The Tensional Fascial Network: Power your Practice with Research
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(recommended reading and most content discussed and quoted is from this text and my fascia dissection research)

“I am not accustomed to saying anything with certainty after only one or two observations.”
- Vesalius (De Humani Corporis Fabrica)
1. Fascial research (and my latest areas of study)  
Dr. Antonio Stecco, University of Padua, Italy- pioneered with Dr. Carla Stecco separating the three layers of fascia in dissections.

Hyaluronic acid (HA) produced by connective tissue by HA-secreting cells in trauma- also called “goo” molecule. Acts as a lubricant to maintain the sliding between muscle/s.tissue.

The deep fascia is not just a tough barrier structure of collagen and elastin, but is a metabolically active vascular layer which provides gliding and protective functions (Bhattacharya V, Barooah P, Nag T, et al. Detail microscopic analysis of deep fascia of lower limb and its surgical implication. Ind J Plast Surg. 2010;43(2):135–140. doi: 10.4103/0970-0358.73424.)

In mechanics terms, fascia is similar to fiberglass cloth and resin used in auto body repair, both the cloth and the resin can change properties depending on the applied loads. *(Reed RK, Liden A, Rubin K. Edema and fluid dynamics in connective tissue remodelling. J Mol Cell Cardiol. 2010;48(3):518–523. doi: 10.1016/j.yjmcc.2009.06.023)*

*Fascia remodels and can be changed through specific movement and intent.*
Recent studies indicate that fascia in general is not just a passive structure but is contractile (and elastic).

Fascia has also been assumed to be involved in acupuncture effects, in that planes of connective tissue have a close relation to acupuncture points and react very sensitively to them.

The thoracolumbar fascia can play a role as a sensory organ only if it exhibits a dense innervation.

Fascia has been discussed as a possible source of pain in patients with non-specific low back pain (Yahia et al. 1992).

The fascia covering the overexercised muscle became more sensitive to painful stimulation than the muscle (Gibson et al. 2009). Collectively, these findings suggest that in patients with nonspecific low back pain fascia tissue may be a more important pain source than the low back muscles or other soft tissues.

We now know that glial (brain) cells interact morphologically, biochemically, and physiologically with neurons throughout the brain, modulate neuronal activity, and influence behavior (Castellano López & Nieto-Sampedro 2001; Koob 2009).

Those who study the fascia as an all-pervasive system will recognize that one of the most vital relationships in the body has to be the relationship between the connective tissue and the nervous system.

Fascia as “one interconnected tensational network that adapts its fiber arrangement and density according to local tensational demands.” Pischinger (2007)

Specifically, like the acupuncture meridian system, the fascia may be viewed as a single organ, a unified whole, the environment in which all body systems function.
Finando and Finando (2011) summarize evidence that the ancient acupuncture meridian system shares many structural, functional, and clinical characteristics with the fascial meridians.

The involvement of the fascia in dysfunction and disease is pervasive. It is believed that, to some extent, the fascia will necessarily be involved in every type of human pathology (Paoletti 2006; Pischinger 2007).

“There are no local problems” (Spencer 2007), “There are no local treatments.”

Success of modern manual therapies stems from a willingness on the part of practitioners to unwind a patient’s entire traumatic history, including all of the resulting compensations, which is very different from treating a current complaint.

The kinetic chain is an interconnected tensional network within the living matrix. All movement, of the body as a whole or of its smallest parts, is created by tensions carried through the living matrix. In laying out the following sequence of connections it must be recognized that some parts of the network have been studied more thoroughly than others.

We now know that Wolff’s Law applies to more than bone – it is relevant for virtually all of the connective tissues, including tendons, ligaments, and so on.

Chen and Ingber describe how mechanical forces transmitted through the system ultimately reach the cytoskeleton and nuclear matrix, where they can produce biochemical and transcriptional changes by mechanochemical transduction (Chen & Ingber 2007).

Liquid crystallinity gives organisms their characteristic flexibility, exquisite sensitivity and responsiveness, and optimizes the rapid noiseless intercommunication that enables the organism to function as a coherent coordinated whole. Ho (1997)

Another important property of liquid crystals is piezoelectricity. When put under compression or tension, these materials develop electric fields. (possible explanation for “chi”)

A recent discovery is that biophotons are emitted from acupuncture meridians when points are stimulated with different methods. (low level “cold” laser)

Fascia is a tension network, with all the collagen inherently stressed, the so-called “pre-stress” of biologic tissues.

[See a bow (as in arrow).] Now imagine the “bow” being compressed toward its belly by multiple bowstrings that encircle the bow and are all pulled at once. If the forces were balanced, the bow would not bend, but merely compress. Tension elements at each end that compress toward the center can balance to create a pure compression force, and in a tensioned fascial network bone will be laid down, according to Wolff’s law.

Muscle also has intrinsic “tone” and is never completely lax, and the entire fascial network is continually tensed, by both intrinsic tension and active contractions that can be “tuned”.

Unlike typical man-made structures that are stabilized by gravitational compressive forces, tensegrity systems are stabilized by continuous tension, with discontinuous compression.
Tensegrity structures are intrinsically self-stabilized because of their level of prestress and triangulation. This self-stabilization, in turn, allows tensegrity systems to transfer applied forces throughout their structures, allowing for flexibility while minimizing damage to the structure. Further, because of the prestressed nature of the system, the tensegrity structure immediately resumes its prior shape when an applied force ceases.

Forces are distributed throughout the system rather than locally concentrated as they are in lever systems. The system functions as a single unit.

Movement is not bending of hinges, but expansion, repositioning and contraction of tensegrities.

An increase of tension in a tensegrity structure lets it resist and become stronger. The training consists in using mental processes to generate a tangible feeling of the bones as space-makers and of the space between them. As a result, we can develop the perception of a tensional internal support. Once having found this internal support, it becomes possible to “relax” within it. “Relaxation”, far from being a simple “letting-go”, with its well-known effect of collapsing and weakening, is a redistribution of tension within the tensile fascial network with the qualities of space and strength, and a balance of tension. (pulling silk, i.e. yoga, qi-gong etc)

The stability of a tensegrity structure is due to the equilibrium between outward pushing of the rigid elements that tense the tension network, and inward pulling of the tension continuum that compresses the rigid elements without letting them touch each other: tensegrity structures can be seen as restrained expansion.

To move a tensegrity structure, we grasp it at its two ends and impart a rotational movement in them, one in relation to each other, or move one end, stabilizing the other, which creates a relative opposite movement of the stable end. Each movement is slight, but every part moves. The movement is well distributed... (across the fascial network)

A characteristic of (fascial) training is the use of minimal muscular strength. Studies have shown that, whether a movement is mentally or physically performed, the nervous system tends to react similarly (Malouin et al. 2003) and muscle strength is developed (Ranganathan et al. 2004). It means that mental imagery (i.e. intent) allows us the use of muscular work in a remarkably economical manner to achieve optimal movement efficiency and ease.

2. Internal Power (IP) and how to create an integrated body for bodywork treatments (and health)
   a. an ancient history

   Remember, when moving, there is no place that does not move. When still, there is no place that is not still. First seek extension, then contraction; then it can be fine and subtle.”
   - Wu Yu-hsiang (1812 – 1880)
As the ancient arts proved thousands of years ago, fascia can be altered through specific exercises and intent for a myriad of benefits. **This tissue (biotensegrity) model was not taught in many traditional arts, or it failed in the way it was taught due to language deficits.**

### Setting up the Frame

Before pulling exercises, the body must be set up to best facilitate movement.

- **Line guides** 1) axis  2) shoulder line  3) Hip line

We use these 6 physical relationships to understand how we are aligned or misaligned. Alignment is still maintained in positions of postural change (leaning, crouching, moving)

A helpful alignment guide is the ‘Body Box’. This is the box that is created by drawing lines up the sides of the body from the hips to the shoulders, and between the shoulders and between the hips. When considering the alignments of this box, focus on keeping the shoulder and hip lines parallel. Maintaining the equally and parallel nature of these two lines is a great start.

### Terms

To understand the concept of internal fascial manipulation, one must know these definitions:

1. **Dantian** – the area below the navel where one develops fascial tissue. This area, once developed, “moves” with the entire body. (We are not discussing chi or energy in these locations, but the building of the fascial web)
2. **Ming-men** - the area of the low back approximately across from dantian
3. **Kua** - the crease between the shoulders and hips (glenohumeral and trochanter) These are rotated in opening and closing movements
4. **Intent** - in basic terms, moving before moving. Every movement is filled with intent. Beginning and end movements never “end.”
5. **Pulling Silk** - “pulling” is taking the slack out of the fascial chains. When we pull silk, we are developing (pulling) the fascial tissue. i.e. “silk” is fascia.
6. **Winding** - wrapping the tissue around the bones. The bones do not move.

Fascia, when dissected in the human body, is very much like an elastic steel mesh. It is not the “ridged” structure often defined in anatomy texts. Developing the lines of fascia throughout the body and connecting them to dantian gives you access to a very unusual type of power and incredible health benefits. It is referred to as “steel wrapped in cotton” kind of soft power. The ancient warriors were often said to have “skins of soft steel.” This concept of actually manipulating tissue is the most difficult thing for people to wrap their heads around. **This fascia can be manipulated by movement and intent, and you can change it!**
Changing fascia in the body:

1) Fascia is not muscle. It takes time to create change. Collagenous tissues take time to “remodel” in the body.

2) It requires re-wiring. The muscle-tendon meridians must be “connected” to affect change. Once you get this connection you will feel it!

3) After performing the exercises for a while, changes will be felt as strange sensations, i.e. connected tingling in toes/fingers, “pulling” from ribs/etc as you lift or lower arms. This is good!

4) Always think in 6 directions. The fascial tissue expands in 6 directions during movements.

5) Work slowly. Do the exercises. Don't worry about getting everything correct. But have confidence in yourself that you can learn this. After a while, you will know if you are aligned correctly and you will feel the connections.

Solo Exercises (remember to stretch/relax in-between exercises/sets- very important)

1. Shizentai (shee-sen-tie) (natural posture) reaching exercise (Feel the connections of the major bands)
   a. Reach your arms all the way to the sky, pointing your fingers. Slowly lower your arms to horizontal and feel the connections. Everything from your fingers to your toes should basically begin to tingle as the connections are drawn taut.
   b. Next, bend your elbows (it should feel even tighter now), and let your wrists drop (DO NOT bring your fingers up) Hold that stretch for a bit as your arms lower, trying to maintain that feeling of tension. SHOULDER STAY DOWN

2. 10&10 Drill (10 seconds performing the exercise, 10 seconds relaxing)
   a. Pole hugging Stance (Stillness in Motion and Motion in Stillness)
      a.i. From the first exercise, try to get that feeling, but now in the traditional pole-hugging stance.
      a.ii. Stillness in Motion, and motion in stillness as you try to feel each of those bands, trying to manipulate them to be tight like a rubber band.
   b. Tension POP
      b.i. In the same pole-hugging stance, try to set the tension and then make all the connections POP at the same time. Pay attention to what didn’t pop. Try to think of your body as a balloon that is suddenly blown up.
   c. Relaxed to POP
      c.i. Similar to the last exercises except that in this one, you are starting from a relaxed state and suddenly POPing into position.
      c.ii. Here you should be monitoring what has become bowed and how simultaneous the pop was.
   d. Relaxed to POP to Relaxed
      d.i. Similar to the last exercise, but now you go back to being relaxed and moving while still keeping the tensions.

3. Tissue Winding (this is not spiraling, which recruits both muscle and bone)
   a. Here the point is to only rotate the tissues around the bones, but not the bones themselves. This is an important distinction from “spiraling” movements. (to be demonstrated)

Yi jin Jing: (Eee-in-jing)

This is an excellent exercise to perform several times a day (especially before treatments). It means
“muscle/tendon change classic,” and is intended to change/connect the fascial tendon meridians. It should be performed with the same intent as everything discussed (i.e. pulling silk/tissue)

1) Start
- Open arms and legs as you breath in.
- Open shoulder and hip kua and chest
- breath in and out nose
- Tongue behind upper palate
- Hands lift up at your side to shoulder level
2) Close and start exhale
- Bow back is 1st to change
- Then shoulder and kua
- Arms come down towards your side
3) 3/4 of the way down with the arms
- Change and start the open cycle.
- Arms down at sides.
4) Close as your hands start back up while you breath out.
- Change at peak to inhale and open
- Descend with the arms in an opening rotation during inhale
- Return to neutral side position

Self exercises must be performed daily to create change. Most importantly, find someone to push on you so you can play with force. It will help you make the connections in the tissue. If you want it you have to earn it!

3. Applying IP and fascial science to bodywork treatments and daily life

Exercises should be targeting fascial meridians/lines. All touch/pressure is not muscular but force comes from dantian (fascial connections). When you touch, your tissue expands into that person.

a. Wringing
b. Pendulums
c. How to use Dantian/Mingmen in treatments and daily life