

Myofascial meridian theory applied in Chinese internal martial arts

by Andrea Falk

This article is a short summary, with emphasis on practical concepts for Chinese internal martial artists, of the ideas in Thomas W. Myers' book *Anatomy Trains: Myofascial Meridians for Manual and Movement Therapists* (Churchill Livingstone, 2001). All quotes and drawings come from the book. Since this article is not intended for publication, permission has not been obtained. In fact, I recommend that you buy the book.

Go to the website www.anatomytrains.com for lots of articles, classes by Thomas Myers, and cool tensegrity models. I made my own from his instructions in the book, which is fun, too.

Introduction to the idea of myofascial meridians

Myofascial meridians connect the bones, muscles, tendons, ligaments, and connective tissue throughout the body in a web from the ground to the head. The term myofascial refers to the unit comprised of muscle and connective tissue. The connective tissue is what connects a chain of muscles together. The lines are physical and visible (if you were to cut the body open). They are also lines of pull: "lines which transmit strain and movement through the body's myofascia around the skeleton." (page 5)

The myofascial meridians do not follow the exact lines of the Chinese qi meridians, which are an energetic connection rather than physical. But the body is a relatively limited space – there cannot but be some overlap. Both can be described as an endless web. Unimpeded movement, sought in the Chinese internal martial arts, involves unblocked qi and aligned myofascial lines. Training that unblocks myofascial lines unblocks the qi lines, and visa versa. The Chinese word 'shun' and 'tong', which do not have appropriate English translations, refer to a combination of qi and myofascial alignment.

Training the Chinese internal martial arts is a training of the body to move as a whole, so the classic Western understanding of bones and muscles that operate separately and mechanically is not useful. An understanding of anatomy, however, is useful when these known structures are seen as connected by the tissue and the lines become evident. If the muscles are viewed as floating in bags of connective tissue, all movements and all structures are possible only through the interaction of the contracting muscle with the connecting tissue. Each muscle may exist alone, but the fascia permeates the entire body and connects the muscles like a net. (other terms may help understanding: 'collagenous network', 'connective tissue webbing', extra cellular matrix).

Bones, cartilage, ligaments, and tendons are built of varying degrees of the same substance – collagen – so this unity is more than a structural connection. It is well known that all these things are malleable, that is, they will transform and change shape and structure when stressed. Over time the body becomes deformed, the legs bowed, the back bowed, the shoulders hunched, etc. 'Muscle is elastic, fascia is plastic' (page 18). Fascia

pulled continually out of alignment will eventually stay there. Poor posture and bad habits gradually deform the fascia and stress the muscles, resulting in pain and weakness. Correction is possible, but both muscles and fascia need to be taken into account. The entire supporting structure needs to be rebuilt, and the tissue needs to be reopened. One of the goals of training is to reshape the body back to its natural, balanced, childlike place. The Chinese word 'song', which is normally translated as 'relax', actually is more related to this process of opening and release.

Three metaphors, three "specific but interconnected ideas", are important in understanding the fascial web of the body: " physiologically by looking at it as one of the holistic communicating systems, embryologically through seeing it as a double bag, geometrically through comparing it to a tensegrity structure." (page 20) Myers takes us through these metaphors to show that:

1) The fascial web is one of only three holistic communicating systems that would show the entire body if everything else could be 'disappeared' without the body collapsing – the nervous system, the circulatory system, and the fascial system. "The bones, cartilage, tendons, and ligaments would be thick with leathery fiber, so that the area around each joint would be especially well-represented. Each muscle would be sheathed with it, and infused with a cotton candy net surrounding each muscle cell and bundle of cells. The face would be less dense, as would the more spongy organs...". In addition, the circulatory and nervous systems themselves can be seen as interconnected with this web, as the tubes in which the blood flows and much of the tissue around the nerves are simply more connective tissue. More to the point, "no part of this net would be distinct or separated from the net as a whole; each of these bags, strings, sheets, and leathery networks is linked to each other, top to toe." (page 24) The qi web is energetic rather than physical, so, although it permeates the whole body, does not count as one of these visible holistic systems. The qi web is not thought to follow any one of the three, but it would be interesting to look at the possibility of it being a combination of these three or a linking web for these three.

2) Most of the body is 'double bagged' – the cells, the heart and lungs, the abdomen, the brain – during growth of the embryo (think of "a sock turned halfway inside-out", which creates three spaces: "the space within the inner bag, the space between the inner bag and outer bag, and the environment beyond the outer bag". (page 36). The musculo-skeletal system is also double bagged, with the bones, cartilage, and synovial fluid in the inner bag, the periosteum and ligaments forming the inner bag, and the muscles in the outer bag. The outer bag itself are the structures called fascia, intermuscular septa, and myofascia when separated out in anatomy. "In our conception, the individual muscles are simply pockets within the outer bag, which is 'tacked down' to the inner bag in places we call 'muscle attachments' or 'insertions'." (page 40)

"We need to remind ourselves once again at this point that muscle never attaches to bone. Muscle cells float within the fascial net like fish within a fishing net. Their movement pulls on the fascia, the fascia is attached to the periosteum, and the periosteum pulls on the bone.

There is only one muscle; it just hangs around in 600 or more fascial pockets. We have to know the pockets and understand the grain and thickenings in the fascia around the muscle – in other words, we need to know the muscles and their attachments. All too easily, however, we are seduced into the convenient mechanical picture that a muscle 'begins' here and 'ends' there, and therefore its function is to approximate these two points, as if the muscle really operated in such a vacuum. Useful, yes, Definitive, no. (page 40-41)

It makes a lot more sense to look at the muscles as a long bag of muscle that touches down at some points along the line. This is how we work in training; we never try to isolate a muscle, even if we could.

3) Tensegrity is a word that combines tension and integrity. Tensegrity structures balance tensile forces through the structure, rather than continuous compressive forces, and are characterized by "continuous tension and local compression" (page 42). What this means is that the body, rather than being compressed like a solid brick wall, actually has high mechanical strength triangulated using a minimum of materials. The structure remains stable by balancing the tension members of the myofascia with the compression members of the bones. Tensegrity structures are resilient, and become more stable the more they are loaded. The interconnection between all elements brings them to realign to support stresses. So much of our training is simply intuitively using the principle stated by Myers: "if you wish to change the relationships among the bones, change the tensional balance through the soft tissue, and the bones will rearrange themselves" (page 46)

"In this tensegrity vision, the myofascial meridians... are principal (though no means exclusive) continual bands along which this tensile strain runs from place to place (bone to bone). Muscle attachments... are where the continuous tensile net attaches to the relatively isolated, outwardly-pushing compressive struts. Our work seeks balanced tone along these tensile lines and sheets so that the bones and muscles will float within the fascia in resilient repose." (page 46)

The work that Myers is concerned with is physiotherapy, working on the body of another. Ours is training, working on our own body. In Ma Gui Bagua's intense circle walk, tensegrity is used to strengthen the weak points of the body by applying considerable tension in a balanced, connected manner through the myofascial meridians.

To discuss injury, Myers uses this analogy: if a tree falls on the corner of a building, the corner collapses but the building can remain intact. Much treatment therapy of the body operates with this view of the body – fix the broken part. If one looks at the body as a tensegrity model, however, the entire structure will give when a stress is applied in one corner. "Load it too much and the structure will ultimately break – but not necessarily anywhere near where the load was placed. Because the structure distributes strain throughout the structure along the lines of tension, the tensegrity structure may 'give' at some weak point at some remove from the area of applied strain." (page 44) Chinese tuina therapy operates on this principle. Tuina and acupressure treatment for the lower back often is applied in the upper back or even the lower leg. Clearly this treatment is not entirely dealing with qi flow, but is also applying the Chinese medical understanding, however it is expressed, of tensegrity connections within the body.

Myers' 'Anatomy Trains' of myofascial meridians

Myers' rules:

1) Tracks proceed in a consistent direction without interruption (page 51).

The train analogy is handy because the tracks act a lot like railroad tracks. That is, to remain functionally connected, they must follow the same line, and can only change direction gradually; they must stay at the same depth; they can connect directly or through a switch; and they cannot go through a separating wall even if they continue on in the same direction.

An excellent example of direction and corners is the Deep Front Arm Line. To use the usual anatomical names, the pectoralis minor and the coracobrachialis form this line, which only works functionally when the arm is raised above the shoulder. When the arm is at rest, the corner is too sharp to use the connection. When the arm is raised, the hand is connected directly to the pelvis. (diagram page 52). Any technique that uses a raised arm to deflect before grabbing and pulling down, in allowing this line to connect the grab directly to the pelvis, and thus deep into the body. Ma Gui Bagua uses this connection by raising the elbow to shoulder height instead of using the more common dropped elbow. This is my favourite of the diagrams, what really caught my attention. It explains so many of our actions and applications of force.

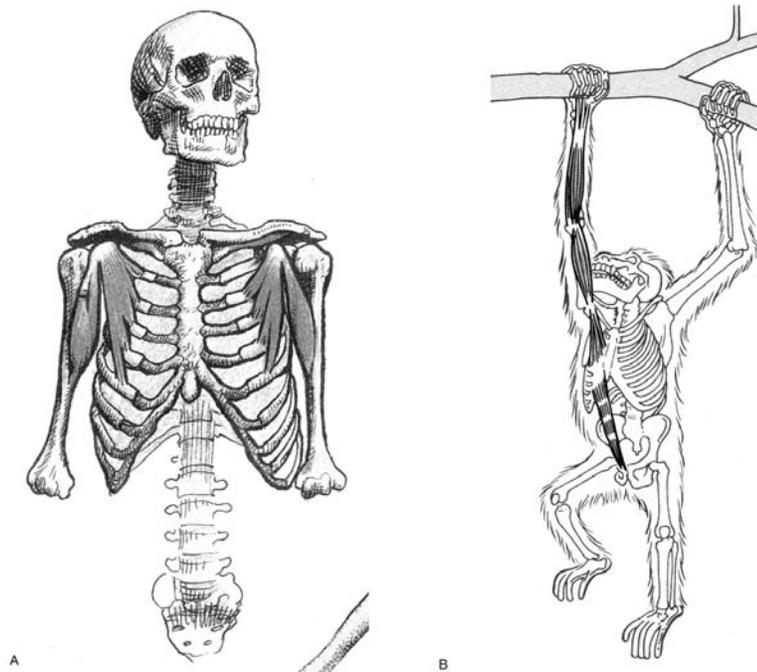


Fig. 2.2 While the fascial connection among the muscles that attach to the coracoid process is always present (A), the connection only functions in our game of mechanical linkage when the arm is above the horizontal (B). (Fig. A is reproduced with kind permission from Grundy 1982.)

2) These tracks are tacked down at boney 'stations' or attachments (page 55)

The origins and insertions of muscles are more than connections to bones, but indeed, just 'touch down' in a line that continues through to the next muscle. The deeper fascia can be

seen to connect into the bones, but the superficial fascia can run directly through to attach to the fascia of the next muscle in the track.

3) Tracks join and converge in 'switches' and the occasional 'roundhouse'. (page 56)

The fascial planes do not exist independently, as the body cannot be broken up into separate units. They can blend into sheets and divide back into tracks, which enables them to react to strains from different directions. The flat sheet at the shoulder blade may functionally switch to the serratus anterior to connect to the trunk (Spiral Line), or switch to the infraspinatus to connect to the arm (Deep Back Arm Line). Concentrating on expanding the upper back may allow you to connect to both for a very stable technique (diagram page 57).

You can look for the myofascial meridians of various positions and techniques by following Myer's rules (page 57):

Follow the grain of the connective tissue, maintaining a fairly steady direction without jumping joints or levels or crossing through intervening planes of fascia.

Note the stations where these myofascial tracks tie down to the underlying fascia.

Note any other tracks that diverge or converge with the line.

Look for underlying single-joint muscles that may affect the working of the line.

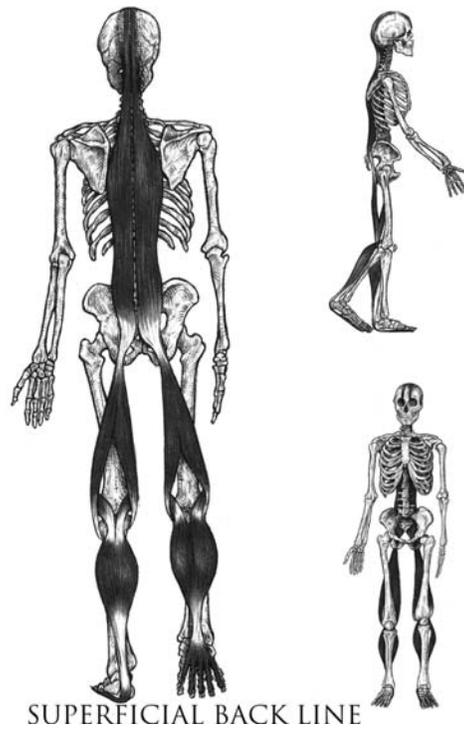
Myers makes no claims to offer the definitive description of the body's movement. Of course the body's structure and movement are more complex than any system of analysis can manage. But myofascial meridians make a lot more sense than the traditional Western approach of describing the action of independent muscles.

The following pages are Myers' diagrams. I recommend getting the book to have the diagrams larger and in colour, or go to the website and get the charts.

The 'Tracks'

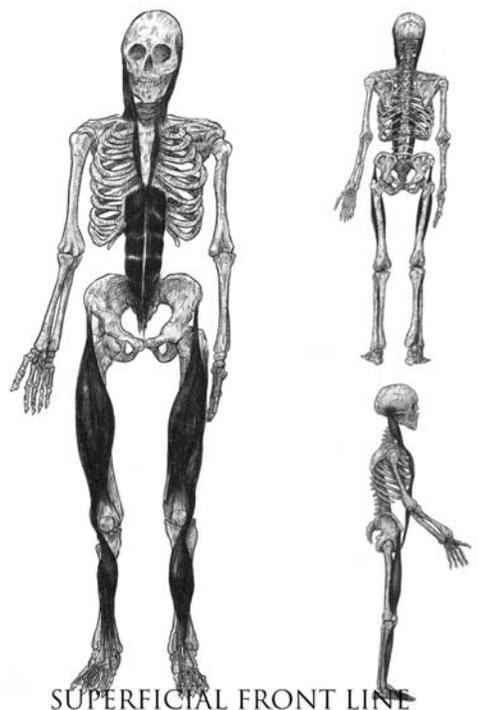
The Superficial Back Line (SBL) (page 61)

Runs from the underside of the foot up the back of the leg to the sacrum, and up the back to the skull, and over the skull to the forehead.
Diagram page 60, summary page 62.



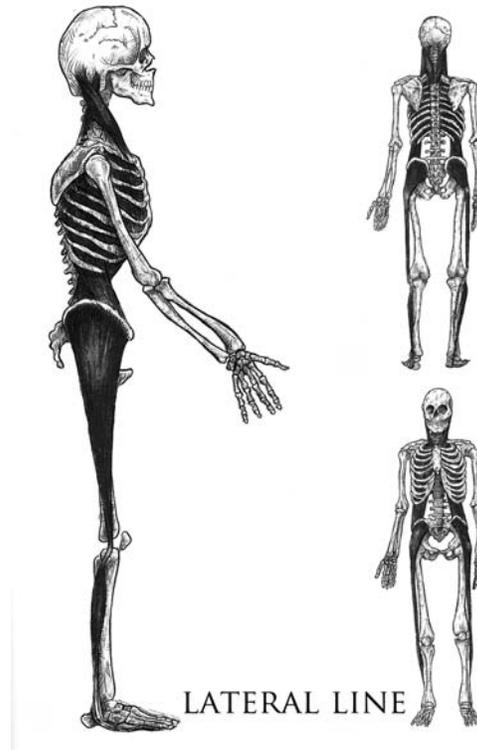
The Superficial Front Line (SFL) (page 93)

Runs from the top of the toes up the front of the leg and up the torso to the top of the sternum, and passes along the side of the neck to the back of the skull.



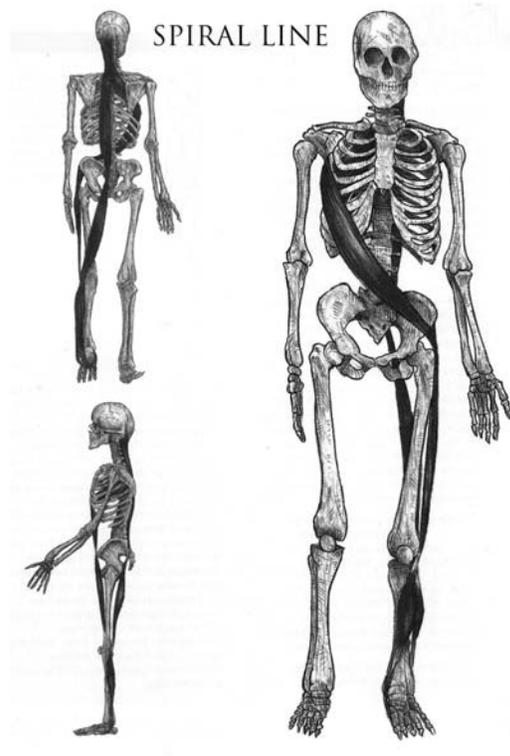
The Lateral Line (LL) (page 121)

Runs from the underside of the foot up the side of the leg and trunk, under the shoulder complex to the side of the neck and skull.



The Spiral Line (SL) (page 139)

Runs from the side of the skull across the neck to the opposite shoulder and ribs, and back across the belly to the front of the hip, the outside of the knee, the inside of the ankle, and under the arch of the foot and back up the leg and back to the skull.



Arm Lines

Deep Front Arm Line (page 162)

Runs from the ribs down the front of the arm to the thumb.

Superficial Front Arm Line (page 167)

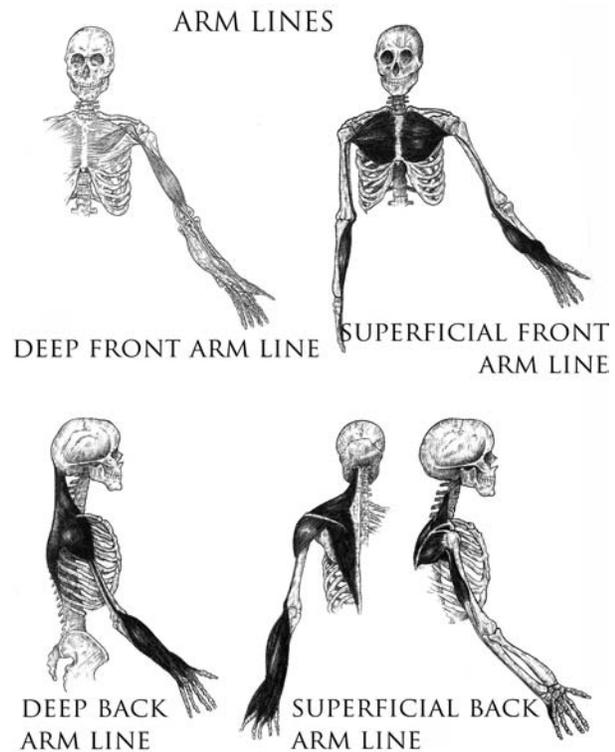
Runs from the sternum and ribs down the inside of the arm to the palm of the hand.

Deep Back Arm Line (page 170)

Runs from the spinous processes through the scapula to the back of the arm and the little finger.

Superficial Back Arm Line (page 173)

Runs from the spinous processes over the shoulder and outside the arm to the back of the hand.



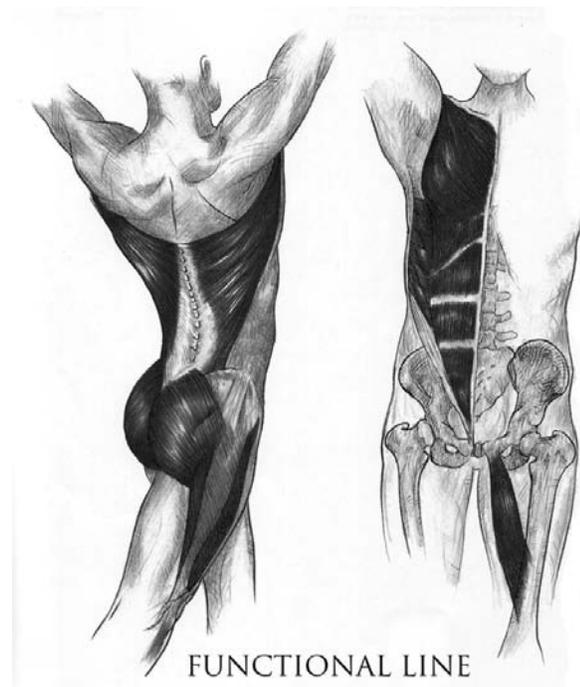
Functional Lines (page 183)
(extensions of arm lines across the surface of the trunk to the pelvis and leg)

Back Functional Line (page 185)

Runs from one shoulder across the back to the opposite leg.

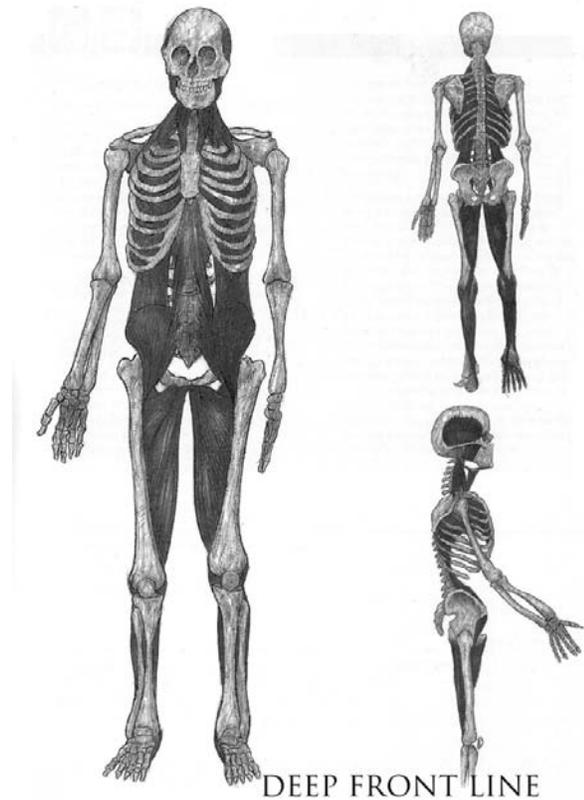
Front Functional Line (page 185)

Runs from one shoulder across the front of the belly to the opposite leg.



The Deep Front Line (page 191)

A core line that begins deep on the sole of the foot and runs up the inside of the leg to the front of the hip joint and across the pelvis to the front of the spine and on up through the thoracic cavity to the jaw and the bottom of the skull.



The Meridians of Latitude (page 265)

Seven bands around the body: pubic band, inguinal band, umbilical band, chest band, collar band, chin band, and eye band.

This article is an introduction to the ideas on myofascial meridians by a non expert. I recommend that you follow up with study of your own. I intend to learn more. The ideas are the foundation of a manual therapy method used to heal injuries and imbalances in the body, which I also intend to learn more about.