardy as they affect shock absorption during locomotion, and bring extra stress upon the soft tissue and skeletal system.

Dental maintenance is also extremely important, as unbalanced teeth can disastrously affect the horse's head carriage, body posture, and biomechanics of the whole body (yes, the whole body, even the hindquarters).

Riding style, training, and the saddling system all can have a direct impact on the state of the soft tissue. It must be remembered that every excessive stress, injury or trauma will directly affect the soft tissue, and from there it is only a short step to initiate the vicious cycle, involving and affecting the whole body.

Bodywork used in the preventive manner helps to deal with the little things before they grow into big things with serious consequences.

Releasing tight muscles, after a training session or long ride resulting in such, can make an amazing difference. Improving general circulation and flow of body fluids during periods of immobility (stall rest during injury or after surgery etc.) can change the healing rate and even the results of the healing itself.

For rider and horse prevention, regular appointments (quarterly, monthly, weekly, or more often as needed) with a qualified and sensitive bodyworker are important. Caregivers can learn some hands-on techniques to provide support to the horse when it is needed.

Rehabilitation

There are many hands-on techniques and touch modalities that address the soft tissue of the body, helping it to return to its healthy and functioning state. Each technique can target different structures or different depths of soft tissue, even cell memory. The fascia should be regarded as a key tissue in restoring health and function in the body, as it is involved in almost every system.

Manual address of the fascia can change the structure of this compromised tissue, returning it from a sticky gel-like consistency to a more fluid and liquid-like state (pliable), and helping it break the cross-links to allow motion and flow. Releasing the fascia (and muscles), restoring their normal function, together with improved circulation and lymphatic drainage, can bring improvement to the whole body and mind of the human and the horse. 🍷🍷

Fascia's

microstructure

Healthy fascia is pliable tissue, with both elastic and plastic properties. Fascia, like other tissue in the body, consists of cells, fibers and the "ground substance" (the basic substance). The cells, which make up the connective tissue, are called fibroblasts. The fibroblasts produce fibers, mostly collagen fibers, aligned in roughly parallel bundles, with visible undulation or waviness – that gives the fascia a variable amount of slack. The bundles are organized into multilayer sheets that affect the fascia's thickness. The ground substance is a thin, jelly-like substance that contains mostly proteoglycans

(protein and carbohydrate molecule), among them hyaluronic acid, with lubricating properties that help the bundles slide freely over each other.



Stiff muscles and rigid fascia can also affect the joints and their range of motion, although the joints are not in trouble on their own ... (Basic Equine Touch, second of the Foreleg Moves)

The liquid properties of fascia play an important role in shock absorption – the ‘damping’ of the potentially damaging concussive forces accompanying movement. Sometimes the ground substance is described as a water-like substance that follows the laws of fluid mechanics. If too fast or too abrupt stress is applied to connective tissue (fascia), this water-like consistency changes to gel-like consistency, making it stiffer.

Clearly from that microscopic picture, healthy fascia in the body can facilitate movement and flow. Everything in the body can then function properly. The nerves can correctly signal (through electrochemical flow) their commands to all systems; all the muscles (striated and smooth) can contract and relax freely; and the blood and lymph can flow unrestricted to the cells, supplying them with oxygen and nutrition and at the same time taking care of their waste products, directing them via veins into the excretory organs. All organs 'move' (peristaltic motion), and the glands can provide their products (digestive juices or hormones) to the body according to its

needs. All this is harmonious movement, coming from and establishing homeostasis. Movement is life. In the healthy body, everything moves and flows.

Fascial changes that perpetuate dysfunction: Injuries, trauma, repetitive extra stress, and simply ageing affect the fascia in negative ways. The inflammation, repair or remodeling that usually follows these situations brings changes. A fascial lesion heals by spider-webbing together with irregularly arranged bundles of collagen fibers and the fascia changes its properties; it becomes more sticky and tight. Visible under a microscope are random intermolecular cross-bonds between the fibers, the bundles, or adjacent tissue. The ground substance now has a decreased water content and the gel consistency is getting thicker. All these changes prevent the collagen bundles from easily sliding past one another, which negatively affects all motion.

It is very interesting that similar changes within connective tissue can be detected during immobility (due to pain, injury or lifestyle). Fascia, as well as tendons, joint capsules, and ligaments, may polymerize and lose flexibility after only three weeks of inhibited motion (including being stallbound).

As movement becomes more and more impaired, the function of the soft tissue (and other systems later on) diminishes. Fascia adheres to fascia, with its collagen fibers coiling in on themselves and leaving the fascia chronically shortened. The lack of movement between adjacent fascial sheets of soft tissue permits the fascia's collagen fibers to form the aforementioned intermolecular cross-bonds. In effect, the fascial sheets polymerize into a somewhat continuous, constricting straight-jacket of living flesh.

Pathology of the fascia (and muscles): Fascia can have a direct effect on the function and structure of soft tissue, and through it even the skeletal system, but it can also influence almost every tissue and its function in the whole body.



...they simply become the victims of tightness in the surrounding soft tissue. (Basic Equine Touch, first of the Foreleg Moves)

Abused, misused, overused, or underused soft tissue will show first functional, then structural, changes. Muscles become shorter and tighter, and where there is tight muscle, there is usually tight fascia. Tight fascia can produce the same pain as tensed muscle. Myofascia is also where trigger points are located – painful nodules inside the tight bands of muscle or fascia that produce (trigger) pain under compression (or other stimulation). The triggered pain can be experienced in distant areas, farther away from where the trigger points develop. For example, stimulation of the trigger points in our sternocleidomastoid (a muscle on the side of the neck) can trigger pain in the head region, causing headache in the frontal area, earache, or even dizziness. This could explain why the pain (or the symptoms) can be registered far from the cause. The trigger point effect and locations in humans are well researched and laid out, however we may have to wait for some time before comparative research is carried out on the horse.

The continuous nature of fascia may also help to explain why an injury in one part of the body can have a profound effect in other more distant parts. Imagine a shirt; if there is tightness in one part, the collar rolled inside for example, it will be misshapen with defined tension across the whole body of the shirt. The same with fascia - tension in one area can be transferred to another. Pain in the head may be due to fascial strain in the shoulder, or a fallen foot arch may profoundly affect the TMJ (temporomandibular joint).

Stiff muscles and rigid fascia can also affect the joints and their range of motion, although the joints are not in trouble on their own - they simply become the victims of tightness in the surrounding soft tissue.

According to physical therapist John Barnes, contracted fascia can exert tremendous tensile force. Imagine that excessive pressure being applied to soft structures, which are encapsulated by fascia, or to all organs, where fascia is a structural part. This explanation suggests to us that fascial dysfunction can affect the many inner organs as well as the whole structural body, in surprising ways.



The continuous nature of fascia helps to explain why an injury in one part of the body can have a profound effect in other more distant parts, such as TMJ or hindquarter imbalances affecting each other. (Basic Equine Touch, first [left] and last [right] of the TMJ/Head Moves)

Constant or excess fascial pressure can squeeze the vessels, diminishing the flow of fluid within them. Tight fascia can entrap and pinch the nerves, resulting in not only pain but in the improper function of muscle, inner organs and glands. Lymphatic circulation will also be stressed as lymph transport to the major vein in the thoracic cavity is slowed, due to narrowed vessels. This return transport system depends totally on the activity of the surrounding muscles to pump the fluid towards the thorax, and any dysfunction of the muscles will cause stagnation. Cells in the tissues will no longer work efficiently and the organs will begin to show signs of disturbed function. Tight and sore muscles will inhibit general motion and eventually worsen that situation.



Pain (from pinched nerves and toxins) "poisons" the mind and changes behavior, and the body is then caught in one big vicious cycle all because of the consequences from one simple injury, trauma, or stress (including inactivity) to the soft tissue.

(Basic Equine Touch, first [left] and second [right] of the Neck Moves)

Pain (from pinched nerves and toxins) "poisons" the mind and changes behavior, and the body is then caught in one big vicious cycle all because of the consequences from one simple injury, trauma, or stress (including inactivity) to the soft tissue.

Even when the primary external stimulus, triggering this situation, is removed, the soft tissue does not always return to the pre-injury state (the wounds heal, but the body remembers). Fascia has profound 'cellular memory' properties and can store all the 'bad' situations during our lifetime. Many restrictions can therefore persist for a long period of time, and sometimes the body requires external help to solve the remaining problem.

About the author:

MVDr. Ivana Ruddock is a veterinarian from the Czech Republic and a member of the American Holistic Veterinary Medical Association. An avid researcher and former lecturer in anatomy and physiology, she is also the Director in charge of Education for the Equine Touch Foundation, which she and her husband Jock Ruddock developed. The Equine Touch, described as the 'ultimate hands on modality for horses', is the first equine bodywork discipline in the United Kingdom to be awarded national accreditation status.