

Feldenkrais, Fascia, and Biotensegrity

By Jeremy Ryan Mossman

This past spring I spent two weeks in Ann Arbor, Michigan in the first of eight live segments of the professional Feldenkrais training. This is a training I started in 2017, but for a variety of reasons was unable to complete, so though they offered to give me credit for the first year I opted to experience it again from the beginning — and I'm so glad I did.

The Feldenkrais method is a way of optimizing your body through lessons that consist of gentle repeated movements (often called Somatics), functionally updating the way your body moves, which enhances nervous system efficiency, facilitating a global reorganization of sorts. It's a challenge to encapsulate — for everyone! If you ask 10 Feldenkrais practitioners to explain what the Feldenkrais method is, you'll probably get 10 very different answers. It brings together movement, psychology, nonlinear and experiential pedagogies, complexity theory, and though they aren't exactly a direct part of the method (largely because the research and areas of scientific study weren't in existence when Dr. Feldenkrais was teaching his method), fascia function and biotensegrity are also very relevant.

The tensional framework is our connective tissue, fascia, which not only keeps our skeleton, muscles, and organs where they should be, but also allows for differential movement, giving our body structural support and movement potential.

Biotensegrity is a combination of three words: "bio" for biological, as this framework includes all living things from animals, to plants, viruses, slime molds, fungi, and everything else that is a living organism, and the rest of the word — tensegrity — is a portmanteau of tension and integrity, bio-tens-egrity.

Tensegrity is a concept with its origins in architecture and art. A tensegrity structure holds its shape through a combination of tension and compression — forces of push and pull — and is gravity independent, just like us. Most structures we see are compression structures — the energy goes straight down to the ground, but tensegrities can change their



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orientation to gravity and not change shape or fall apart. Kenneth Snelson's "Needle Tower" that was until very recently on display in the National Mall in Washington, DC is a tensegrity structure made of metal rods and wire cables that extends 60 feet towards the sky, and the heavy parts of it seemingly float in midair since they don't touch, but through continuous tensioned cables they stay in their spatial relationship.

This is just like the skeleton — bones that don't actually touch and can be in any relationship to gravity without losing their integrity because of the way they are held in a

tensional framework. Though we have inherited ideas such as "the spine is like a stack of bricks" that suggest the skeleton is a compression structure, that notion is untrue and not very resonant to our experience of moving through the world. If it were true, we would have to be upright at all times!

The body's tensional framework is the connective tissue, fascia, which not only keeps our skeleton, muscles, and organs where they should be, but also allows for differential movement, giving our body structural support and movement potential. It has the tensile strength of stainless steel but is essentially a fluid or something that isn't a solid, liquid, or gas — it is soft matter, a relatively new field of scientific inquiry. Its behavioral continuum from compliant to stiff gives our body its tensional integrity.

What an interesting thing to reconcile - fascia as a tensional system and the intention to relax. Can we have both tension and relaxation at the same time? Is it possible that we have misunderstood the functional benefits of tension and that it is not at odds with lightness, mobility, or physical freedom?

Let's explore this through our senses.

- Sit comfortably.
- Imagine the weight of your head somewhere between 8-12 lbs.
- Place that weight on your top vertebrae. Really try to feel that weight on your first cervical vertebrae.
- Add the weight of your head and the top vertebrae to the second vertebrae.
- Keep imagining the weight of your bones on the bones below all the way down your spine to your pelvis.

How does it feel to feel the weight of your head on your neck, neck on your torso, and all of that on your pelvis? I doubt it is

Mossman explains that you can learn a lot playing with gummy worms.

comfortable. It's also unlikely that this aligns with the way you experience yourself from day to day.

- Now imagine there's space between each vertebrae.
- Don't force anything. Just imagine.
- Do you feel a little lighter? More agile? More ready to move?
- Now fill the space with goo. A fluid that's thicker than water and moves slower than water. More like honey, or partially set Jello.

How does *that* feel to your senses? Move around a little while maintaining this feeling. It may even feel better than usual!

You may have attended some of my workshops in the last few years that referenced being made of gummy worms. It's not totally untrue! Gelatin is made of collagen — and so is our fascia. You can learn a lot playing with gummy worms: when you pull on them forcefully and fast, they stiffen and resist, but if you pull on them softly and slowly, they can stretch quite far, but you have to be gentle and get gentler as they lengthen. You can also get a feel for the importance of hydration in healthy movement. A gummy worm you leave on the counter will get stiffer as it dehydrates and moves in a rigid way, but if you soak it in water for a bit, it will return to a more mobile state. This is a feature of non-Newtonian fluids, which respond to stress in nonlinear ways. A hard touch makes them harder, and a soft touch makes them softer.

You can prove this:

- Give your temporo-mandibular joint a massage.
- Really knead your fingers or knuckles into the muscles.
- Pay attention to your breath — are you holding it?
- Pay attention to your body — are you bracing?

Compare this to a touch softer than soft:

- Take your hands to the same area and gently move the skin around.
- Listen to how the tissue under the skin responds.
- Sense how your soft touch is contacting far more than just the skin level.

Which helped your jaw move easier?

It's pretty wacky. I highly recommend watching Jean Claude Guimberteau's 22-minute documentary, "Strolling Under the Skin," on YouTube. It shows some of the only footage of fascia in a living body and highlights an important reality — we are not like machines at all, despite our mainstream models.



It's a common misunderstanding that fascia is around our muscles, bones, and organs because in reality fascia is everywhere. It is the scaffolding for our anatomy (read: named body parts). David Lesondak, author of "Fascia: What it Is and Why It Matters," refers to it as our "soft skeleton." Fascia researcher Robert Schleip calls it "the body-wide fascial net," as it is one interconnected woven web that acts as a communication network within itself, and as an interface between the brain and the world outside the body as it is more highly innervated than skin or the eyes leading it to be considered a sixth sense; a sensory organ for perception both in, of, and around the body.

Fascia explains how we are interconnected into functional unification, disproving models of levers, pulleys, origins, and insertions. It also explains how a problem in our foot could lead to a problem in our voice.

If only Dr. Feldenkrais could have known all of this! Though I imagine he *did* know on many levels. At the very least, it was something he sensed. He knew the importance of a soft touch. He recognized the body as interconnected. The way Feldenkrais elegantly connected mind and matter takes the effort out of learning and allows one to learn from their experience rather than an instruction. It's nonlinear learning at its best. Some even refer to him as the first neuroplastician. There are two chapters devoted to his method in Norman Doidge's book, "The Brain's Way of Healing."

Though I'm technically repeating training I've already done, it is taught and sequenced so differently than last time. Priorities are different, the nurturing is different, and the highlighting of certain key principles is also different.

One of the priorities was fully resting and releasing between every attempt of repeated movements. It's interesting how such a simple idea is both "elusively obvious" (to quote Feldenkrais, himself) and also so powerful:

I move. I return. I scan my contact points with the ground. I say to myself, "Relax. Soften. Sink."

When I start again, it's a **fresh** start. It allows brand new experience that gets better and easier with each iteration. Like a soft reset.

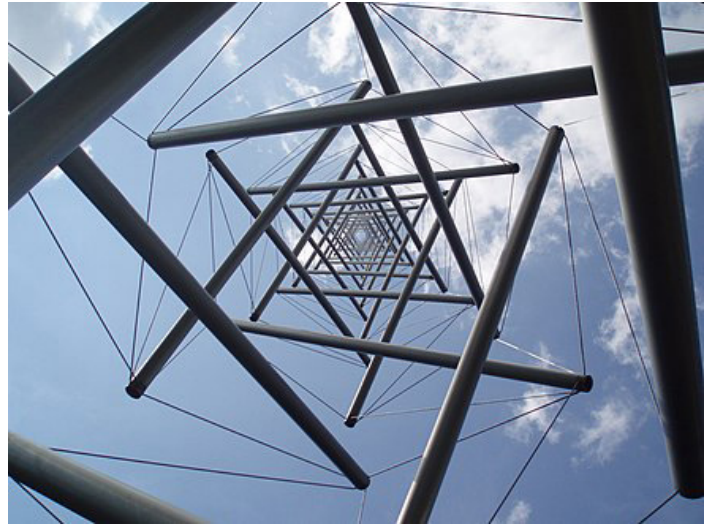
There's a lot of research on taking breaks in learning and how this helps our neurology consolidate each attempt into new skill potential. How the *time off* is as important as *time on*.

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It also gives a little agency to that "in-between" place of doing and not doing. It gives that stage a deeper purpose. Metaphorical connective tissue. Focusing on the movement is like early anatomical inquiry where they considered muscles, bones, organs, and other named "parts" of the body to be "the important stuff," tossing away the in-between fascia, leaving it and its important roles in energy flow/force transmission, perception, and as the body's architectural support yet to be discovered.

Imagine applying this idea of a soft reset in the voice studio or singing practice.

- Sing a phrase to get a baseline for how things feel before doing anything else.
- Establish a baseline for relaxation as you encourage the soft tissues to melt.
- Prepare to sing a phrase. Don't start with the hard stuff or the "problem area." Start and stay where it's easy for a while.
- Really listen to the body as it moves from that softened place through inhalation into the impulse to vocalize. A LOT CAN HAPPEN IN THAT PROCESS.
- If anything abrupt happens, stop, relax, start again. Try slightly different tactics each time — going slower is a magnifying glass into what's going on and when. Imagining it first is going to prepare the pathway. Set the intention clearly. This is the seed that needs to grow deep roots.
- Let curiosity lead the way.
- When it's easy, sing some harder stuff. Watch for signs that learning has shifted from cognitive ("thinking about how") to autonomic.



Snelson Needle Tower tensegrity structure
Public artwork by American sculptor Kenneth Snelson, 1974

- Move on! Let that percolate and focus on artistry to see how the initial phrase has shifted. There may still be some glitches but was there improvement.
- Don't obsess about it being perfect. Better is enough.

Like my Feldenkrais teachers, I bring this up again — maybe not every session, but the more you can weave it in, even just a nod to the idea every so often, the more the seeds you planted will emerge on the surface. Imagine how it would be a great habit to have for long-term effortless singing. We might even consider this PREhab.

From Awareness Through Movement "each one of us speaks, moves, thinks, and feels in a different way, each according to the image of himself that [they have] built up over the years. In order to change the mode of action we must change the image of ourselves that we carry within us."

The next time you watch a high quality live vocal performance, notice how rarely the performers look relaxed. Notice how they're active and energetic in all parts of their body. But also notice the relative ease.

Jeremy Ryan Mossman (BM, MM, 500CYT) is a teacher of voice, movement, and wholistic expression. He has recently moved on from academic teaching after more than 15 years in order to focus on teaching in more creative and integrative ways while sharing his passion for wholly embodied singing. Knowledgeable in both biomechanics and biotensegrity, he has a unique way of reconciling long-held beliefs with new understandings about the body and teaching voice, which he teaches to other voice teachers in his program, Body Based Voice Ped. Learn more at bodybasedvoice.com.