

Threads within the Fabric

Kirstin Schumaker is a KMI graduate, practicing Structural Integration in Corvallis, Oregon since 2005. In the last two years she has been exploring work with peripheral neural fascia, through classes she has taken with both Christophe Sommer and Don Hazen, and through hands-on study in the context of her SI sessions. She has been a bodyworker for ten years, formerly specializing in shiatsu--thus she has for some time been working with linear features and expressions within the fascial fabric, exploring concepts and palpation through several different paradigms.

This paper is intended to be “a report from the field” about my experiences with neurofascial manipulation in the context of practicing traditional Structural Integration. Although I am “green” in terms of number of years practicing SI, it is my desire to instigate conversation amongst colleagues about the practicalities and benefits of working intentionally with the fascia of peripheral nerves. In fact, as Structural Integrators, we are working with neurofascia all the time whether we realize it or not. The idea that inflamed or irritated nerves shorten structure and limit function has many repercussions for Structural Integration. Often traditional myofascial methods do foster neurofascial release, but sometimes they actually perpetuate inflammation of nerves. Of course some neural irritation is to be expected in the context of good SI work, but when traditional SI techniques aggravate chronic neural inflammation, they are actually counterproductive in terms of leading to beneficial shift. I want to make a pitch to the greater SI community (“Hey, come look at this! It’s amazing!”), because I think this neurofascial paradigm will catalyze many useful insights, and over time has the potential to transform subtly but significantly how we Structural Integrators conceive and implement our work.

So far I have referred to myofascia and neurofascia as if they are two separate things, but really myoneurofascia is one fabric, and nerves are integral to the material with which we work. If you have yet to explore specific palpation of nerves, I’d like here to serve as your tour guide. I wish to help you “see and feel” some of what I have discovered through touch, while surveying this myofascial landscape with a small set of guiding principles I learned from my neurofascial teachers, my Netter atlas, and my own working set of “rules” that are derived through experimental trial and error. Neural anatomy and physiology are not my areas of expertise and so I refer curious readers to the papers on Don Hazen’s website that summarize and explain quite a lot about the way the CNS and PNS work,¹ and to the detailed and well-illustrated presentation of neural anatomy and physiology in Jean-Pierre Barral and Alain Croibier’s book on peripheral nerves.² What I do feel able to expound on is my subjective clinical experience, with descriptive examples that I hope will pique your interest in further study. I love a good kinesthetic or visual metaphor, and I will cast them about freely because I think they make for a good way to share and develop sensitivity and understanding. No one metaphor is most apropos--myoneurofascia as fabric is one of my favorites, but the body as landscape is another. I want to convey what I feel to be true, and I acknowledge that my analogies are

sometimes not technically accurate. (You must take a class and/or study the writings of Barral and Hazen and Sommer, if you want a truer understanding of neural anatomy and physiology; I am here to serve as more of a sensorial guide.³)

Fascia as Fabric

Major nerves branch off into an ever finer network that pervades the fabric of the body. In many places the directional trend of this neural web lies “on the bias” or at a contrasting diagonal to the directional trend of the muscle fibers. When I palpate myoneurofascial tissue in the deltoid, or the vastus lateralis, for example, I notice linear tension or fullness and “stringiness,” crossing in several different directions.

Considering first the deltoid (you may want to get out Netter or another favorite atlas to follow along): when the branches of the axillary nerve are inflamed, they are identifiable as linear features that can be distinguished from muscle fibers because they run in a contrasting direction. The axillary nerve divides into an anterior (upper) branch that fans forward innervating the anterior deltoid muscle, entering the muscle from underneath, and a posterior (lower) branch which innervates the posterior deltoid, also from below, and sends off a small shoot to innervate teres minor and a shoot that becomes the superficial lateral brachial cutaneous nerve, which flows over the posterior inferior edge of the deltoid and fans anteriorly and down across the lower deltoid and biceps. A few shoots of the anterior branch of the axillary nerve apparently pierce the muscle and also become cutaneous. This is a lot of detail, but my main point is that there are deep and superficial branches of the axillary nerve and the general trend is that fibers fan anteriorly, whereas the myofascial fibers of the deltoid fan superiorly. Additionally, the stringy parts of the anterior and middle deltoid that are usually interpreted as tendinous or fibrous strands of muscle are likely inflamed supraclavicular nerves that cascade down onto the deltoid (often continuing further down into the arm) from above the acromion and clavicle. (Through palpation, one can distinguish that these strings feel and react to pressure and stretch like nerves, not muscle fibers.) Next considering the vastus lateralis, muscle fibers run from posterior superior to inferior anterior, whereas the femoral nerve branches run from anterior superior to inferior and slightly posterior. In both examples, the nerves are the warp and the muscle fibers the weft (or *vice versa*) of the neuromyofascial fabric.

To some extent it is true that when your t-shirt is too tight from spending time in a hot dryer, it doesn't matter which direction you stretch the fabric to ease the binding in the shoulders. Yet forming a decision about which direction to specifically work the fibers of the deltoid (i.e. working away from the central nervous system along either the axillary or supraclavicular neural fibers, or working from the lateral intermuscular septum below the deltoid to redistribute the fascia upward) will likely be based on intuition, a reasoned myofascial strategy, a neurally informed strategy, or a combined strategy, and working from different directions will yield different results.

Here are a few more fabric metaphors:

Working with an individual nerve branch could be likened to working the snag out of a sweater. It is a local tightness that disturbs the smooth continuity of the fabric, and smoothing or tugging on the fabric broadly does little to mitigate the snag, but carefully applied local manipulation can be effective in adjusting the relationship of the snagged thread with the surrounding fabric. The body seems to shorten up neuromuscularly and posturally where nerves are inflamed or irritated, perhaps in an effort to make the person more comfortable. Easing a few snagged nerves can be all the impetus a body needs to renegotiate the distribution of fascia and find a more harmonious posture.

In places where a major nerve runs through a fascial tunnel or sleeve (radial nerve through the lateral septum of the arm, or saphenous nerve through the lower third of the septum running beneath the sartorius), the nerve can be likened to a cotton drawstring stuck in the fabric tunnel of a pair of thick cotton sweatpants that causes the fabric of the pants to bunch up to one side or the other—what one needs to do is distribute the fabric sleeve around the string.

Developing a Map and Philosophy of Approach

Let me now explain some of the principles taught by my neural teachers and some of my personal rules of approach for working with neurofascia. Both in Christophe Sommer’s class and in Don Hazen’s class, the first task was to begin to get a feel for how to distinguish nerves from the adjacent and surrounding tissue.

Sommer began his teaching with the cranium and the cervical nerves, and then moved into the brachial plexus. He said it is best to begin treatment of a nerve close to where it exits the central nervous system. (This makes sense to me experientially because I have seen that reducing nerve irritation “upstream” can dramatically reduce sensitivity in the nerve branches that are more distal, facilitating faster titration of myofascial work that is more comfortable to receive. Neural pain and stress in the system as a whole is reduced more quickly, making the body more willing and able to shift.) We learned to palpate “nerve buds,” the places where the posterior rami of the cervical nerves leave the spinal column and emerge through a fascial “tunic” or sleeve—it feels like a lump in the tissue when the nerve ramus is inflamed. Most of the course focused on nerves of the neck, head and shoulders, but upon class request, Sommer taught us to locate and treat a few major lower body nerves where they exit the pelvis. Then he instructed us to just “follow your sensation” and use your anatomy atlas to find the neural pathways in the lower extremities.

Don Hazen began from the ground up, teaching palpation of nerves in the feet and legs, then the arms, preferring to save “core” work with the brachial plexus and lumbar plexus for a “part 2” class—a pedagogical choice he says, because it is easier to access and distinguish nerves in the extremities, therefore it is a good way to begin learning. When I asked him about the concept of working from the core out, he stressed that one can “enter

the system” from any point and have a beneficial and harmonizing effect, if you are working or “listening” sensitively. He also stressed that it is effective and efficient to identify the greatest neural restriction along the neural path. His first example in class was to teach identification and release of a branch of the plantar nerve, to allow the big toe to dorsiflex more fully, and then ask us to notice how that small neurofascial change can improve alignment and coordination in gait.

Either way, whether you begin with the core or the extremities, the way to develop and internalize a useful map, and the “x-ray vision” that is part imagination and part finely tuned sensation, is to do just what Sommer says—learn basic palpation, follow your sensation to decide where the nerves run, trust your imagination and senses, then use your atlas for verification.

Arborization—When the Atlas Fails, Believe Your Fingers

In the phenomenon of arborization, chronically stimulated nociceptors produce nerve growth hormone, and so an irritated nerve can actually lengthen beyond where anatomy atlases show them extending. Don Hazen introduced me to this idea—he says there are many papers about the phenomenon of arborization, and yet no documentation exists about nerves lengthening to extend way beyond where they are drawn in the anatomy atlases. Nevertheless, he has felt this to be true over and over again clinically.

Since I have learned to palpate the iliohypogastric nerve, including its lateral cutaneous branch passing over the iliac crest and down the posterior lateral aspect of the thigh, I am also convinced of this phenomenon. I have been so excited about the IHG nerve lately, and its arborized extension down to the ankle, that it is for me “the new psoas”—it seems to perpetuate or significantly contribute to many patterns, such as pelvic tilt and torque, lateral shift of the lumbar spine, rotation of the ribs relative to the pelvis, and lateral shift of the rib cage, in addition to simply shortening the Lateral Line.⁴ (Of course this is a case of chicken and egg—identifying one causative element or feature within a complex structural pattern is not feasible, the aggregate of perpetuating factors exists synergistically. Nevertheless, in many cases addressing locally inflamed nerves, especially arborized cutaneous nerves, seems to be an important key to unlocking a structural pattern.)

How to Decipher What You Feel

Nerves are easy to locate in places with distinct geographical landmarks—for example, the saphenous nerve (the most medial branch of the femoral nerve) follows the pathway of the sartorius, running down the fascial septum between the quads and the adductors before it continues into the medial knee and lower leg, where it is more superficial.

When looking for either a superficial cutaneous nerve, or a nerve that is embedded within a muscle, it is necessary to palpate gently with the finger pads. My senses are more alive

and attuned if I do not try to palpate deeply, and I am better able to feel the nuances in the tissue. This is what Sommer and Barral term a “listening” touch.

I learn the approximate pathway from studying images in an atlas, then I imagine it on the body and just lay my finger pads down lightly. More often than not, I seem to land on the nerve at first try. Students and teachers in my classes have noted similar experiences. I think we are following visual cues that we are not intellectualizing—tissue seems locally swollen or flattened, local muscle tone is high, and/or there is a “magnetic” intuitive attraction to a particular spot.

When I lay my finger pads lightly down, I look for a string, a cord, a linearity that seems to stand out within the neighboring tissue. An inflamed radial nerve in the forearm might feel like *al dente* spaghetti, and have a slight pulse or feeling of fullness, but after manually reducing the inflammation, that same nerve will feel more like well-cooked vermicelli—harder to find and distinguish within the surrounding myofascia—and it may have just a ghost of the energetic tension previously felt.

This fullness or pulse exists because nerves are vascularized, and they also contain interstitial fluid, which cushions and lubricates the linear components contained within the layers of perineural fascia. Nerves have turgor pressure, and so pressing gently on a nerve is like pressing a garden hose when the spray nozzle is turned off but the spigot is on, it pushes back a little. If I palpate a nerve with finger pads of one hand and place my finger pads of the other hand a few inches away, further up or down the nerve, I can push with one hand and feel the pressure response with the other—just as if this fluid filled structure were a waterbed, I push one side and feel the other side go up. Playing with contact in this way has taught me how to sensitively work with inflamed nerves, because when inflammation and swelling increase the internal pressure, the pain threshold is reduced, so that just a slight external pressure elicits pain.

Right below the inguinal ligament is a good place to look for a nerve that feels “buzzy” or irritated, especially on an anteriorly tipped pelvis when the hip is extended. I find the femoral nerve just lateral to the artery (looking for a buzz, not an arterial pulse) or the lateral femoral cutaneous nerve just medial to the ASIS. A nerve will feel more electrically alive if it is impinged somewhere upstream or has been recently overstretched. In this locale, impingement often occurs when a chronically engaged or hypertonic iliacus crowds the space under the inguinal ligament where the neurovascular bundle must travel. (The psoas is more tendinous as it goes under the inguinal ligament, so iliacus is a more likely culprit.)

If a nerve has been chronically inflamed, it may feel surprisingly “fatter” than one would expect because likely it is surrounded by denser fascial layers in addition to being swollen, and it may not feel buzzy because it is functionally protected from local stretch and irritation by the dense fascial matrix around it. (The same nerve may feel more buzzy

just outside of the dense zone, where it is locally vulnerable to overstretch.) Inflamed nerves are less elastic and therefore will function to limit structure in movement and posture—these fascially bound nerves might even feel like fascially adhered bundles of muscle fiber.

The lateral calf is a good place to experiment with distinguishing hard nerves from tendons and fibrous muscle. I might begin by looking for a cordlike lateral cutaneous sural nerve—something I have previously mistaken for the tendinous, fascially bound head of peroneus longus, or a stringy flexor hallucis longus palpable beneath the soleus. These longitudinal features all run parallel to each other in the same lateral region of the leg, but as I palpate moving laterally across them, slowly and lightly, I will try to determine just how many linear elements I feel and then begin to sort them out. If I shorten the myofascia slightly by repositioning the client’s ankle passively, the nerves will be less sensitive, and it is easier to slide or palpate lightly along one and to distinguish it from muscle tissue. (When a muscle is slack, it is as easy to find a nerve as palpating a thread under a dinner napkin.) In addition to the tendons and fascial septae, I find three nerves—the lateral sural cutaneous nerve, the superficial fibular (peroneal) nerve, and possibly an arborized extension of the iliohypogastric nerve. (While palpating, I ask myself: How deep is this stringy structure? Where is it located relative to the fibula? Where does it go when I follow it? What happens to it when this client flexes or circumducts her ankle? Where are the borders of the muscles? What could the neighboring stringy structures be? Can I distinguish a string of nerve tethered very closely to the fibula that could slowly and with very small movement be shifted laterally relative to the bone?)

Strategies for working with peripheral nerves

Some techniques for working to liberate and differentiate nerves may at first seem like a departure from traditional SI concepts and techniques. And yet many of the principles of working with nerves harken back to traditional SI maxims: figure out how to *lengthen what is short*; liberate what is stuck; *pile up on the mountains* (a KMI maxim referring to the nuances of performing ‘backstripes’, which essentially means distribute the tissue to the place that is under strain from being stretched or ‘locked long’); and *listen to the tissue*. In sum, it is important to pay attention to what *feels right* while working with neurofascial tissue. Part of figuring out what feels right is being able to choose what specific layer of tissue or what part of a structure to work with. If one has a mental map of the major branches of peripheral nerves, it is easier to make logical decisions about how to sequence the fascial work. Client feedback about whether stress on the nervous system is increasing or being relieved is important information. I specifically tell clients that I want to avoid sharp or escalating sensation when I am working on nerves; their feedback helps me precisely hone the work—pain equals no gain. Moment by moment and inch by inch, I adjust my touch to meet the local needs of the nerve. I feel my way through the fabric with my sensation that is constantly updating my internal vision. I can trust my sense of when a neural technique is “just right” because it feels satisfying to both

me and the client—it surprises me sometimes that my own sighing is a sign that the client’s nerve and nervous system is easing.

My greatest teachers in this regard have been the “sensitive” clients who have chosen to work with me. I have had the privilege of learning to refine my neuromyofascial techniques and strategies by working with quite a few clients who present with variations of “fibromyalgia;” two clients with sensitized or traumatized nerves from broken hand injuries; several clients healing from spinal disc injuries with lingering pain and/or weakness in the thigh and leg; numerous clients with cervical and brachial plexus restrictions that contribute to shoulder girdle and neck alignment problems and result in hand and arm neural symptoms; and some clients who have loose or hypermobile joints and/or generally open and supple myofascia, yet they exhibit structural alignment issues that manifest for them as pain. (These folks have the kind of body structure that can easily be overworked or “sprunged” with heavy-handed generalized SI techniques.) Through working with them, I have come to feel strongly that it is important to listen to what the nervous system “wants,” to figure out and be able to anticipate what will put it at ease, and to honor “pain” as a signal that the body is intelligent and is able to help a responsive practitioner figure out how to finesse the tissue to reduce structural strain.

What Principles Do I Follow?

1. Generally start near the central nervous system, upstream.
2. Think in terms of layers, working with the superficial cutaneous nerves first.
3. Pay attention to what is short. This is our usual body reading, asking if there is a *neural* component to this shortness.
4. Pay attention to working what is dense and tethered. Roll or contact the nerve with lateral pressure (to soften and to differentiate), then lengthen (to further differentiate).
5. Work the tissue locally, from the middle of the density, before trying to move through it. (A nerve trapped in a dense matrix of fascia could be compared with a tangle of yarn—the most successful way to undo the snarl and save the yarn is to pull it apart from the middle, reducing the density of the knot, and then one can figure out how to pull things free.)
6. Follow a nerve to its end, before moving on to the next nerve. (For greatest client response, when I find myself on a good track, doing satisfying release work on a particular nerve, I make sure to follow a neural path to its end, even if I use just a light touch as I trace into the dorsum of the foot or the back of the hand.)
7. If it is painful to receive, then change tactics!

Starting Upstream, with the Superficial Layers, and with what is Short

Learning to address nerves with specificity and subtlety has completely changed the way I approach the lateral hip, thigh, and leg. I will try to describe the geographical details and elaborate on some of these principles in order to explain what makes my sequencing a neurally informed strategy. (Time to follow along in the atlas again!)

When addressing Session Three territory, or at the outset of a lower body integration session, I like to begin with the iliohypogastric and ilioinguinal nerves, approaching them first from the posterior, palpating through slackened quadratus lumborum and spinal erectors (yes, you really can! ...even though they run anteriorly to the QL), then working above the iliac crest with client movement to differentiate the obliques and transverse abdominus. (These layers form the “sleeve” around the IHG and II nerves that begin traveling between the layers of the abdominal muscles above the lateral iliac crest as they leave the QL. The IHG nerve may be what SI practitioners often describe as the lateral raphe of the QL. From the lateral iliac crest, the IHG and II nerves parallel the inguinal ligament on their way to the pubic crest. It seems to me that when they are inflamed and short through here, there is greater impingement of the femoral and lateral femoral cutaneous nerves passing underneath—I can’t offer more than a weak hypothesis about why this is so. But it works well to consider the IHG nerve to be superficial to the lateral femoral cutaneous nerve, and I feel it is most effective to address the tissue above the lateral iliac crest and ASIS before addressing the anteriolateral thigh.) Often I will use a long active rotation of the whole body, with proprioceptive cues to get the client to actively use transverse abdominus as the obliques are stretching and working. If this hip is posteriorly tilted relative to the other hip, and the muscles at this side of the waist are dense (with the ribcage shifted to this side when the client stands), then I will think about sliding the IHG nerve through its fascial sleeve (after the layers have been fluffed up), as I push the tissue of the obliques forward above the iliac crest. (This is a neurofascial description of a typical myofascial approach to work above the iliac crest.)

In a lower body integration session, I might work next with the lumbar plexus (psoas territory) before I move on to working with the other superficial nerves, since the lumbar plexus is upstream of all the nerves of the legs. And for either a Lateral Line differentiation session or a lower body integration session, if the client has been reporting gluteal area pain, I will slide down through the slackened lumbar fascia with doubled fingers, tracing the imagined pathways of the cluneal nerves as they emerge from between the lumbar vertebrae making a short trip on a slight diagonal down to the iliac crest—if the upper glut area is sensitive, I generally stop at the iliac crest or trace the nerves only lightly as they fan down over the gluts. This is because the more superficial ends of the upper cluneal nerves, everything downstream of the iliac crest, are often stressed from overstretch due to entrapment where they emerge from the lumbar fascia. The middle cluneal nerves, which emerge from the sacral foramen and can be similarly entrapped where they emerge from the lumbar fascia, run laterally toward the hip, while the upper cluneal nerves flow from the iliac crest diagonally down toward the lower

margin of gluteus maximus—together they can seem to form a basket weave pattern. Barral says in his book that the cluneal nerves should almost always be followed “in the listening direction,” meaning toward where they emerge from the lumbar fascia, toward the iliac crest or the sacral foramen. This relieves stress on the sacral plexus and reduces neural inflammation in the superficial tissue of the gluts, making it easier to then listen to and work with deeper layers. “Sacroiliac joint pain” reported by the client is often simply cluneal nerve pain superficial to the SI joint.

I look next to the most superficial nerves that run through the places that visually are shortest. This means that if the pelvis or innominate is anteriorly tilted, I go to the branches of the lateral femoral cutaneous nerve that run down along the TFL and anterior iliotibial band, and if the pelvis or innominate is posteriorly tilted, I address the lateral cutaneous branch of the iliohypogastric nerve that descends posteriorly over the lateral crest of the ilium heading down behind the greater trochanter, where it then follows the posterior edge of the IT band. If the client has a pelvic torque with one innominate tilted anteriorly and the other posteriorly, then I will work asymmetrically, on the shortest pathways, checking to be sure the other side “wants it” before I attempt to release the longer tracks. Usually I just “listen” in a few places or lightly follow the longer neural tracks. I follow these nerves all the way into the foot, and then I work with the femoral nerve and its branches or the sciatic nerve and its branches, and with the more medially located posterior femoral cutaneous nerve and obturator nerve.

I abbreviate here in my descriptions because I can’t really describe in great detail the individual step by step techniques, and I speak as if I am only addressing nerves, but I am using the nerve names as a “zip code.” What I mean is that I work the myofascia above the iliac crest, then work fascially down toward the foot along the lateral leg. (Sound familiar?) What is different is that I am working to differentiate and relieve the nerves along the way. AND I generally avoid sweeping upstream where the nerves are irritated. This would be like petting the cat backwards—you can get away with it for only a short amount of time. If my SI strategy tells me that the fascia needs to be “lifted from below” up to the anterior ASIS, I might iron the tissue broadly upward AFTER I release tension and inflammation in the nerves by specifically and selectively working part of the fabric in a downstream or distal direction.

Working with Density and Tethering—Pay Attention to Sensation

Within the denser regions of myofascia (for example above the iliac crest, or behind and inferior to the greater trochanter, where there is often a pad of dense fascia and fatty tissue), I give my attention to freeing the nerves within the surrounding tissue, because where the fascial matrix is dense, nerves are more tethered and trapped. A client may report pain near the *perimeter* of a dense area of fascia, because this is where the nerve gets stressed during activities that require the general region to stretch. (The nerve is essentially protected from local stretch within the dense areas.) The place to look for length is in the dense zones, not necessarily the painful zones. Reducing fascial adhesion

around a nerve increases overall extensibility and will distribute physical stress more evenly when the client performs something like a yoga stretch. If manipulating a nerve produces pain it is important to shorten or slacken the myofascia slightly and “listen” to the nerve before trying to slide along it. After the nerve has softened and become more responsive, then it is possible to roll the nerve laterally, stretch or traction the nerve longitudinally, or apply a broader stretch of the myofascia that includes more of the neural net.

“Lateral Glide”

Rolling a nerve (applying lateral pressure at multiple locations while gradually moving down the line) seems to free it up within the fascial matrix that tethers and holds it in place. But I am guessing that it also frees up the fascia that is IN the nerve. Nerves are like coaxial cables that contain bundles of neurons and other linear components, including layers of fascial sheaths, and the blood vessels that vascularize the nerves. Rolling the nerve will roll the contents of the nerve. The smallest version of “rolling” is simply a pressure applied laterally. This can be amazingly quieting to an acutely agitated nerve, making it more responsive to stretch—it is somewhat like warming up silly putty which then becomes more extensible. (Essentially this is the same as “listening,” except with this subtle version of rolling I do have some intention to manipulate the nerve, I am not being simply receptive.)

Arborized cutaneous nerves, perhaps because of the conditions under which they grow (there is pain that inhibits free movement of the body in that zone), tend to be very tightly tethered or anchored in place, and thus are more vulnerable to overstretch and irritation when that body part is taken into repetitive extreme stretch. I imagine these nerves anchored to the myofascia are like ivy anchored on a wall, immovable unless the tenacious roots are broken, except that the fascial and neural roots anchoring an arborized nerve need not be broken, but can be softened and reshaped by rolling, so that the arborized nerve becomes a more mobile threadlike component of the myofascial fabric.

I remember being told during my SI training that it often doesn’t matter whether one is following the grain of the muscle when working to lengthen/open/expand fascia in a particular area, and sometimes working “on the bias” feels very helpful. From a neurological perspective, if one is moving SLOWLY in a lateral direction across an inflamed cutaneous nerve it will be like rolling it to free it from the underlying myofascia, in order to improve lateral play, or lateral glide as Barral calls it. I would add however that working too quickly or insistently across the grain of the neural web, specifically strumming across an inflamed nerve, is counterproductive for releasing or easing the fabric. Directly and insistently stretching an inflamed nerve to lengthen it is also counterproductive, because this will only serve to perpetuate inflammation, but it is possible to finesse the neuromyofascial tissue in a way that restores length.

Lengthening or Stretching the Fibers

Length is often needed right where there is density, but you have to open up the tissue before you try to get length. My favorite example is in the anteriomedial septum of the thigh. (I love to work this area, because it is so often sensitive and is such an important area to liberate for knee tracking and alignment!) Here is a neural analysis of why it's important to open up this area fascially. When movement calls for differential lengthening and shortening of neighboring muscles, nerves running through or along an intermuscular septum will experience pulling and tugging. The saphenous (cutaneous) nerve and a neighboring (muscular) branch of the femoral nerve run alongside one another beneath the sartorius in the intermuscular septum between the quads and adductors. These nerves can be stressed as the quads shorten and the sartorius and anterior adductors lengthen during a long stride. Repeated strain can become chronic nerve inflammation, which leads to local fascial reinforcement and further tethering or trapping of the saphenous nerve that branches out to supply the whole medial knee. Medial knee pain is so often caused by saphenous nerve entrapment in this lower third of the anteriomedial intermuscular septum, and it is my guess that fascial adhesion in the upper half of this septum also stresses the nerve to the vastus medialis, which inhibits muscle contraction and contributes to problems with knee tracking.

Now I am sure all Structural Integrators have the experience that working linearly along this septum can cause escalating pain or sharp sensation, especially in the lower third, where one typically finds the most significant amount of fascial adhesion, and especially if one is trying to slide upstream; and each practitioner eventually figures out his or her own way of finessing the tissue to open up this area. My strategy is that the density must be opened up a bit first, and it is more productive to work in a way that actually soothes and relieves the nerve. Trying to travel along this septum too soon is like being a bulldozer with a pile of dirt—pushing fascially adhesive tissue that has a nerve densely anchored in the matrix, one leaves an increasingly strained nerve in the wake of one's fingers, and the nerve slowly begins to scream as it is stretched thin. It is better to start in the middle of the pile and move outward, minimizing the distance traveled upstream. It is also better to work in segments, localizing the stretch with a broad pin upstream and a more directive differentiating touch alongside the nerve at the downstream end, with both the upstream and downstream hands migrating apart, but with some intention to traction the nerve distally. One can move segmentally upward in this manner until the dense or adhesive section has been cleared, and then it works to travel upward in a long stripe through this septum to create “lift” without intensifying neural distress.

I remember Sommer saying that nerves really “like to be stretched,” however inflamed nerves don't like to be stretched *tight*, especially around hard corners (like the ulnar groove). You can pull on the end of a garden hose that is lying about in the yard, in order to extend its reach to all the plants, but if it is caught around a shrub or wedged between the car tire and the driveway, you'll have to go up the line and unhook it directly. This is the corollary to “you can't push into a density” without first opening it: you can't simply pull the nerve away from a restriction either. One has to free the nerve where it is tethered

or restricted before trying to pull on it. In the case of a nerve being strained where it passes over a bony or ligamentous obstacle, the restriction must be freed and/or length found from above the “hard corner,” and the limb must be positioned such that the nerve will not be pulled so sharply around it, then one can attempt to traction or lengthen the nerve.

When I am “in a hurry,” and I am working on a more uniformly inflamed nerve (maybe one that was impinged further upstream but is no longer), and the client is not terribly sensitive, I will just lightly trace the nerve path, touching here, there, there, there, to find my path—forming a dashed line trail, telling the body, *this is where I am headed*. I might apply a little water-based lotion, or I will simply moisten my fingers with water, or maybe I’ll be able to travel on dry skin. (It is best to be able to slide easily when working on nerves, without distracting skin friction, but I don’t want to be later stuck with an oily surface when I want to apply a broad myofascial stroke.) Then I’ll slide down the edge of the nerve like a skateboard on a rail, while the client is gently doing some indirect movement (ankle flexion perhaps, if I am working on the thigh). If the nerve is very sensitive I will work more slowly and be more of an observer, less a doer, as I listen down the length of the nerve, touching lightly with the finger tips of both hands, then moving one hand at a time down the line, so that there is always a gentle contact on the nerve—in this instance making my dashed line almost unbroken, feeling gently along the nerve to trace its path. If the nerve is extremely sensitive, I may use no client movement at all, because when a nerve is that sensitive, the client will already be fully present with me and my point of contact. My mission is to de-escalate the state of alarm or agitation. The body knows I am “there”—I just want to reassure and soothe along my way, through a more “listening” touch. “Observation” becomes the treatment, inflammation diminishes in the neural branch that was being “listened to,” and then the myofascia, including the fine neural net that is intrinsically part of the fabric, can be stretched either manually or through active or assisted client movement with minimal stress to the nervous system, and the entire neuromyofascial fabric eases.

A Neuromyofascial Strategy Informed by the Direction of Fibers within the Fabric
Branches of the femoral nerve pass under the anterior edge of the iliotibial band and the lateral femoral cutaneous nerves. So they are the next layer down when addressing the lateral thigh. (The upper gluteal nerve that runs deep anteriorly through the lateral hip and innervates the TFL might actually be next, if I am dealing with hypertonic anterior hip abductors.) If we return now to my earlier description of fiber directions in the lateral aspect of the thigh, I can explain how I originally arrived at this protocol and why I have mostly stopped trying to work up *toward* the iliac crest when the client has an anteriorly “pulled down” ASIS.

As I used to simply iron up the lateral aspect of the thigh, I’d often have to reorient the angle of my forearm mid-stroke to avoid “ba-dumping” over a tight band of vastus lateralis muscle typically located mid-thigh. The other obstacle I’d sometimes run into

would be acute sensitivity in the lateral thigh that seemed to prohibit ironing upward. In particular, a few clients would find ironing upward completely intolerable, attributing this sensitivity to “fibromyalgia.” I would experiment with working down the thigh instead, which would be much easier for the client to receive, however in cases of significant anterior pelvic tilt, I’d be perplexed and intellectually distressed about which was the “correct” direction to work.

The lateral femoral cutaneous nerves which run down along the anterior edge of the iliotibial band emerge from the abdomen just medial to the ASIS, where they are often impinged due to hypertonicity in the iliacus that crowds the neurovascular elements as they pass beneath the inguinal ligament. Impingement creates irritation and inflammation, and if chronic, these superficial nerves will be the most obvious linear features on the lateral thigh—to the practitioner they may feel and seem to act like the reinforcing fibers in strapping tape, yet they will likely be very sensitive to pressure. Hypertonicity in the TFL, which tightens the IT band, and inflammation of the lateral femoral cutaneous nerve running down the anterior edge of the IT band, promote fascial adhesion between vastus lateralis and the IT band, leading to irritation of the branches of femoral nerve that pass under these longitudinal elements. Sometimes mid-thigh just a few branches of femoral nerve are inflamed, and so irritated motor neurons raise the tonus of just a band of muscle within the vastus lateralis. This is the source of the “ba-dump” phenomenon so often found within the middle third of the lateral thigh.

I slide along these inflamed femoral nerve branches toward where they pass under the IT band, working very specifically with just my index and middle fingers, reducing the local neural inflammation. And then I move broadly through the myofascia of this middle section of the thigh toward the knee, working slowly and at greater depth, to benefit the more regional neural net and deeper myofascial density, lengthening and smoothing the vastus lateralis, but working slightly on the bias of both nerve and muscle fibers to benefit both. Perhaps I more specifically work along the diagonal of the muscle fibers from back to front as I work toward the midline of the quads or the patella. Eventually I again smooth and soothe specifically just the superficial lateral femoral cutaneous nerve riding down the anterior edges of each branch with my finger tips. I follow them across the joint of the knee down into the anterior compartment, wherever the delicate sensation in my finger tips takes me. And THEN I may make the broad gestural pass of ironing the myofascia upward. This feels like the integrative icing on the cake.

Conclusion

My own clinical experience continues to prove to me that a combined neurofascial and myofascial approach enhances traditional SI strategy, making it possible for clients to realize change more quickly—some find relief from myofascial and neural sensitivity, which facilitates their receiving the myofascial work, and for others release of neurofascia is simply the key to structural shift, because this seems to be the greatest fascial limitation. My practice has benefited greatly from the study of neural anatomy and my evolving understanding of the ways that inflamed or irritated nerves shorten structure and limit function. I hope you will join me in opening up this study to a spirited dialogue on how some traditional SI techniques *can* be applied in a way that adversely impacts peripheral nerves and how a few techniques and strategies for fascial release of nerves can create positive impact and make us even more effective in reshaping structure and serving sensitive clients.

Resources

1. For Don Hazen's perspective on neural inflammation, Jean-Pierre Barral's work, and their relevance for myofascial manipulation go to his website. (<http://dhazen.com/neuropages/Local.html>) He has posted several long and interesting papers in which he condenses and explains key concepts of neurology.
2. Barral, Jean-Pierre & Croibier, Alain. *Manual Therapy for the Peripheral Nerves*, New York: Churchill Livingstone, 2007.
3. Christophe Sommer has worked with Jean-Pierre Barral for years and teaches classes on neurofascial and visceral manipulation through the Barral Institute. (At the time I attended his class, he was teaching in the US through Kinesis.) Don Hazen (whose Neurology of Posture class I attended a year later) also studied a bit with Barral but has developed a somewhat different perspective on neurofascial manipulation.

Through Hazen, I gained different insights and learned different palpation and treatment techniques from those I learned through Sommer, partly because these teachers have different pedagogical approaches, but largely because I was at a different place in my own learning when I attended each class. What I learned from Hazen was more about subtle technique, and with his presentation of the concept of arborization, he filled in my map of peripheral nerves in the lower body and shoulder. At the time I took Sommer's class, I was able to absorb a few major concepts of neural anatomy and the principles of direct and indirect release technique as applied to nerves, along with techniques for lengthening or tractioning nerves, but because I was so "green" as a practitioner, it took a year of almost daily nerve exploration within the context of my regular SI work, and then the catalyst of attending Hazen's class where I really learned subtle "listening," for me to really leap to a more effective level of practicing neurofascial release. Sommer's class was faster paced and began with cranial work that was new to me and challenging--I

probably would have gained more immediately from Sommer's class if I had taken the Hazen's class first, however Sommer's class gave me excellent preparation to continue study on my own. I am grateful for the experience of learning from both teachers, and I intend to pursue further study with both Hazen and the Barral Institute.

4. The Lateral Line is simply an Anatomy Trains and KMI term for the fascial continuity that can be traced through the lateral aspect of the body.