# The Importance of Fascia & Myofascial Release

# In Manual Osteopathy

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**Structure of Fascia:**

Fascia is composed of three layers: an outer superficial layer, a middle layer, and a deep inner layer. Fascia is a connective tissue that encases and connects all muscles and organs in the body, providing lubrication and support. There is continuity in this fascial envelope from head to toe. It has been likened to yarn in a sweater or a spider's web. Anatomical displays tend to show the bones, muscles, nerves and veins, but leave out the fascia that connects them. If left intact this would allow people to see the full picture, shedding light on these fascial connections. Fascia is made up of layers of collagen. It surrounds and holds together all parts of the body. It allows for movement and connectivity between parts of the body and plays a big part in ensuring our structural health and range of motion. The collagen is laid down in specific directions in response to stress exerted on the tissue. It is a living tissue containing fluids and blood vessels. Fascial fibres run in many directions, allowing it to move with the surrounding tissues. Its structure changes based on a person's movement patterns and in response to stressors. If there are restrictions in the fascia, the muscles and joints are unable to move freely. If an individual develops bad posture, the fascia molds accordingly causing the body to become stuck in a maladaptive position. These compressions and misalignments can even lead to inflammation and joint deterioration if prolonged.

**Description of Myofascial Release:**

Myofascial release (MFR) reduces tension by applying gentle sustained pressure to fascial connective tissue. The slow gentle pressure reduces pain and increases mobility. Myofascial release is used to treat musculoskeletal pain and loss of mobility. It is a holistic treatment that treats the body as an integrated whole. Myofascial therapy

allows muscles and connective tissue to release restrictions and improve overall functioning. MFR is achieved through releasing tension at trigger points by applying a gentle and constant pressure over the tissue until the tissue is released. This is done in layers, increasing pressure as the fascia releases. Pulsing, vibration, heat, or even spasm may be felt as the fascia is released. After the client will feel a sense of relaxation and a reduction in pain.

**History of Fascia and Fascial Release:**

There is some disagreement in the literature, but Andrew Still, the father of osteopathy, was perhaps the first to talk about the importance of fascia. He emphasized the importance of connective tissue and treating the body as a whole. In the early 1900s he referred to myofascial release as "fascial twist". Scientist Ida Rolf later studied myofascial techniques in great detail in the mid 1900s. Her understanding of fascia and the structures of the body was aided by her doctoral studies of biochemistry. The term myofascial was first used in the medical literature by Dr. Janet Travell in the 1940s. The actual term myofascial release was coined by Dr. Robert Ward in 1960, an osteopath who studied under Ida Rolf.

**Dr Andrew Still on Fascia:**

Dr. Andrew Still elegantly stated in reference to fascia, "This connecting substance must be free at all parts to receive and discharge all fluids, and use them in sustaining animal life, and eject all impurities, that health may not be impaired by dead and poisonous fluids." (Findley T., 1910) Still believed fascia was critical to our health and wellbeing.

He further emphasized the importance he places on fascia by this statement, "By its actions we live and by its failure we die." (Rosen M., 2008) Dr. Still believed fascia to be the root of all conception as well as disease. If unobstructed it could be a great source of nourishment and renewal. However, if this flow is restricted, it can be a great source of illness. Still describes the relation between fascia and muscle in the following way, "Each fibre of all muscle owes its pliability to that yielding septum-washer, that gives all muscles help to glide over and around all adjacent muscles and ligaments. It not only lubricates the fibres but gives nourishment to all parts of the body." (Findley T., 1910). This demonstrates his belief in the importance of fascia to the wellness of the muscular skeletal system. Considering the emphasis and importance Dr. Still, the father of osteopathy placed on fascia, it is surprising more research has not been done on fascia's role in manual osteopathy.

**Importance of Fascia in Osteopathy:**

Fascia is extremely important to osteopathic diagnoses and treatment. This connective tissue allows the manual practitioner to view and treat the client in a holistic manner. When an individual experiences injury or inflammation, the fascia loses its freedom of movement. This creates tension and tightness in the body. When muscles contract and joints lose their mobility, it increases tension in the surrounding fascia. In order to return the body to homeostasis, tension needs to be released and mobility returned to the joints, muscles, and fascia. A fascial restriction in one part of the body creates tightness and a reduced range of motion in other areas as well. When fascia is released overall functioning is improved. Osteopathy includes three major components:

mobilizations, muscle energy techniques, and soft tissue therapy. Trigger point therapy and myofascial release fall under soft tissue treatment. Mobilizations help to release and mobilize the joints, while fascial release helps to ease tension in the muscles and surrounding tissues. Including myofascial release in therapy allows for a more global and integrated treatment for the patient.

**Myofascial Release & Dropping Holding Patterns:**

Fascia is affected by body structure and stress. If we form bad alignment through injury or poor posture, the fascia "locks" us into this position. Muscles and fascia that have been locked into shortened positions need to be released. Even if mobilizations are performed on the joints, the body will return to maladaptive patterns and posture unless the fascia is released. Soft tissue and myofascial release are a good adjunct to MET and mobilizations. By dropping old holding patterns the changes become more integrated and long lasting. The release of fascial tension results in better biochemistry, allowing for a more fluid exchange of oxygen and nutrients between tissues. Once the fascia has been released from old holding patterns and alignment is restored, the collagen can be laid down in a healthier manner. This allows for better posture and a greater range of motion.

**The Mechanisms Behind Fascia:**

Much still needs to be learned about the biochemistry and mechanisms involved in fascia. It is hoped that more research into the structure and function of fascia will increase our understanding and the treatment of musculoskeletal issues.

Muscle and fascia share load and tensions. Muscles transmit force onto fascial sheets rather than exerting their full force on the skeleton through the tendons. More motor units are used if more force is required. There is a rotational system the motor units use so that some motor units get a rest while others take over briefly. If resistance is encountered more motor units step in. This happens without our conscious awareness. Dr. Gracovetsky demonstrated that the muscles and fascia share the load of the lumbar spine. If fascia takes on too much force it would stretch too much, while if pressure was always on the muscle it would tire.

The scope of fascial connections goes beyond connecting muscles bones and ligaments. The nucleus, the very core of the cell is affected. For instance, Dr. Ingber showed how even a light touch on a cell's surface causes the nucleus to expand and begin transcribing DNA. The cell itself is affected by the compression and tension around it. The interim sensors in the cell can sense and transmit information about physical forces and mechanical stresses. Cells can communicate with other cells about the stress they're experiencing. Mechanical signals from outside the cell can be converted into internal biochemical reactions. An understanding of this framework at a biochemical level can help us to better understand stress disorders in the body and the mechanisms of action in manual therapies.

Dr. Grinned demonstrated the importance of fibroblasts cells in the fascia. At rest there is little tension and low synthesis of collagen. If tension is high the fibroblasts increase their collagen synthesis and cells reproduce. These changes at the cellular level can be

measured in studies to test the effects of manual therapies on fascial tension. By changing shape the fibroblast this can affect the rigidity and thickness of connective tissue. One must wonder, "Does the fibroblast just respond to the mechanical forces around it, or is it a primary force for directing growth and adaptation?" (Findley T., 2011). If researchers better understand how cells respond to forces, better or more refined manual treatments can be developed.

Deep fascia provides gliding and protective functions. Between the deep fascia and the muscle, there is a lubricating layer of hyaluronic acid which allows fluidity and sliding between fascia and muscle. If there is trauma to the muscle, the fascia becomes irritated and no longer produces a lubricating layer of hyaluronan. Restoring this lubricating layer is important to manual therapists. In his paper, Findley asserts that fluid flow in fascia is very important. Interstitial flow in soft tissue is mainly influenced by blood flow. The pressure gradient is strongly influenced by movements of the skeleton, organ movement, respiration and arterial pulsation. Increased fluid flow increases the production of collagen. The properties of the connective tissue surrounding muscles and organs is constantly changing. There is much complexity in the fluid. This is important to manual therapists. Fascia helps to regulate fluid flow. It is not a passive filter. By affecting the fascia the flow of fluid is affected. By releasing tension in fascia, contraction is released and flow is increased. Much still needs to be learned about the biochemistry and mechanisms involved in fascia. Myofascial release appears to be a useful adjunct to manual osteopathic therapies, but the science and mechanisms behind its effectiveness need to be better understood in order for treatments to improve.

**Evidence of the Effectiveness of Myofascial Release in Scientific Studies:**

There are many case studies to be found claiming myofascial release is an effective manual treatment. However, more random controlled studies need to be conducted with large numbers of participants.

A study by James showed improvements in pain and range of motion of 31 subjects with neck pain who received myofascial release and structural integration. An improvement in pain scores of subjects with patellar tendon pain was shown after fascial manipulation was demonstrated in a study by Pedrelli. Day similarly showed a statistically significant reduction in pain after myofascial manipulation in subjects with chronic pain in their posterior brachial. Mayors showed improvement of measures of pain, activities and daily living in 40 osteopathic treatments, which included MFR. MFR treatment to the pelvic region resulted in better pelvic alignment in 10 patients with unilateral pelvic rotation. Banter and Chandler studied 75 subjects to study MFR's effect on hamstring tightness. They demonstrated MFR positively affects the passive straight leg raise angle by 6.6 degrees in patients with hamstring tightness, compared to only 0.9 degrees in controls. 30 subjects with plantar fasciitis were studied by Kuhar et al. A significant reduction in VAS (visual analog scale for pain) and FFI (foot function index) measures were shown. (McKenney et. Al., 2013)

Romulo et al designed a clinical study to determine if myofascial trigger point therapy combined with a self stretching program would decrease pain in patients with plantar

heel pain. Stretching had been shown to be an effective treatment for plantar heel pain, so they wanted to determine if the inclusion of MFR would further improve pain reduction. 60 patients were divided into 2 groups, a self stretching control group, and a group that received the self stretching protocol as well as MFR trigger point therapy. Their pressure pain thresholds were assessed (bodily pain measure) in the affected muscles, and they completed the quality of lifeSF-36 questionnaire (physical function measure). Subjects were tested both at baseline and after treatment. Patients receiving both the self stretching protocol and the MFR soft tissue therapy experienced an improvement in measures of physical functioning as well as a greater reduction in pain. The mixed model analysis (ANOVA) showed physical function (P=.001) and bodily pain (P=.005). This demonstrates the differences between the groups were statistically significant, rather than due to chance. This provides evidence to support the utility of using MFR as an adjunct treatment for plantar heel pain.

A randomized controlled clinical trial was performed on 64 fibromyalgia patients. Patients were randomly assigned to experimental (massage and MFR) or control groups. It would have been easier to tease out variables if the researcher had also had a group receiving MFR but no massage. Pain, anxiety, quality of sleep, quality of life, and depression were all measured at baseline and after treatment. At baseline, the experimental and control group did not differ significantly on any dimension except emotional role and sleep duration. The experimental group showed a significant improvement in VAS pain score (from P<.087 to P<.043). There was a reduction in sensitivity points and the experimental group showed an improvement in anxiety

(P<.041 down from P<0.074) as well as significant improvements in physical function and quality of life. No significant change was seen in placebo subjects.

This study demonstrated that myofascial release is a good complementary therapy in myofascial patients.

**Challenges with the Empirical Study of Fascial Release:**

While it is telling that many practicing manual therapists recognize the importance of fascia based on their direct experience, I would like to see more well designed scientific research conducted on this important topic. It has been shown through case studies that MFR is effective, but more randomized trials with large numbers of participants need to be conducted.

There are many aspects of myofascial release that make it challenging to assess empirically. The therapist must also be able to determine whether the problem is in fact a somatic dysfunction and therefore likely to respond well to manipulation. The many names given to myofascial release adds to the difficulty of collecting empirical data on its effectiveness as a treatment. Testing the efficacy of osteopathic treatments in general is a challenge as osteopathy aims to treat the body as a whole. This can make it more difficult to tease out benefits and effects. Since MFR relies on communication between the patient and therapist, their rapport with the client comes into play. There are many subtle interactions that occur between a therapist and a client that cannot be effectively controlled for. The effectiveness of myofascial release relies on advanced palpation techniques. MFR must be administered with the appropriate force at the right angle until just a slight resistance is felt. The release of tissue is not always predictable, so the practitioner must be able to continually assess changes in the tissue and readjust

accordingly. This allows for variability across clinicians depending on their palpation sensitivity. The talent and experience of the therapist plays a large role, and must be assessed along with research findings. MFR can still be studied empirically, but the therapist's abilities must be taken into account. McKenney et al. analyzed the efficacy of myofascial release as a treatment for orthopaedic ailments using academic peer reviewed studies. The studies showed positive patient outcomes with the use of myofascial release, but the quality of studies was mixed. This shows that myofascial release is a worthwhile field of study, but additional high quality objective research needs to be conducted. It is important that manual therapists base their therapies on peer reviewed scientific research so that clients can feel confident that they are receiving the best treatment.

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