Myofacial treatment, part of the osteopathy or individual method

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1. **Introduction**:

It has been many centuries since Hippocrates recommended the use of physical treatments, and over 100 years since Dr. Andrew Taylor Still developed osteopathy as a formal system of manual medicine. Osteopathy is a comprehensive method of manual therapy that focuses on the overall health of the body. Founded by Still in the mid-1800s in America, the approach is based on a simple belief: when the body's structure is properly aligned, functions normally, and has a healthy blood and nerve supply, the body’s natural ability to heal itself is restored.

Dr. Still’s osteopathic principles are based on four main ideas. First, he believed that the body functions like a machine, and it operates optimally when all its parts are in proper alignment and working together. The second principle emphasizes that the body has an innate ability to maintain its health and heal itself when given the right conditions. The third principle highlights the connection between structure and function, meaning that changes in the body’s structure, particularly in the musculoskeletal system, can affect the function of other systems and vice versa. Treatment in osteopathy is built upon understanding these principles and applying them to help restore balance and health in the body.

Ther is a five models of osteopathy. They provide a framework for diagnosing and treating dysfunctions in the body. These models guide Osteopathic Manipulative Treatment (OMT) and patient care.

1. Biomechanical Model (Structural & Postural) Restore proper alignment, posture, and movement
2. Respiratory-Circulatory Model Improve oxygenation, circulation, and immune function

3. Neurological Model Optimize nerve function, proprioception, and pain modulation
4. Metabolic-Energy Model Improve nutrition, cellular function, and body recovery
5. Behavioral-Psychosocial Model Address trauma, stress, and emotional factors in physical health.

Most of the fascia treatment belongs to the biomechanical model, but after new reaserch we can connect them to all models of osteopathy.

Fascia plays a crucial role in osteopathic diagnoses and treatment. It is a connective tissue that allows practitioners to approach the body in a holistic way. When a person experiences an injury or inflammation, the fascia loses its ability to move freely, leading to increased tension and tightness in the body. This restriction causes muscles to contract and joints to lose their range of motion, which in turn affects the fascia around them. To restore balance in the body, it is necessary to release this tension and restore mobility to the muscles, joints, and fascia. A restriction in one part of the body can also lead to tightness and reduced movement in other areas.

2 Anathomy and function of fascia

Fascia consists of layers of connective tissue located just beneath the skin. These tissues play various roles, such as attaching and stabilizing structures, providing strength, maintaining the openness of blood vessels, separating muscles, and enclosing different organs. Historically, the term fascia was mainly used by surgeons to refer to the dissectible tissue that surrounds organs, muscles, and bones. However, its definition has evolved to encompass all soft tissues in the body made of collagen, including the cells responsible for creating and maintaining the extracellular matrix. The updated definition now also includes certain tendons, ligaments, bursae, and the different layers surrounding muscles, such as the endomysium, perimysium, and epimysium.

The cellular components of fascia includes fibroblasts, fat cells (adipocytes), macrophages, mast cells, undifferentiated mesenchymal cells, plasma cells, and white blood cells (leukocytes). Among these, fibroblasts are the most numerous. These cells are regulated by hormones and are crucial for producing complex carbohydrates, collagen, elastin fibers, and other proteins that make up the extracellular matrix.

The brillar component of fascia includes two main bre types: collagen and elastin.

Collagen fibres are rather not flexible but become stiff and strong when subject to tension. This tension and resulting strength is provided by covalent cross links between collagen molecules, which develop and arrange according to the direction and magnitude of mechanical loads applied to them (Hukins & Aspden, 1985; Stecco, 2015). The alignment of the collagen fibre itself is usually along lines of tensile stress and hence can be indicative of loading patterns and function.

Elastic fibers are made up of two main components: elastin and microfibrils. Unlike collagen fibers, which provide strength and support, elastic fibers give tissues the ability to stretch and return to their original shape. They can stretch up to 150% of their original length when force is applied, and then return to their normal length once the force is removed. Collagen fibers, which are more rigid and can only stretch by less than 10% before breaking, are often woven together with elastic fibers to help prevent overstretching and damage.

The final part of the fascial system is the e**xtracellular matrix,** which helps distribute mechanical forces and provides a structural framework for cells to attach and move. It consists of both elastic and collagen fibers, as well as a gel-like substance called the ground substance. The ground substance surrounds the cellular and fibrous components of fascia and serves to support and nourish the cells. Its water content, which affects its viscosity, plays a key role in the overall flexibility and connectivity of the connective tissue matrix. This allows the fibers to move with minimal friction. The main components of the ground substance include proteoglycans, hyaluronic acid, and link proteins. (Lusi C.M. And Davies H. M. S.Fascial Anatomy of the Equine Forelimb. 2018)

There are four main types of fascia:

1.1 Superficial fascia is located just beneath the skin. It helps attach the skin to underlying structures while allowing flexibility and movement, protects muscles and organs from impact. It contains fat, nerves, blood vessels, and lymphatic vessels. It helps with skin movement, energy storage, and thermoregulation.

1.2 Deep fascia, unlike superficial fascia, is tougher and more rigid, providing structural support and aiding in force transmission. Deep fascia is stronger and less flexible than superficial fascia, making it essential for movement, stability, and protection. It has highly organized layers – forms sheaths around muscles, tendons, and ligaments , Primarily composed of collagen fibers. Unlike superficial fascia, deep fascia contains little to no adipose tissue. Becouse she is Rich in Nerve Endings Plays a role in proprioception (body awareness). It also reduces friction , allowing muscles to glide smoothly over each other.

1.3 Visceral fascia (Subserous fascia) is a specialized connective tissue that surrounds and supports the internal organs (viscera) within the thoracic, abdominal, and pelvic cavities. It helps hold organs in place while allowing movement and function. Elastic and collagen fibers in visceral fascia allow organs to expand and contract (lungs during breathing, stomach during digestion). Becouse it is rich in blood and lymphatic vessels, it supports nutrient exchange and immune function. It also work as a shock absorption and protects organs from mechanical stress.

1.4 Parietal fascia is the connective tissue lining the walls of body cavities (thoracic, abdominal, and pelvic cavities). It works closely with visceral fascia, which surrounds internal organs, to provide support and structural integrity. Works closely with visceral fascia to support internal structures.

Fascia, is rich in sensory receptors that play a crucial role in proprioception (body awareness), pain perception, and movement coordination. These receptors communicate with the nervous system to regulate muscle tone, posture, and balance. That,s why is so important in manual treatment.

Receptors in Fascia: sensory and proprioceptive functions

Mechanoreceptors

a) Golgi Tendon Organs (GTOs) are specialized sensory receptors located in the tendons of muscles. Found at the junction where muscles connect to tendons. Connected to afferent nerve fibers that send signals to the central nervous system (CNS). They monitor tension and force generated by muscle contractions and play a crucial role in protecting muscles from excessive strain. When excessive tension is detected, GTOs signal the spinal cord to reduce muscle contraction, preventing injury.

b) Pacinian Corpuscles are rapidly adapting mechanoreceptors that detect vibration and deep pressure in the skin, fascia, and joints. They help the body respond to changes in touch, movement, and mechanical stress. Located in deep fascia, joints, and ligaments.

c) Ruffini Endings are slowly adapting mechanoreceptors that detect sustained pressure, skin stretch, and joint movement. They play a crucial role in proprioception, grip control, and posture regulation. Located in joint capsules, they help the brain sense joint position and movement.

Nociceptors (Pain Receptors) are located throughout all layers of fascia. It detect pain, inflammation, and tissue damage and can become hypersensitive in chronic pain conditions (e.g., fibromyalgia).

Interstitial Receptors (Fluid & Blood Flow Sensors) can be found in superficial and deep fascia. It Detect changes in fluid pressure, oxygen levels, and muscle tone.

Proprioceptors (Body Awareness Sensors) are located in muscle spindles and joint-related fascia, that provide information about body position, movement, and balance. They help maintain coordination, posture, and motor control by constantly sending feedback to the brain and spinal cord. Besides of golgi tendon organs , pacinian corpuscles and ruffini endings we have muscles spindles and free nerve endings

a) Muscle Spindles are found inside muscles, parallel to muscle fibers. They can detect muscle stretch and speed of movement. They helping maintain muscle tone and prevent overstretching.

b) Free nerve endings are unencapsulated sensory receptors found throughout the body, especially in fascia, muscles, joints, and skin. They detect pain (nociception), temperature, touch, and chemical changes, playing a crucial role in the body's protective and sensory responses.

Including all the aspect of anatomy, function and the location fascia in the body, almost every treatment have to have a fluent to the fascia matrix.

3. Osteopath and scientist about fascia

Andrew Still, the father of osteopathy, was perhaps the first to talk about the importance of fascia. “In every view we take of the fascia a wonder appears. The part the fascia takes in life and death gives us one of the greatest problems to solve. It surrounds each muscle, vein, nerve, and all organs of the body. It has a network of nerves, cells, and tubesrunning to and from it; it is crossed and no doubt filled with millions of nerve-centers and fibers which carry on the work of secreting and excreting fluids vital and destructive. By its action we live and by its failure we die.” (Still A.T The Philosophy and Mechanical Principles of Osteopathy 1902)

First scientist, who intredted fascia for was Ida Rolf. Her therapy aimed at realigning fascia called Rolfing®. She Introduced the idea that manipulating fascia could improve posture and movement. Fascia is a continuous, three-dimensional web that supports and organizes the body. Misaligned fascia creates poor posture, which leads to chronic tension and pain. (Rolf, Rolfing: The Integration of Human Structures, 1977.)

One of the students of Ida Rolf, Tom Myers was mapping fascial connections throughout the body. Its called Anatomy Trains. (Myers, Anatomy Trains: Myofascial Meridians for Manual & Movement Therapists, 2001.) The main concept was that the chronic pain, poor posture, or inefficient movement can be traced through fascial pathways, rather than just individual joints or muscles. Instead of treating pain in one spot, therapists should analyze entire fascial lines to find the root cause.

Another student of ida Rolf, Joseph Heller . He developed Hellerwork Structural Integration in the 1970s. His work expanded on Dr. Ida Rolf's principles by integrating deep tissue bodywork, movement education, and emotional awareness into a holistic approach to posture, pain relief, and personal growth.

Dr. Robert Schleip discovered that fascia is rich in sensory receptors (Schleip, Fascia as a Sensory Organ, 2011.), playing a major role in proprioception and movement coordination. His studies revealed that fascia is not just a passive structure but an active (Schleip et al., Fascial plasticity – A new neurobiological explanation, 2003)Fascia behaves like a liquid-crystal matrix, meaning hydration affects its flexibility. (Schleip et al., The Fascial Network, 2012.)He discovered also that Fascia is connected to the autonomic nervous system, meaning stress and emotional tension can tighten fascia. (Schleip et al., Fascia and Pain, 2014.)

Dr. Luigi Stecco and Dr. Carla Stecco are leading researchers in fascial science and the developers of Fascial Manipulation® (FM). Their work has transformed the understanding of fascia as a key organ in movement, proprioception, and pain modulation. Fascia is organized into "myofascial units", each coordinating movement across joints. Dysfunction in one part of the fascial network can cause compensation and pain elsewhere. Chronic pain is often not localized but comes from distant fascial restrictions. Treatment must address entire myofascial chains, not just isolated muscles. (Stecco L. Fascial Manipulation for Musculoskeletal Pain, 2004.)Fascial Manipulation® (FM) – A hands-on technique to release fascial adhesions and densifications.

Off course its not all scientists intrested in fascia. Every year we get new reaserch and discoveries , that show us the popular of this subject. We still dont't know much of the role and posibility of using the fascia.

3. Fascia treatment.

Every human theories of fascia can be used on every mammals. Thats why all the hands on terapy was succesfull adapted on animals.

Myofascial Release: is defined by Manheim (2001) as the facilitation of mechanical, neural, and psycho physiological adaptive potential as interfaced via the myofascial system.It involves the application of a low load, long duration stroke, along the lines of maximal fascial restriction . The terapist palpates the latter and the pressure is applied directly to the skin, into the direction of restriction, until resistance (the tissue barrier) is felt. Once found, the collagenous barrier is engaged for 90e120 s, without sliding over the skin or forcing the tissue (Manheim, 2001), until the fascia complex starts to yield and a sensation of softening is achieved. (Manheim, C.J., 2001. The Myofascial Release Manual, .)

Still Technique The principle of requires firstly determination of position of ease for the fascial element that is restricted; secondly the introduction and maintenance of a compressive force into the tissue; and finally the application of force to follow the tissue as it unwinds along its wandering pathway toward, and through, the position of initial restriction

Stuctural integration its based on Hellerwork and Rolfing. focus on posture, movement efficiency, and fascial release. To correctthe problem therapist uses mild, direct pressure to melt or release fascial holdings and allow the body to find health through the re-establishment of balance. It is currently believed that the slow, deep strokes stimulate intra-fascial mechanoreceptors (sensory neurons of the muscle nerve), which in turn trigger the nervous system to reduce the tension of the related muscles and fascia. We can say that the treatment allows the brain and nervous system to "re-boot" areas of the body that are receiving too much electrical stimulation (chronically tight or sore muscles). (www.rolf.org)

A founder of Equine Structural Integration is Joseph Freeman, a hellerwork practitioner, who start to work with horses. In 1998 he started to teach in the Equine Natural Movement School, It includes few sesion to change the fascia system, for human 10, for horses 5. (www.equinenaturalmovement.com)

Equine Myofascial Lines: The concept of myofascial lines in horses is inspired by Tom Myers' "Anatomy Trains", which describes how fascia creates interconnected pathways of tension and movement in the body. In equine anatomy, these lines help explain posture, movement efficiency, compensation patterns, and injury risks.

Dr. Rikke Schultz and Vibeke Elbrønd adapted Myers' work to horses, identifying equine myofascial lines that connect muscle and fascial chains across the body. (Elbrønd VS, Schult RM Myofascial Kinetic Lines in Horses 2014)

In human **12 major fascial lines** that organize movement and stability:

- **Superficial Front Line (SFL)** – Affects front-body posture & core stability.
- **Superficial Back Line (SBL)** – Connects plantar fascia, hamstrings, and spine.
- **Lateral Line (LL)** – Controls side bending and balance.
- **Spiral Line (SL)** – Affects rotation and counterbalance.
- **Deep Front Line (DFL)** – Key for core stabilization and breath control.
- **Arm & Functional Lines** – Influence upper body movement patterns.

(Myers, *Anatomy Trains*, 3rd Edition, 2014.)

" In horses we have the Superficial Dorsal Line (SDL), Superficial Ventral Line (SVL), Lateral Line (LL), Spiral Line (SL), and Functional Line (FL). SDL included hind limb flexors and the errector spinae group, which extend the hip and spine. SVL is antagonist and included hind limb extensors, abdominal muscles, and ventral neck muscles. LL followed myofascial tissues along the side of the abdomen and produced latero-flexion of the spine. FL and SL formed spiral lines concerned with spinal axial rotation. FL connected the front limb to the contralateral hind limb by crossing over the midline at the thoraco-lumbar level dorsal and ventral on the trunk. SL connected one side of the neck with the contralateral front limb and ipsilateral hind limb by a helical course around the body crossing over at the cervico-thoracic and lumbo-sacral junctions.The SBL, SVL and LL complete a functional anatomical ring, which balances the dorsal, ventral and lateral motion patterns of the horse. The helical FL and SL determine the spinal axial rotation. " (Rikke M. Schultz, Tove Due, Vibeke S. Elbrond Equine Myofascial Kinetic Lines for professionals 2021)

Specific points to treat each line has been found and tested by Tove Due. Every line has at least one point which after stymulation will release the tension in the line. The stimulation can be the acupuncture, laser, infrared light or pressure.

Stecco Fascial Manipulation® Fascial Manipulation® (FM) by Luigi and Carla Stecco is a manual therapy approach that focuses on the deep fascial system to treat pain, movement dysfunctions, and postural imbalances. This method is based on scientific research into how fascia influences biomechanics, proprioception, and neuromuscular coordination. The idea of the treatment is that dysfunctions in one fascial point can cause compensatory patterns throughout the body. Releasing specific fascial points restores normal movement and reduces pain.(Stecco, L. (2004). Fascial Manipulation for Musculoskeletal Pain.) The body moves through myofascial sequences (MFU), not just isolated muscles. MFU is composing of: motor units fibres, which are innervating the segment when it is moving in specific direction, joint, nervous system, veins and lymphatic system and fascia, which is uniting the system. Fascia contains densely innervated "Centers of Coordination" (CC) and "Centers of Fusion" (CF) that organize movement. Part of the deep fascia that is connected to periosteumand part is connected to the epimysium of the muscle. Other parts of the fascial system can move freely. Myofascial expansions together with the muscles are creating tension in the deep fascia. Vectors of these forces are forming CCs. CCs are often located in the area of muscle belly and they are palpated from the deep fascia.

Centre of fusion (CF) is uniting two movement directions and combining them in one point. They are located near joints in retinacula areas. CF synchronizes movement between CCs. the main functions of the CF is proprioception. CC is connected to the function of the muscle spindles. CF is connected to the function of GTO, Ruffini nerve endings and Pacini corpuscles .

Befor the treatment terapist should check the range of motion of the joints, to choose the dysfunctional line. Then apply manual pressure on specific CC or CF points to release fascial densifications :(“chrunchy”soft tissue) pain, changes of fascial layers movment, to restore neuromuscular coordination and full-range movement. (Mika Pihlman & Tuulia Luomala, 2017 Material from the course)

Animal Fascial Manipulation (Animal FM) is an adaptation of the Fascial Manipulation® method developed for treating animals, particularly horses, dogs, and other companion or working animals. It is based on the work of Luigi Stecco, originally designed for humans, and has been expanded by Tuulia Luomala and Mika Pihlman, Finnish physiotherapists ,to address fascial dysfunctions in animals.

Craniosacral therapy (CST) is a gentle, hands-on therapy that focuses on evaluating and enhancing the function of the craniosacral system—the membranes and cerebrospinal fluid that surround the brain and spinal cord. CST is used to relieve pain, improve movement, and support the body's natural healing processes.Craniosacral Therapy (CST) was developed by Dr. John E. Upledger (1932–2012), an American osteopathic physician and researcher. It is based on the idea that the craniosacral system has a subtle rhythmic motion (the craniosacral rhythm) that can be felt and influenced by a trained therapist. (J.E. Upledger Craniosacral Therapy 1983).

Membranes in the head, called The meninges are three layers of connective tissue that surround and protect the brain and spinal cord. They provide structural support, circulation of cerebrospinal fluid (CSF), and a barrier against infections and trauma. So working on them is also a fascial treatment. Craniosacral therapy is also used in horses, dogs, and other animals to improve movement, relieve tension, and support rehabilitation.

The role of fascia in osteopathic treatment is central. By addressing fascial restrictions and promoting healthy movement patterns, osteopathic practitioners aim to improve both the structural and functional aspects of the body, leading to better outcomes in pain relief, mobility, and overall wellness.Tension, adhesions, or restrictions within the fascial layers can contribute to chronic pain conditions. Fascial restrictions can alter biomechanics and create abnormal strain patterns in muscles and joints.

4. Conclusions

Fascia is a continuous, connective tissue network that envelops muscles, bones, and organs throughout the body. Because it is so widespread, many manual therapy techniques, whether or not they are specifically designed with fascia in mind, will interact with or influence fascial tissues to some degree. Techniques like myofascial release, Rolfing, or certain types of soft tissue mobilization are explicitly developed to assess and treat restrictions, adhesions, and tension within the fascial network. Their primary intent is to improve the mobility, hydration, and elasticity of fascia.

Other osteopatic treatment, such as joint mobilizations, spinal manipulations, or neuromuscular reeducation, may also affect the fascia indirectly but are primarily aimed at influencing joint mechanics, muscle function, or neurological responses. In these cases, while fascial changes might occur as a secondary effect, the treatment isn’t defined by a focus on fascia. Even if a treatment isn't labeled as a "fascial therapy," many manual techniques work by affecting multiple tissue types simultaneously. The mechanical forces applied during these treatments can alter the behavior of fascia along with muscles, tendons, ligaments, and even neural elements. However, the therapeutic rationale may not center on fascia.

Research into fascia has significantly influenced the field of osteopathy, reshaping both its theoretical framework and practical approaches. Studies on the viscoelastic and fluid-like properties of fascia have provided insights into how fascial tissues respond to mechanical stress, injury, and therapeutic manipulation. This has deepened osteopathic practitioners' understanding of tissue mechanics. By addressing fascial dysfunction, osteopathic treatments have shown promising results in managing chronic pain and improving functional movement. Patients with conditions like fibromyalgia, chronic low back pain, and other musculoskeletal disorders benefit from therapies that target fascial restrictions. The recognition of fascia's role in overall health has contributed to a more holistic treatment paradigm in osteopathy, where practitioners not only address symptoms but also consider the underlying connective tissue dysfunction.

Bibliography

1. Carla M. , Davies Helen M. S. *Fascial Anatomy of the Equine Forelimb.* 2018)

2.Elbrond V.S. Schultz R.M *Myofascial Kinetic Lines in Horses* 2014

3. Mika Pihlman & Tuulia Luomala, Material from the course 2017

4.Manheim, C.J.,. *The Myofascial Release Manual,* . 2001

5.Myers, *Anatomy Trains: Myofascial Meridians for Manual & Movement Therapists,* 2001.)

6. Myers, *Anatomy Trains, 3rd Edition,* 2014.

7. Rolf, *Rolfing: The Integration of Human Structures,* 1977.)

8.Schleip et al., *Fascial plasticity – A new neurobiological explanation*, 2003)

9.Schleip, *Fascia as a Sensory Organ,* 2011.

10. Schleip et al., *The Fascial Network,* 2012.

11. Schleip, R., Jäger, H., & Klingler, W. *What Is Fascial Tissue? A Review of Its Structure, Function, and Clinical Relevance.* Journal of Bodywork and Movement Therapies, 16(4), 496–502. (2012)

12. Schleip et al., *Fascia and Pain,* 2014.)

13. Stecco L. *Fascial Manipulation for Musculoskeletal Pain,* 2004.

14. **Stecco, C., Macchi, V., Porzionato, A., et al.** *The Fascial Network: A Morphologic and Functional Analysis.* Journal of Bodywork and Movement Therapies, 18(2), 308–316. (2014).

15. Schultz Rikke M., Due Tove, ElbrondVibeke S. *Equine Myofascial Kinetic Lines for professionals"* 2021

16. Still Andrew Taylor"*The Philosophy and Mechanical Principles of Osteopathy"*1902

17. Tozzi P., *Selected fascial aspects of osteopathic practice* 2012

18. Upledger J.E. *Craniosacral Therapy* 1983

19. www.rolf.org

20. www.equinenaturalmovement.com