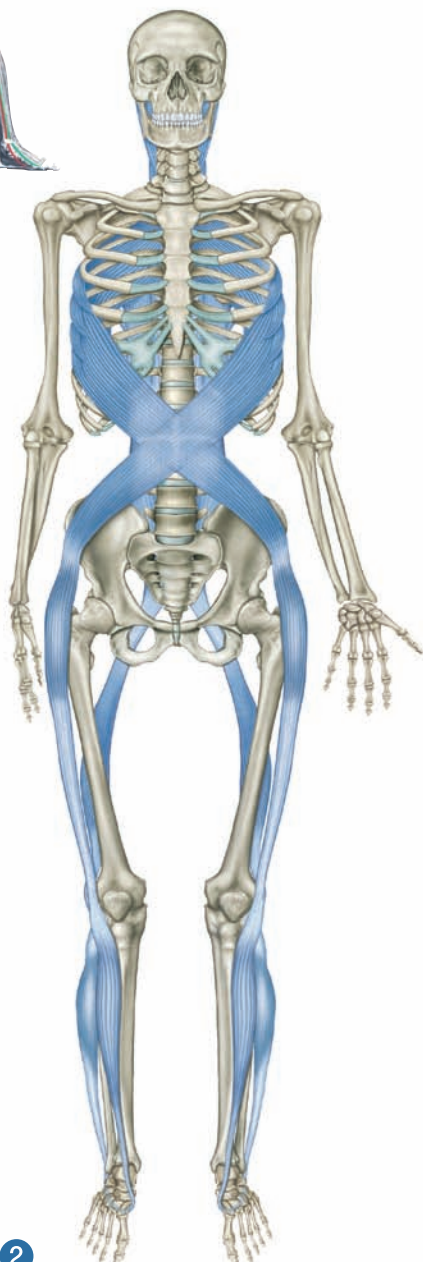




Some of the Anatomy Trains lines mapped on a figure from Albinus.

1

The Spiral Line creates two opposing helices around the trunk, and a long loop from the pelvis, under the arches of each foot, and back again.



2

The Spiral Line

By Thomas Myers

In this ongoing series, we are examining specific issues in visual assessment as they relate to the Anatomy Trains Myofascial Meridians—longitudinal chains of conjoined muscle tissue and biological fabric that provide stability and force transmission in daily function and performance.

INTRODUCING THE SPIRAL LINE

We have examined what we have termed the cardinal lines (Image 1)—the Front, Back, and Lateral lines—because they are head-to-toe stripes that define the body's north, south, east, and west. (To access previous BodyReading columns, visit the digital editions of *Massage & Bodywork* at ABMP.com.) This issue we go all around the town with the Spiral Line, which wraps in a helix around the torso and loops from the pelvis, under the foot arches, and back again (Image 2).

Because of its oblique path (with more of a horizontal component than any of our previous lines) to visually assess the Spiral Line we look not so much at tilts and bends, but rather rotations. The complication here is that the Spiral Line does not produce pure rotation but oblique movement, and thus complex oblique compensations.

Thus, by the time you have imbalance in the Spiral Line, and the person has compensated so that their inner ear or eyes are level (something most of us do automatically), you do end up with tilts and shifts as part of the picture. We will be quite precise, therefore, in chasing down these subversive Spiral Line anomalies.

On its journey, this Spiral Line blends with the first three lines we have already covered, so trouble in the Spiral Line alone is rare indeed. Most often the Superficial Front, Back, and Lateral Lines are also adversely affected by lack of tonal balance or fascial shortening in the Spiral Line. For this reason, in unfolding our version of the structural integration protocol, we usually address the front, back, and lateral lines before tackling this interwoven Spiral Line.

DISCOVERING THE SPIRAL LINE

Incidentally, a piece of this Spiral Line first drew my attention to functionally connected anatomy. Energy medicine specialist James Oschman, PhD, handed me an article by Raymond Dart, MD, titled "Voluntary Musculature in the

Human Body; The Double-Spiral Arrangement.”¹ Dart, the preeminent anthropologist of his time, was also a student of the Alexander Technique. In the article, he described the relationship from the rhomboids to the serratus anterior to the external oblique. I was fascinated by the obvious significance of these functional connections, but my reaction was, “Why stop there?” Over the next several years, I went on to document the whole Spiral Line and the rest of the Anatomy Trains from this inspiration.²

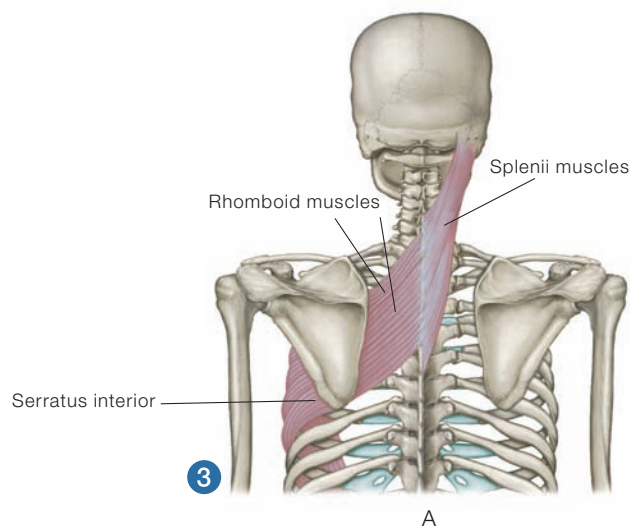
I thank Dart for the inspiration and Oschman for pointing his finger in the right direction, but the progressive development of the Anatomy Trains system involved a lot more perspiration, including the work of demonstrating the reality of the myofascial lines through dissection, the results of which appear in the photos accompanying this article and on our DVD *Anatomy Trains Revealed*.³

I am fond of describing the Spiral Line as a double helix, but it is not a twisted-ladder double helix like the DNA molecule. It is rather two reverse helices that wrap around the body in opposite directions like a straitjacket, supporting the spine and trunk with their tone, and inducing rotations when contracted unilaterally or asymmetrically.

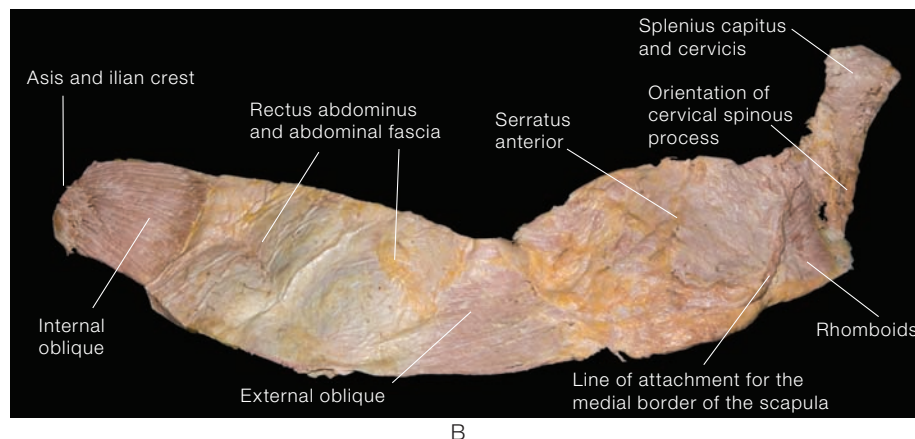
Let us take a brief tour of the Spiral Line anatomy, before returning to see it function as a whole, and then run down some of the red flags that can alert you to Spiral Line imbalance.

SPIRAL LINE ROUTE MAP

Just under the trapezius on the back of the neck are the two splenii muscles, the topmost muscles of the Spiral Line, which come down and in (OK, they

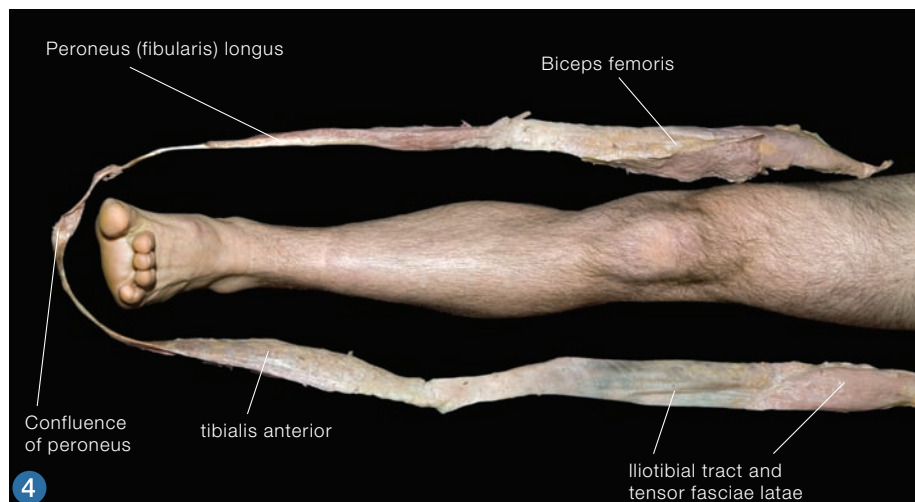


While we had theorized about it previously, it was still surprising what a strong fabric of fascia traverses the spinous processes from the splenius on one side to the rhomboids on the other. *Photo courtesy of the Laboratories of Anatomical Enlightenment* (<http://lofae.com>).

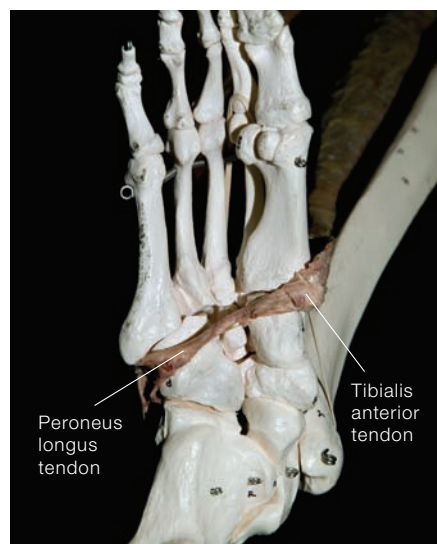


come medial as they pass inferiorly), unlike the trapezius and most of the spinal muscles, whose fibers go down and out, or just straight down. If we cross over the spinous processes, we pick up the rhomboids on the opposite side (Image 3A). There is actual fascial fabric traversing over the top of the spinous processes joining these contralateral muscles—which honestly was a surprise and delight to me when we dissected it (Image 3B), which we have done several times with the same result.

The connection between the rhomboids and their continuation, the serratus anterior, is well established. The medial border of the scapula does not divide these two muscles in any tissue sense as depicted in many anatomy atlases. In fact, the fascia and sometimes even the muscle fibers are continuous with each other under the edge of the shoulder blade. The scapula could be more accurately described as being simply glued by fascia onto this sheet of rhombo-serratus muscle. We will return to this shortly.



A



B

This rather startling image demonstrates an underlying truth of anatomical connection: there is a consistent and posturally significant myofascial loop that goes from the front of the pelvis to the back of the pelvis by way of a sling pulled snugly under the arches.



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The upper Spiral Line continues from the serratus into the upper part of the external oblique, which connects fascially and functionally across the abdominal fascial sheets to the internal oblique on the opposite side.

It gets confusing, but now we are back to the same side we started on. The right Spiral Line involves the right side of the head, the left shoulder and rib cage, and back to the right hip. Obviously, there would be an opposite—and hopefully equal—left Spiral Line looping

from the left of the head around to the right shoulder and ribs and back to the left hip. (Don't worry; I still have to puzzle out left and right on this line, too, especially if I am looking in the mirror with the client to explain what's up.)

This brings us to the anterior superior iliac spine (ASIS), but we can keep right on going: the lower Spiral Line continues in the same direction with the tensor fasciae latae, which of course continues into the anterior portion of the iliotibial band (Image 4A).

The anterior iliotibial tract clearly blends into the fascia of the upper tibialis anterior, which in turn carries us across the front of the tibia to the inner arch (Image 4B)—but don't stop here. The peroneus longus (now the fibularis longus) continues under the arch of the foot, looping under the cuboid of the lateral arch and up the lateral lower leg to the fibular head. We all know the lateral hamstring is attached to the head of the fibula, so the biceps femoris completes the jump rope of the lower Spiral Line, linking the fibularis longus to the ischial tuberosity, your sitting bone. As we will see, understanding this loop from the very front (ASIS) to the very back of the pelvis (iliotibial) links your pelvic angle to arch support.

The Spiral Line continues across the sacrotuberous ligament and past the sacroiliac (SI) joint to travel back on up via the erector spinae of the head. Since we already covered this track in the *Superficial Back Line* episode, let us proceed to *BodyReading* issues in the Spiral Line.

BODYREADING THE UPPER SPIRAL LINE

We will deal with the upper and lower Spiral Line separately, for ease of understanding.

In looking at your client face on, there are three red flags that should alert you to the possibility (though not the certainty) that you are looking at Spiral Line imbalance: 1. head tilt, rotation, or shift; 2. one shoulder rests in front of the other; 3. the rib cage is skewed. Let us take these in turn.

I left in the bit about head rotation, but few people walk around with their head rotated (unless they have vision problems in one eye as in Image 5). Head tilt is more common, and a head characteristically tilted to the left would indicate shortness in the left splenius or left Spiral Line in general. Oddly, if the head is right shifted (level, but held to the side, like Asian temple dancing), that would also indicate contraction in the left Spiral Line (and the client is using another muscle in the neck, frequently the scalenes or sternocleidomastoid, to level out the head).

The second indication, one shoulder hanging forward of the other, can suggest that the shoulder is being pulled around by shortness in the serratus anterior, or again, by the line in general (Image 6). This is not as certain a red flag as the first, because other factors like hand dominance, injury, or use patterns can bring that shoulder into protraction or anterior tilt without involving the Spiral Line. But if you see one shoulder significantly forward of the other, it is a good idea to assess the two Spiral Lines for imbalance.

The last sign is pretty reliable, and involves an eyeball measurement. Make a mental X across the belly, from ribs to the opposite hip. To be precise (although with a little practice, eyeballing it is easy), measure from the right ASIS to the 7th rib on the left where the lateral edge of the rectus abdominis crosses onto the rib cage, and make a similar measurement on the other side. If one side of this measurement is significantly shorter than the other, then Spiral Line imbalance is a near certainty (Image 7A, page 98).

Be real here. If you have to get out your tape measure to determine if there is any difference, it is probably not clinically significant. In those with significant imbalance between the two Spiral Lines, you will see with no trouble the difference in the two legs of your X. The shorter side, of course, indicates the shorter Spiral Line.

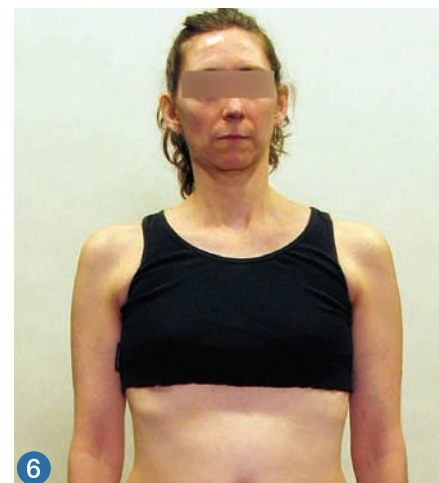
This series is about visual assessment, not treatment options, but myofascial release, stretching exercises, or awareness work can all be effective here when applied to the shortened tissues.

It would be nice if life were simple and everyone showed up with one or the other upper Spiral Line consistently short all the way along, but unfortunately that is not how it works. Sometimes the back side of the upper spiral on one side is short from head to ribs, counterbalanced by the other spiral



An off-center head is a frequent indicator of Spiral Line imbalance, which is linked (in my opinion, no evidence) to our vestibular system, or inner-ear balance.

Though shoulders go into imbalance for many reasons, significant difference in placement alerts me to look at the Spiral Line.



being short in front from ribs to hips (see Image 7B, page 98)—thus more or less canceling each other out, and making the simple visual clues we listed above a bit more complex.

You can, however, take the measure of head to ribs on the back, and then the measure we made above of ribs to hips in the front. Again, if it is too close to call visually, probably better to work on some other imbalance that is more telling, but sometimes the discrepancy between these two lines tells the story.

The last complication in visual assessment of the Spiral Line is that there is a deeper line (the core, or Deep Front Line, as we call it—stay tuned), which often produces rotational deviations as well, via pelvic or spinal twists and torques. We will get to this in a later article, but for now, suffice it to say that it is common enough for the core to produce a twist in one direction, and the Spiral Line to compensate by countering the twist in the other direction.



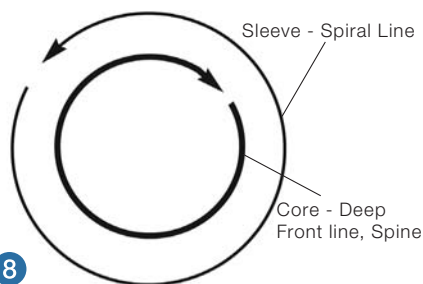
A

7A: If one leg of this 'X' projected onto the belly (or back) of a client is significantly longer than the other, then imbalance between the left and right Spiral Line is demonstrably present. 7B: A similar summary read can be made in the back.

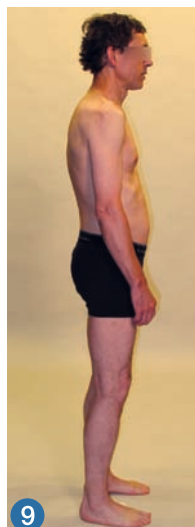


B

Human anatomy allows there to be one rotation expressed in the muscles closer to the body's centerline (i.e. psoas, deep spinal muscles, scalenes, etc.), counterbalanced by another counterrotation in the body's sleeve (these are compensatory rotations we are talking about in the Spiral Line).



8



9

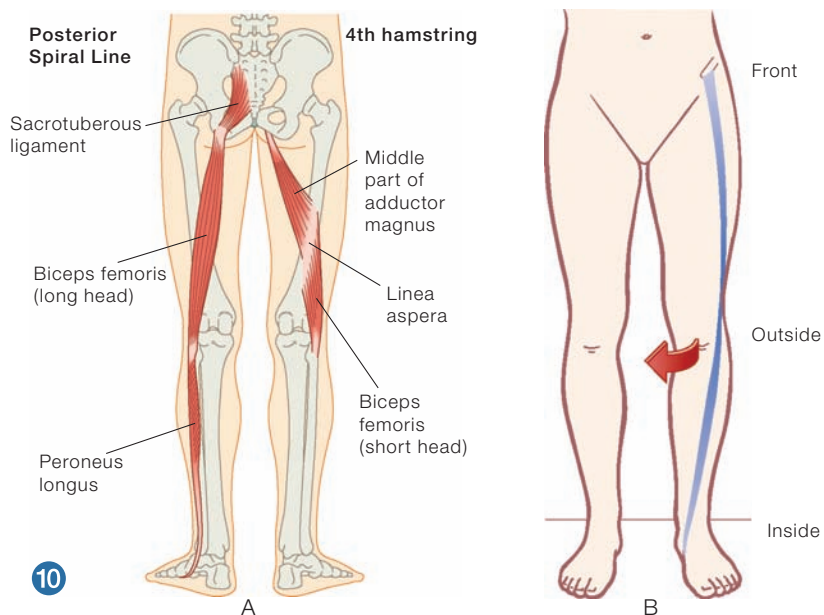
This gentleman does not show significant imbalance between the right and left Spiral Lines, but rather a general slack tone of both Spiral Lines—allowing the rib cage to fall back and the belly to pooch out. He needs both Spiral Lines toned.

The actual assessments for this common pattern are too complex for this article; see *Anatomy Trains* (Elsevier, 2009) or the BodyReading 101 DVD self-study course for more detail. Sometimes when you release the short upper Spiral Line, you find that the client looks more rotated than before you started. If the client has this sleeve-one-way, core-another rotation, you have not done an “Oops!” but rather a “There!” Now you can get to work on the psoas or the adductors or deep pelvic or spinal muscles that are holding that core rotation. Most folks with scoliosis are manifesting this inner-outer counterspin, but almost everyone has a mild spinal rotation, and many are holding it together with the outer bands of the Spiral Line (Image 8).

One final note before we go south, more for the trainers among us than the strict massage therapists: the Spiral Line crosses the body's midline twice, as we have seen—once between the shoulder blades, and once more or less over the navel. If both sides of the line are slack, then the person so afflicted can fall into the pattern we see in Image 9, with the rib cage falling back and the stomach easing forward. Giving them toning exercise for the Spiral Lines can radically and rapidly alter such a pattern. I am a lifelong pacifist, but boxing is a great motion for toning the Spiral Lines and giving equal exercise to both sides (as opposed to throwing or batting something, which are decidedly one-sided).

BODYREADING THE LOWER SPIRAL LINE

The lower loop of the Spiral Line (Image 4A) also has its complexities, since it winds its way through the other lines of the leg. The idea that the tibialis anterior pulls



10

The front and back of the lower Spiral Line jump rope present compensatory problems and thus treatment opportunities.

up on the arch and supinates the foot and is thus an antagonist of the fibularis longus that, when shortened, pronates the foot, is not a new one. The new piece here is that fascially they both extend all the way up to the pelvis by means of their extensions in the thigh.

Thus, an anterior tilt of the pelvis, left to itself, will predispose the client to foot pronation, and a posterior tilt leads to foot supination. The opposite patterns also lead to distinct strategies: If the pelvis is tilted anteriorly and the foot supinated, you will find shortness along the anterior lower Spiral Line—in the tensor fasciae latae or tibialis anterior. If the converse pattern is present and the pelvis is tucked under and the foot is pronated, look for excess muscular tension in the fibularis or outer hamstring. Treatment strategies for these patterns are expanded in the *Anatomy Trains* book.

One last set of points on the front and back of the lower Spiral Line: in the front, note that the stations (attachment points) of the lower Spiral line are the front of the hip (ASIS), outside of the knee, and inside the ankle. As this line tightens, it could, as we have said, pull up on the ankle or down on the hip, but often the effect is to medially rotate the knee as the line straightens (Image 10B). Looking at your

client from the front, if an imaginary flashlight in the patella points more inward than one placed over the second metatarsal of the foot, it is worth considering whether the front lower Spiral Line could use some opening.

The posterior part of the lower Spiral Line is a direct connection from the lateral arch to the SI joint (Image 10A). If your usual efforts to ease SI joint pain have failed you, it is worth looking to the posterior lower Spiral Line, especially its effect on the cuboid and heel bones, as a distant but relevant place to visit.

Whew! When I agreed to write this series (which, as with all writing I do, is a way to make these issues clear in my own squiggly brain), I had not realized how complex these articles would get—but they need to be to tell the whole story. Next time, we will tackle the arms and the arm lines. This is such a complex of anatomical relationships that we will stick primarily with the shoulders—and hopefully we have given you enough here to work with for the next couple of months. **m&b**

Notes

1. Robert A. Dart, "Voluntary Musculature in the Human Body; The Double-Spiral Arrangement," *British Journal of Physical Medicine* 13, no. 12 (December 1950): 265–8. Accessed November 2011, www.ncbi.nlm.nih.gov/pubmed/14791941.
2. *Anatomy Trains* (Elsevier, 2009) details other historical attempts at linking muscles functionally.
3. The associated resources and learning materials mentioned in this BodyReading the Meridians column are available at www.anatomytrains.com/store.

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