

There's the rub

Author:
Cate Montana

October 2017 (Vol. 28 Issue 7) in *Acupuncture, Arthritis, Back pain, Blood, Cancer, Chronic Fatigue Syndrome, Clinic (multi-discipline), Fatigue, Fibromyalgia, Healing, Inflammatory*



Doctors just think of the fascia as a simple wrapper over muscles, but as Cate Montana discovered, many therapists are proving that it's the key to pain relief—and more. The toe bone connected to the foot bone. Foot bone connected to the heel bone. Heel bone connected to the ankle bone..." That description, from the early 20th century American song "Dem Dry Bones," is how most people—including medical doctors—view human anatomy to this day: an interlinked skeletal system filled with various discrete organs held in place and given shape by a sticky white tissue called fascia.

According to this traditional view, the fascia serves as a protective, binding layer that individually wraps organs, muscles, blood vessels, arteries and nerves, holding everything in place. It's a container, nothing more, consisting of proteins—collagen bundles and layers of elastin—that make it both strong and flexible, and a lubricating layer of hyaluronic acid (hyaluronan) that permits sliding between the fascia and neighboring muscles.

The fascia was also a relatively ignored part of the human body until Dr. Janet Travell, physician to President John F. Kennedy, pioneered treatments for what she called "myofascial trigger points."

In fact, the fascia exists as one continuous interconnected tissue from the top of our head to the bottom of our feet.¹

This fascial matrix can be damaged and restricted by disease, accident, surgery, inflammation, overuse and underuse, causing pain in the fascia and in the muscles and organs it surrounds. The more flexible the fascial matrix is, the more efficiently the body can handle these traumas. However, trauma, along with associated emotions, is often held within the fascia, creating fascial restrictions that cause pressure and pain. Over time, the collagen bundles in the fascia become disordered, pulling on bones and vertebral discs, creating pain through misalignment, and even cysts and fibroid tumors.¹

Fascial trigger points—contracted knots in the fascia and underlying muscles—are especially painful. And it's no wonder. Trauma, inflammatory responses or surgical procedures create myofascial restrictions that can produce tensile pressures of approximately 2,000 pounds per square inch on pain-sensitive structures, and these knots do not show up in standard tests like x-rays, myelograms, CAT scans and electromyography.

In the 1960s, osteopath Robert Ward, a student of Ida Rolf, developer of the Rolfing technique, and physical therapist John Barnes individually developed the practice of myofascial release (MFR), each approaching the fascia in vastly different ways. True to his Rolfing background, Ward developed a method called direct MFR, most often referred to as deep tissue work, where practitioners manipulate the fascia and go into the underlying muscles with some force, using their knuckles, elbows and other tools to slowly stretch restricted fascia, sometimes seeking to even tear the fascia at adhesion points—the painful sticky places where the fascia appears to fuse and stick to the muscles and skin.

Barnes, on the other hand, developed the method of indirect release that is most commonly associated with MFR, where the practitioner uses very gentle pressure on restricted fascial points, holding each point for as much as five to eight minutes, allowing the heat and infrared frequencies emanating from their fingers to "melt" the restriction/adhesion and stimulate greater blood flow and circulation to the damaged area, allowing the body to self-heal.

MFR physical therapist Dr. Carol Davis, DPT, EdD, MS, FAPTA, professor emerita in the Department of Physical Therapy at the University of Miami Miller School of Medicine, says you can actually feel fascial restrictions release. "It's like putting your hands on a bowl of Jell-O," she says. "The collagen part of the fascia is actually very plastic. Where there's a restriction, it folds over on itself. The protein polysaccharide gel in the tubules of the fascia, called 'ground substance,' gets thinner when you press, like a gel melting—and all of a sudden you feel that little lump under your hand start to disappear. The elastin part of the fascia starts to elongate, the collagen starts to un-kink and the gel becomes thinner, like taffy stretching."

As soon as the practitioner takes their hands off the point, blood flows in through the capillaries and hydrates the area, permitting the fascia to glide on the layer of hyaluronan once again, unrestricted.

Studies of fibroblasts (cells in connective tissue that produce collagen and other fibers) reveal that manual therapy does indeed cause changes in the cell shape—and thus the fascia—at the cellular level. All cells sense and respond to mechanical signals at the molecular level through a process known as cellular mechanotransduction, which converts mechanical stimuli into electrochemical activity.²

Barnes credits many of the changes that occur in the body during a myofascial treatment to something called the 'piezoelectric effect'—the ability of certain materials, including cells, to generate an electrical charge in response to mechanical pressures. "The piezoelectric effect coupled with mechanotransduction created by sustained finger pressure creates a biochemical and hormonal effect at the cellular level," he says. "At around the five-minute mark, mechanotransduction in the body produces interleukin 8 (a signaling protein), which is our body's natural anti-inflammatory and cancer killer. It also produces interleukin 3 and interleukin 1B, which increase circulation and boost the immune system."

Multi-targeted treatment

Practitioners of MFR say they use it to relieve pain and other symptoms in patients suffering from a wide range of health problems, from back and neck pain and scoliosis to sports injuries, fibromyalgia, chronic fatigue syndrome, and even disorders of the reproductive system such as endometriosis. Studies have shown MFR to be effective at improving the overall quality of life for people suffering from complications of rheumatoid arthritis and collagenous colitis, ³ low back pain⁴ and scoliosis.⁵

MFR has also been proven effective for the treatment of carpal tunnel syndrome⁶ and plantar heel pain.⁷ Patients who have undergone traditional medical treatment for these conditions are often startled when an MFR practitioner begins treatment for carpal tunnel syndrome by holding points in the neck and shoulder areas, or treats plantar fasciitis by holding points in the pelvic area. But this is exactly the kind of problem and approach that reveal the true nature of the vast network of fascia for what it is: an interconnected, extracellular and intracellular web capable of inducing healing once the barriers to cellular communication are gone.

"Nobody who's ever come to me with carpal tunnel has had to have surgery," says Davis. "Once you get into the neck and release those restrictions, then you go to the point of vulnerability with the wrist and release restrictions there. Then give them an in-home program, and in two weeks they're better."

The same thing is true with planter fasciitis, which, she says, is not a foot problem at all. Rather, the issue starts in the pelvis with a rotated ileum. Once the fascial restrictions in the pelvis are released, she works down the leg releasing other related points. Add a program of at-home stretches, and the issue is soon resolved, she says.

So, if MFR is so effective for so many health problems, why is it not better known? For one thing, Barnes points out, fascial restrictions do not show up in any standard testing, which is why myofascial problems are continually misdiagnosed and ignored. The other problem is a lack of research. Although the number of studies on MFR are increasing, their quality is mixed. Even though the majority shows positive outcomes, the current evidence is not conclusive.⁸

Fibromyalgia and chronic fatigue

Fibromyalgia is a chronic syndrome characterized by generalized pain, joint rigidity, intense fatigue and many other symptoms, from spastic colon to depression. Its cause is completely unknown. The best guess by medical science is that it originates in the muscle, even though enzyme levels in the blood, electromyographic readings, and muscle biopsies show the muscles to be completely normal.⁹

"Chronic fatigue, fibromyalgia and myofascial pain syndrome are all descriptions of symptoms that are basically fascial in nature," says Barnes. "When we experience trauma, the body is designed to numb us to help get us through the ordeal and save our life. Unfortunately, many traumas remain subconscious, and most of us are walking around in a state of disassociation and tension, where the body is holding onto past traumatic experiences as though they were still happening. There's a constant state of inner tension throughout the body that solidifies the gel-like ground substance surrounding fibroblast cells in the fascia, which starts to create crushing pressure on your body."

In other words, according to Barnes and other MFR practitioners, 20 years after a bad automobile accident, for example, some people are still living in the state of protection and contraction they experienced at the time of the accident. Their bodies haven't released the tension and fear, and the pain and dysfunction they experience years down the road is the body-wide fascial network gradually hardening and binding the muscles and organs into that pattern of tension.

This kind of body-wide systemic tension also provides one possible explanation for chronic fatigue. Ruth Duncan, an advanced myofascial therapist from Glasgow, Scotland, points out that when the extracellular matrix is restricted, so is proper lymphatic drainage, thus reducing the

body's capacity for releasing toxins. In addition, the pelvis—which is structurally designed to balance the body in order to take the strain off the central nervous system and the cranial-sacral system—is imbalanced in many people, especially those who have endured accidents, falls and other injuries.

"When the pelvis is imbalanced. . . the dural tubes (the membrane surrounding the spinal cord) running from the sacrum all the way up into the tissue around the sphenoid bone in the skull are affected, and cerebrospinal fluid is not being flushed properly throughout the system," she says. "If the spine and nerves are not properly bathed with fluid, it puts the body into the flight-or-fight response, and you get this huge amount of adrenaline constantly coursing around your system. And that contributes to a lot of the fatigue people experience."

Duncan says she has helped many people suffering from fibromyalgia, chronic fatigue syndrome and myofascial pain syndrome. "You can actually see people who have experienced these long-term issues change within a half hour on the treatment table," she says.

Scarring

MFR practitioners claim the therapy is also effective at reducing the pain of surgical scars.¹⁰ "I often find that abdominal scarring will eventually affect a person's back and hips," says Duncan. "People come to me because of back pain, but during the consultation I find that the man has had an appendectomy or the woman has had a cesarean. And when I treat the scar, their back pain goes away. It's incredibly common."

Sharon Wheeler, founder of Wheeler Fascial Work for Scars, Bones & the Cranium, says that scars are well-suited to fascial manipulation. Work usually progresses from the surface layers all the way to the depth of the surgical procedure. Scars transform from feeling stiff, irregular and inelastic to smooth and pliant. The main goal is the return of function to the tissues involved. This often includes the return of sensation where the scar is numb, as well as motor function. "Scar tissue's tactile quality changes quickly and easily," she says. "Uneven textures consisting of lumps, holes, strings and pads in the tissue smooth out, and the appearance of the scar improves."

The amount of change in one intervention is extensive, as the small changes in the scar tissue accumulate rapidly."

Wheeler assures her patients that the sensations involved in working with scar tissue are very mild. "It's very rare for any of the techniques to be painful," she says.

Memories and emotions are frequently recalled as the work progresses on a scar. "Perhaps they went through domestic abuse and have a scar down the side of the face. When you start to treat that scar, it brings up the emotion of what they felt like when they were being abused and couldn't get away."

"When you see things like that, it makes you realize and understand there's more to body memory than just the central nervous system. There have to be body memories stored within the fascial tissues that allow the muscles to somehow contract and actually make movement occur." Duncan says she's even seen a quadriplegic paralyzed from the neck down perform incredible movements on the treatment table during an MFR session.

"It's amazing," she says. "And whether there is research on it or not, it still happens."

What is the fascia?

The fascia is a sheet of connective tissue made of collagen and elastin that covers all the structures in the body and binds them together, thereby providing structural continuity. Surgeons know it as the tough, white, fibrous material that they have to cut through to get to the organs underneath.

Physiologically, the fascia is made primarily of cells called fibroblasts, which synthesize, organize and remodel collagen. The fascia is contiguous—running from the top of the head all the way down to the bottom of the feet. Microscopically, the fascia is made up of three-dimensional polygon-shaped tubules filled with a liquid gel of polysaccharides and fluid—it has no spaces or layers.

A vanguard of scientists, doctors and researchers, including Dr. Carol Davis, are beginning to wonder just where—or even if—the fascia leaves off and our muscles and organs begin. The protein matrix that forms the fascia is now known to reach all the way into the nucleus of every cell in our body.¹ Studies in tensegrity (the structure of muscular-skeletal relationships) reveal that the fascia is involved in a mechanical force transfer that affects processes including cell signaling and gene transcription.² Tiny fibers from the extracellular matrix even pull open nitric oxide receptors on capillaries to increase blood flow to muscles as needed.³

"Every animal, every plant, every human, has fascia," says Davis. "Fascia is the connective tissue for every living thing."

Myofascial self-treatment

Self-treatment is a large part of MFR. The fascia does not actually 'stretch.' Rather, it actively elongates itself under the proper conditions. A lot of pain and limited range of motion is actually caused by tightness of the collagen and dehydration of the ground substance in the fascia. And normal exercises and stretching don't help.

"As much as athletes stretch, the stretching that they learned only releases the elastic and muscular component of the fascia," says John Barnes, one of the founders of MFR. "It doesn't release the collagenous barrier. Yoga is the same way. But when you couple MFR with myofascial 'stretching,' then you start to get the kind of results in optimum performance that you're looking for."

Here are a few ways to give yourself a taste of myofascial stretching from Joyce Karnis' book, *Comprehensive Myofascial Self-Treatment*.

- Hold any ordinary stretch for a minimum of 90-120 seconds. Even better, hold it for 5 minutes. This releases the collagenous barrier as well as the elastin in the fascia.
- For tight areas and limited range of motion, don't try to force a movement past the pain. Instead, "telescope" past the place of resistance. For example, limited shoulder range can be improved by lifting your arm to the point of resistance and then extending your fingertips away from the body, gently elongating the arm. Hold for 90-120 seconds or longer if possible.
- Bring your full attention into the stretch as you hold it.

Two myofascial success stories

Annie, a 56-year-old woman from Pennsylvania, received aggressive physical therapy and was put on weight machines too soon following an injury. Her entire back became "bound down," and on a pain scale from one to 10, her back pain averaged between six and nine. She saw a doctor who prescribed muscle relaxants and antidepressants. She saw a pain management doctor who gave her trigger-point injections, but the effects only lasted 24 hours. She got massages three times a week, which helped "a little," plus acupuncture and talk therapy, but experienced no long-term relief.

The pain was getting worse, and she was nearing the end of her rope when in 2004 she came across John Barnes and his Myofascial Release Treatment Center in Pennsylvania on the internet. "I felt so much pain," she says, "and I was trying to keep a full-time job going. So I gave it a try."

She found the evaluation and first treatment to be very gentle. She also felt her body respond positively, so she signed up for an "intensive"—an initial week of 15 hours of treatment designed to keep the body from going back to the old painful holding patterns right away. She also started doing the MFR exercises she learned at home.

"You heal gradually," she says, "because the fascia needs to be released from different layers." Today, she says she's 90 to 95 percent healed and on no medications. "Doing MFR turned out to be the best decision I ever made."

TCR, a 64-year-old woman, also from Pennsylvania, went to Barnes' Malvern clinic because of muscle and nerve pain throughout her body that kept her in bed most of the time. She also had carpal tunnel issues, even though she'd had surgery for the condition, as well as spondylolysis, a condition in which one vertebra slides forward over the vertebra below it—usually in the lower back—causing back pain and numbness or weakness in one or both legs.

Mainstream doctors recommended a rhizotomy for the spondylolysis—a surgical procedure where the nerve roots in the spinal cord are severed to relieve chronic back pain and muscle spasms.

She didn't want surgery, so she went to physical therapists and osteopaths—but got no relief. Finally, she found MFR. "After the first intensive, I could sit properly and stand vertically," she says.

She continues to see effective improvement and says others see it as well—and she has been able to avoid surgery. "MFR has given me the long-lasting improvement that allows me to be able to enjoy my grandchildren, travel, and take care of myself by learning how to self-treat."

RESOURCES

www.myofascialrelease.com

www.wheelerfascialwork.com/ceu-courses/scar

www.polestarmiami.com/polestar-center-staff/therapists/carol-m-davis-dpt-edd-ms-fapta/

www.myofascialrelease.co.uk/the-mfr-tutors/ruth-duncan/

Myofascial Release, Healing Ancient Wounds, by John Barnes

Comprehensive Myofascial Self Treatment by Joyce Karnis, PT

References - Main

- 1 Int J Ther Massage Bodywork, 2011; 4(4): 1-6.
- 2 Ann Biomed Eng, 2010; 38: 1148-61
- 3 Int J Ther Massage Bodywork, 2011; 4(3): 1-9
- 4 Spine (Phila Pa 1976), 2002; 27: 1142-8
- 5 J Bodyw Mov Ther, 2008; 12: 356-63
- 6 J Am Osteopath Assoc, 1993; 93: 92-4, 100-1
- 7 Foot (Edinb), 2014; 24: 66-71
- 8 J Athl Train, 2013; 48: 522-527
- 9 Evid Based Complement Alternat Med, 2011; 2011: 561753
- 10 J Bodyw Mov Ther, 2016; 20: 906-913

References

- 1 Ann Biomed Eng, 2010; 38: 1148-61
- 2 Prog Biophys Mol Biol, 2008; 97: 163-79
- 3 Fascia Research II: Basic Science and Implications for Conventional and Complementary Health Care. München: Elsevier Urban & Fischer; 2009. pp. 129-137