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Orientation and Empathic Resonance Considered as Psychobiological Elements in Structural Integration

By Kevin Frank, Certified Advanced Rolfer™, Rolf Movement® Instructor

Rolling® [Structural Integration] is about good technique, and rapport, and rapport, and rapport . . . .

Gael Ohlgren

Orientation is the basis for how we (mammals) do anything at all. First, without exception, we need to know where we are in relation to gravity or “up and down.” Then we perceive. We assemble our perceptions. With our perception, we build and populate a world to which we orient, and then we go about our business. As we do our business, communication is also critical.

Communication in somatic (body-oriented) therapies such as structural integration (SI) is about more than words. Communication, in the somatic context, embraces all the channels of sensory awareness: skin takes part in communication, the breath is part of communication, the intellect participates in communication, and movement is part of communication. Sounds (not limited to words) are part of communication. Silence is also filled with communication.

The back and forth of communication links necessarily back to orientation – gravity orientation and general orientation – how we locate this body in space. We literally “hold the space” for our work through orientation. Successful negotiation of orientation and sense perception is a central ingredient in client-practitioner communication and rapport. Successful communication and rapport is worth examining when we think about the process of educating SI practitioners.

A body-oriented look at communication between client and practitioner highlights what has been called the psychobiology of SI – “biology” because we work with gravity response, orientation and the physiology of motor control, and “psychology” because we work with perception, meaning, and the belief construct around “having” a body.

The SI process is a format where we can examine and evoke what are normally invisible threads of communication. Synergies of communication around body awareness are themselves shifts in consciousness. These shifts of consciousness are opportunities to remake the inherent sense of body, to loosen beliefs about body limits, and to revive body-friendly coordination. Communication that supports shifts in belief, and change in body shape, is necessarily a cooperative event, one where client and practitioner manage somehow, consciously or unconsciously, to share awareness with each other or to resonate with each other. Thus, resonance suggests itself as a metaphor, a way to refer to a phenomenon that can’t be fully explained, but is nonetheless a vital part of the work.

Resonance

Resonance, in the language of physics, is a matter of waves and specific harmonies of movement that can occur within a system. If you pluck a guitar string, other strings move. You hear the harmonics as other strings vibrate. A key feature of resonance is the specificity with which one object has the freedom to respond to certain wave frequencies exclusively from others. All objects are filters of energy. An object effectively “filters out” those waves passing through it that don’t resonate, and resonates with those for which its physical shape, length, and density are appropriate.

With biological systems, resonance is different than with inanimate objects. One can describe many forms of resonance between and within cells, plants, and animals. We watch life forms mimic and dance with, or repulse away from, other nearby life forms. Two plant stems may grow around each other. A dog and a cat may learn to share close proximity, but perhaps only at certain times and places. Resonant behavior in biology is selective and specific, like guitar strings.

Resonance relevant to somatic work is the combination of psychology and biology (psychobiology) called empathic resonance. Empathy is a capacity to feel in one’s own body what another is doing or feeling in his/her body. Empathic resonance is when two persons (or a group of people) sense the empathic exchange, consciously or unconsciously, and find mutual interest in the exchange. This can, in turn, evoke a sense of “shared attention.” This quality of shared attention, this resonant state, can be sustained as both people allow it. An empathic resonant state supports somatic work because it is a state where body patterns that are normally fixed are more plastic.

Empathy

We live at a time when empathy between animals and/or human beings finds scientific credibility. There is, for example, the “mirror neuron” effect. Neuroscientists observed, first in monkeys and then people, brain activity that indicates empathic activity. We now know that a person observing another person’s movements will exhibit sensory and motor brain activity that corresponds with the brain activity of the mover. We see a movement and we feel it, at an unconscious brain level. We can also learn to feel another’s movement consciously, at a sensory level. We can, in fact, learn to empathize specifically and somewhat reliably. Skillful empathy is part of empathic resonance but the latter is a step further along in the skill set. As structural integrators we learn to empathize with another person’s experience as a part of learning to do the work.

An example of empathic skill in SI is “body reading.” Empathic body reading is a skill that structural integrators develop to determine what needs work, what effect the work has had, and what to do next.
It helps to be able to “see” what is alive and differentiated, and what is less able to move in a client, so one can assist the client to move more freely, and with more clarity of function. We “see” or “see/feel” another’s places of ease, or places of effort/compression because our body senses subtle motor activity within ourselves that imitates the person observed. The capacity to imitate gives us a capacity to see. The goal is to acquire the capacity for the process to become conscious and deliberate.

Empathic body reading is meaningfully enhanced through differentiation of one’s body map, the motor and sensory mapping of one’s body at conscious and unconscious levels. My map of you can only be as good as my map of me. If I can’t notice an articulation, a plane of movement, or a spatial awareness in my body, I probably won’t be able to see it present or absent in yours. Mapping is another way to speak about embodiment. We can define SI as the work of differentiating the body’s map of itself – the body/action space. Whether we call it embodiment or mapping, the goal is the same: to restore the body to operate more intelligently by opening to better data.

**Empathy's Role in SI**

Before going further, it must be acknowledged that one can use empathic body reading as a tool of “power” over clients, certainly, or for any number of self-interested purposes. Such pitfalls are briefly mentioned later in this article. As a therapist, however, the best use of this skill is to help evoke new places of aliveness/awareness in the client or student, as a “listening” skill, and for modeling differentiated awareness in oneself.

SI practitioners often demonstrate to a client how it looks to evoke or inhibit particular sense perceptions. For example, one might demonstrate perceptually inhabiting a specific region of kinesphere, such as the space above one’s head, to show the client how it looks to move with this perception. This, in turn, stimulates the client’s empathy to see/feel the practitioner’s sense perception and movement.

Here is another aspect of empathy at work in SI. The client is effectively asked to empathize with the practitioner. Client capacity to “body read” the practitioner depends on the client being open to doing so. The client, in effect, has to allow the practitioner’s movement to touch him/her, for the demonstration to have any impact.

What evokes willingness to allow this level of intimacy? What evokes empathy? What qualities of attention in the practitioner hold a container for empathy-based work? Does the way we orient and attend affect those in our presence? These questions lead to considering one’s attentional field.

**Shapes of Attention**

Empathy is affected by the shape of our field of attention. Every moment our “movement brain” maps the space around us with a combination of conscious and unconscious orientation. We can’t turn this off. Orientation happens as a background to our other forms of consciousness. We can, however, influence parts of orientation through conscious perceptive attention.

How we orient, or formulate our shapes of attention, can be described geometrically: for example, as a sphere, an ellipse, a line, plane, or as a shape with missing or enhanced quadrants. Geometry is used to describe the shape of space that includes our orientation. I can ask, “Does the shape of my attention feel spherical, equally omnidirectional, or does it feel like an ellipse in one particular direction? Does my attention include space behind me or behind the one I face, or does the attentional space close in around my body, or my partner’s body?” “What is the shape of my kinesphere?” would be another way to ask these questions.

The geometric shape and perceptive details of our orientation influences how others feel in our presence. An omnidirectional field of attention to the space around oneself, a bidirectional sense of axis, and balance of weight and space orientation transmit the message that the practitioner is stable, because he/she is present in his/her own gravity orientation. Similarly, sensory awareness in the hands and feet signals stability. A broad spatial orientation, in contrast to pointy reactivity, offers a place of ground for the work. As with the physical ground we stand on, we want our practitioner’s ground to feel reliable and stable.

Stability of attention especially matters when we meet sensitive moments in the work. As a client opens to a new experience, pleasant or unpleasant, how do we, as practitioners, respond? Optimally, we maintain a broad, self-referential orientation; a stable background to the client’s new experience. Attention to gravity orientation is an essential part of holding the container. Stable orientation tends to reduce ungrounded reactivity. Ungrounded reactivity means my personal reaction to your experience, which is not relevant to your process (and not relevant to my support of your process). Reactivity, such as eager enthusiasm or subtle recoil, tends to pull clients out of their experience. Reactivity is typically the enemy of resonance.

**Inclusive Attention**

The capacity to empathize while simultaneously sustaining a broad and stable orientation to context supports deepening of the re-mapping process that is at the heart of SI. To grow a new map, one needs continuity of direct observation, which most people are not used to. We support the client’s sustained observation through sustaining our own attentional field.

As the process continues, clients recognize that the field of inquiry shared with their practitioner is a space that, at least at times, helps open new dimensions of awareness. As clients get used to a quality of shared observation, a feeling we call “resonance” or “empathic resonance” develops.

Clients can also start to feel the power of “inclusive attention,” in which one balances awareness of one’s own body sense with awareness of the other person. Inclusive attention isn’t unique to SI. However, the skill can be named and taught as part of the somatic set of skills one learns in SI. It is, in fact, part of reviving core stability in which psychology and biology are not separate.

**Our Varied Availability to the Idea of Somatic Resonance**

Many factors affect rapport. Some have to do with mirroring, or with simple listening and pacing, and some are as basic as good practice/office habits. Empathic resonance is a particular quality of rapport that makes somatic education possible. At the same time, we come to this aspect of the work with different backgrounds. Some practitioners come to somatic trainings strongly developed in skills of grounded empathic resonance. For others, it can feel new and unfamiliar. Some students feel understandably suspicious of the terminology, hearing terms like somatic or empathic resonance. The label can sound “new age” and distinctly ungrounded, for example. In fact, empathic resonance is a way to describe how all mammals, including people, develop social bonds,
and is increasingly recognized in the behavioral and neurological sciences. Empathic resonance is a quality that has been cultivated in many cultures far back in recorded history. At the same time, it’s helpful to respect the pace at which SI students are ready to learn about orientation and the more subtle levels of communication.

The good news is we can develop empathic resonance through training and practice. Our brain is eager to be exercised in this way. We learn to differentiate our map of body and space by having course time in which practice is part of the curriculum. We learn to build skill with our attentional field through partnered tracking exercises: exercises in which the tracker’s perceptual posture is a tracked parameter observed, ideally, by a third person. We learn through skillful feedback, feedback that is delivered in language that separates observation from inference (observed facts from assessment or judgment). Feedback, too, is more helpful in a field of empathic resonance.

**Empathic Resonance and Integrity**

As mentioned earlier, empathic skill does not automatically confer therapeutic integrity. There are many examples of empathic skill gone awry, when used by unhealthy personalities. How do we define integrity in somatic work, a field that is all about subtle and intimate communication? What do we teach students as a basis for safety and appropriate boundaries?

Simply put, empathic resonance is a grounded activity. We are grounded when the ground of our orientation is stronger than our focus on the client. Adequately grounded, we offer a container that is less susceptible to unconscious projection and transference because our clients don’t substitute for our ground. The client stays figure, as in the phrase “figure and ground.”

A broad attentional field – one informed by gravity orientation, a backfield and side field, and differentiated perception of bodily sensation – is not an attitude that “leans on the client.” Grounded resonance is a field of inquiry; inquiry is an attitude of curiosity. With stability, one doesn’t lean forward to look for stability, physically or psychically. We notice the ground beneath the work – the client, for all his/her fascinating details or dramas, is not our ground, but a figure within it/upon it.

Can we fool ourselves? Yes, the thinking/emoting mind is often fooled. To clarify orientation, practitioners benefit from feedback, feedback from partners and observers in courses that embrace psychobiological aspects of the work. We may not notice “leaning in” to the client until it is pointed out to us. We may not notice loss of gravity orientation and sensory awareness of our own body until we are asked, kindly and with curiosity, to notice what we sense in our body. Invited in such a way, we may actually be willing to look and see what can be noticed in this moment.

Can we still fool ourselves? Yes. Somatic work is inherently risky. Stacey Mills, one of the early Rolfers, and a Rolling® Structural Integration teacher said, “Rolfers are [people] willing to take all risks.” We are hugely vulnerable, in large part due to our eagerness to do work that is deep and fundamental to improved function. For whatever reason, there are times we “go to sleep” and wake up in trouble. What is the answer? There is, of course, no answer. Daily practice of perceptive and coordinative skills and daily opportunity to become present to oneself helps. Yet there is no passive security we can relax into. We all benefit by collegial support and continuing education in a mode that allows us to receive safe mirroring, along with any other choices for self-care.

**The Role of Empathic Resonance in SI Education**

Empathic resonance is a theory. It is based on the science of empathy and the subjective experience of resonance when two people share attention, when two people attend to a somatic experience in a nuanced way. Educating practitioners about empathic resonance offers skill sets that are straightforward and specific. These skill sets overlap with the basic skills of being a structural integrator: we differentiate the map of our body and the space around us at a detailed level, and we come back again and again to gravity orientation. We develop the capacity to describe our map of sensory awareness, and to ground our experience in sensory language. We develop the capacity to hold “fields of attention,” meaning background orientation to weight and space and to dimensions of space, of inside and outside, so there is a broad and stable container for our inquiry with people. Finally, we practice with each other to build stability and confidence in our perceptual and postural attitudes. We find out how perceptive attitude affects our own posture and how perceptive attitude affects the experience of our practice partners and, ultimately, our clients.

**The Psychobiological Idea**

Empathic resonance points to dimensions of SI that involve supporting perception, coordination, expressivity, and self-regulation. We ask clients to explore themselves in ways that are new and unfamiliar. We ask them to walk, or sit, or feel in ways that put them on the spot. How do we support this challenging learning situation, so that a client feels safe enough to sincerely explore? All of us are, first of all, animals. We are expressions of mammalian biology and, as such, we orient. And primarily, we orient to gravity. We want to track how our client/creature is orienting and we will do this best by observing how we, ourselves, are orienting – at each moment. Psychology is informed and supported by the biology of empathy and orientation. We don’t have to do psychological analysis to do psychobiological work. Psychobiological work happens as we support the conscious and unconscious work of empathic resonant exploration, and by bringing sensory perception to conscious awareness.

**An Exercise with Orientation**

Imagine you are about to meet a client to do an SI session. What is your orientation? Notice your orientation without edits. To what does your mind associate? What captures your attention? How does your body feel? Start from your actual baseline, without judgments.

Then, take time to notice your gravity orientation. Where do you find a sense of weight in your body? Take time to allow weight to register in your system. What is your sense of body volume? Breathe into your volume.

How do you notice your balance of “back space” (space behind you), front space, side space, overhead space, and “below you” space? Is the shape of your kinesphere a rounded bubble or an ellipse? If it is an ellipse, what direction does the ellipse elongate to? What helps you to balance your shape of spatial orientation? What makes it easy? How might you invite rounding awareness toward an omnidirectional
Elastic Walking: The Fascial Engine

By Adjo Zorn, Ph.D., Certified Advanced Rolfer™, Rolf Movement® Practitioner and Kai Hodeck, Ph.D., Certified Rolfer™

Note from Robert Schleip, Ph.D., Director of Fascia Research Project at Ulm University (Germany), Rolfing® Instructor: The presentation of Dr. Adjo Zorn at the World Congress on Low Back and Pelvic Pain in Los Angeles in November last year was, for me, one of the highlights of that highly esteemed conference. Coming from his perspective of being both a long-time practitioner of Rolfing Structural Integration as well as an established scientist, Adjo’s lecture presentation on “Walking with Elastic Fascia: Saving Energy by Maintaining Balance” suggested nothing less than a paradigm shift in classical gait theory. The article below sets forth some of the same ideas he presented at the Congress.

We have been studying human walking with the tools of mechanical engineering. Our work suggests a unique principal mechanism of walking that has yet to be properly understood. This mechanism requires precise action of the psoas muscle and the lumbar fascia.

The Problem

The human way of walking is strange. Not only does no other animal use such a stiff stance leg, but no other animal moves its mass up and down so much with each step! (see Figure 1). Generally speaking, to lift mass consumes energy, and no other animal voluntarily transforms flat land into hill country.

Moreover, a closer look shows that the upper body not only is lifted and lowered, but also changes its velocity in each step.

What is your sense of body and orientation to weight and space?

Now imagine: How might it feel to greet your client from this sense of body, weight, and space, this sense of up and down that you notice at this moment? How might you imagine finding this broad orientation, at times, during your work? Can you invite this possibility?

What was most easy or interesting to notice in this exercise? The most easily noticed details may be your best entry point to orientation, places to which you can check in during work.

Errors in the Conventional Model of Human Walking

Here we identify what we believe to be erroneous in the conventional model of human walking.

1. The upper body is thought to make no active contribution to walking. In the conventional model of human walking, the fundamental pattern is the inverted pendulum. The HAT segment (head, arms, trunk) is considered no more than a passive passenger, just a center of mass being firmly attached at the top of the pendulum (see, for example, Perry’s Gait Analysis: Normal and Pathological Function).

2. Elasticity is thought to have no role in walking (part 1). At one time, scientists...
discussed at length whether or not walking is an elastic action. The single exception to the rule that lifting weight burns lots of calories is where elastic recoil is involved. For example, bouncing high on a trampoline takes little effort because of the trampoline net, which brakes the falling weight, stores the energy, and recycles it again for the acceleration of the body upward. In the 1940s and 1950s, with the evolution of modern muscle physiology and the availability of EMG measurements, scientists discovered, much to their surprise, that the walking body uses its muscles to decelerate limbs almost as much as to propel itself forward.2 It seemed that this would be a waste of energy unless elastic structures were involved, and the search for elastic structures began. The researchers, who were mainly physiologists, concluded that there was simply not enough elastic material in the body for walking to be an elastic action. Having examined muscles, bones, ligaments and tendons involved in walking, they stated that those structures would contain only a negligible percentage of elastic fibers. Even today, most physiologists agree that collagen fibers, which predominate in tendons and fascia, are not elastic fibers.

3. Elasticity is thought to have no role in walking (part 2). Meanwhile, other researchers, whose focus was biomechanics, were exploring running. They concluded that running bears a strong resemblance to bouncing on a trampoline in that it seems to employ elastic recoil.5 Because walking and running use the same muscle, tendon, and ligament structures, this conclusion was at odds with that of the physiologists. However, the angles of the legs in running and walking are not the same, and the angle of the legs in walking is such that elastic rebound would propel the body not forward but backward—which makes it unlikely that any elastic recoil mechanism is employed in walking. Thus was established a gait analysis dogma (in full consonance with the former conclusion): While running is regarded as an elastic activity, walking is described as a pendular action.

4. Elasticity is thought to have no role in walking (part 3). What’s more, were elasticity involved in walking, something would keep a tight hold on the strings of the trampoline. As the well-known physiologist and biomechanist W.O. Fenn concluded, from general considerations and with utmost finality:

To maintain tension in any such tendon an active muscle contraction is therefore required, and this involves such a large expenditure of energy that the idea of elastic energy storage in the usual sense seems to lose its meaning. . . . The limbs do not ‘bounce’ from their tendons and the body does not bounce from one step to another however ‘elastic’ the step may appear to be.6 Consequently, to explain the “wasteful” muscle activity shown by EMG studies of walking, scientists like Hill and Fenn were seeking “chemical springs”, i.e., muscles that work “inversely” to produce chemical energy like accumulators when stretched eccentrically.7,8

The Role of Fascia

By accounting for the role of fascia, we can correct these errors and solve the puzzle. Let’s try a new hypothesis: that the lumbodorsal fascia, with a huge number of collagen fibers, acts as a tendon in counterpoint to the psoas major tendon, both of which are highly elastic and function as huge strong springs connecting the stance leg to the trunk (see Figure 3); and that these springs do most of the work of walking.

Figure 3: A stance leg and a balancing upper body, connected by the lumbodorsal fascia and the gluteus maximus muscle.

Some silly notions never die—and the non-elasticity of collagen is one of them. While the almost perfect elasticity of collagenous tissue has been proven repeatedly beyond any doubt and has been tacitly understood by many researchers, most physiologists still either deny outright that collagen is elastic or implicitly distinguish between collagen and “elastic fibers.”9 However, tendons and fascia actually consist of almost nothing but elastic collagen.

In our hypothesis, the HAT segment is not just a passenger, but plays an essential role in walking. It functions as a heavy counterweight for the hip-extensor and -flexor springs. This would explain the human peculiarity of balancing a heavy weight high above the hip joint. Identifying springs in the upper body instead of in the legs also resolves the problem of the force directions.

While Fenn and many others considered absurd the possibility that in walking, tendons function as elastic springs held in tension by actively contracting muscles, it has been demonstrated as a reality for the gastrocnemius aponeurosis.10 The situation might be clarified if we can learn more about isometric muscular contraction, especially in the tonic, slow-twitch muscles. Surprisingly, there is virtually no research about the energy consumption of a muscle acting isometrically, far below maximum contraction force. If it turns out that this is highly energy efficient, it will cast a whole new light onto endurance activities. And, it might also be that most muscles act this way in proper walking.

The Hypothesis of an Elastic “Bootstrap” Design

Have a look at Figure 4. In grey is the inverted pendulum of the conventional model of gait analysis. Superimposed on it in black is a representation of what our calculations have shown happens when the upper body is included. The stance leg moves up, thereby losing momentum and slowing down. Due to inertia, the HAT mass tends to maintain its speed. With no brake for the trunk, the walker would stumble forward. The opposite would happen when the stance leg goes back down: because of the weight it is supporting, the descending stance leg would accelerate while the trunk would stay behind, making the walker stumble backwards. As the conventional stance leg inverted pendulum does not work very well for the walker, it is evidently misleading.

Figure 4: An upper body without extra support for balance (black) superimposed upon the conventional inverted pendulum (grey).
Our hypothesis is that springs acting on the hip joint balance the weight of the upper body and avert the stumbling. To test our hypothesis, we developed the new model shown in Figure 5. This figure represents only the idealized single-stance phase of a step; the double-stance phase is not considered here. The springs counteract the inertia of the upper body, allowing it to maintain its balance on the alternately rising/decelerating and falling/accelerating hip joint base. At the same time, the springs pull the leg upwards in both phases, thereby also counteracting both the acceleration and deceleration themselves.

Not surprisingly, our calculations show that the success of the design depends on the precise adjustment of the springs, which would be achieved in the real world by fine-tuning the pre-tension of the relevant tissue structures. This tuning might be accomplished by muscles working isometrically under the control of accurate motor intelligence. As is the case with a fine musical instrument, effortless balance demands perfect harmony.

We consider our hypothesis to be a “bootstrap” design – a term derived from an 18th century German tale of one Baron Münchhausen, who reputedly pulled himself out of a swamp by his bootstraps. The same idea was introduced in English by James Joyce in *Ulysses*: The bootstrappers “had forced their way to the top from the lowest rung by the aid of their bootstraps. Sheer force of natural genius, that. With brains.” In engineering, a “bootstrap” is a device that feeds part of its output back into its input. Such devices are rarely so close to the original gravity-dependent meaning as ours.

**The Anatomy of Elastic Walking**

We propose that the combination of the lumbodorsal fascia and the gluteus maximus muscle serves as the hip erector spring (see Figure 6a). Indeed, EMG recordings of gluteus maximus activity support our hypothesis: maximum activity occurs at the beginning of the upward movement shortly after heel strike at maximum hip extension, when in our model the spring is stretched to its maximum length.11

Most likely, the psoas muscle and its long tendon serve as the hip flexor spring (Figure 6b). Unfortunately, little is known about the function of the psoas major in walking. Data on the “iliopsoas” almost always relates to the iliacus. Based on his observations of poliomyelitis victims, Duchenne13 concluded that the only muscles indispensable for walking, with or without mechanical support devices, are the hip flexors. Duchenne, by the way, because he could not use electrodes to stimulate the psoas itself, is responsible for popularizing the confusing term “iliopsoas.” Even when the function of the psoas major as a hip flexor is examined, its performance at an extended hip (Figure 6b) is often ignored (e.g., as in this source13).

In fact, the function of the psoas in walking is rarely examined at all. Most of the literature about the psoas addresses its assumed function as a stabilizer of both the hip joint and the lumbar spine (e.g. this source14). Bogduk disagrees. He reports, “A striking feature of the fascicles of psoas major is their similarity of length. This suggests that the psoas is designed to act from the lumbar spine on the femur. With all fascicles of similar length, they would all undergo the same relative shortening and would share to the same extent the linear excursion of their common site of attachment on the femur.”15 This seems to support our assumption that the psoas muscle acts mainly isometrically as an activator of the tendon spring.

Given the location of the psoas, EMG measurements in walking are rare. However, Keagy16 implanted electrodes into the psoas muscle during lumbar sympathectomy surgeries on five patients, and reported regular psoas activity in each patient during heel-rise. Guided by an ultrasound technique, Anderson17 inserted needle electrodes from the back in four subjects. At 1.5m/s walking speed, he measured activation duration times approximately 70ms while the muscle was elongating. Both studies support our hypothesis.

When the psoas is stretched most in walking, the hip is in internal rotation. “When through secondary muscle group action the hip is stabilized in a position of internal rotation, the action of the Iliopsoas is enhanced. At this time, the lesser trochanter is posterior and medial to the axis of the femur, and contraction of the Iliopsoas when riding anteriorly over the crest of the pubis produces reinforced and more deliberate lateral flexion and rotation of the spinal components through the

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**Figure 5a:** The first half of a step. A stance leg rises, due to kinetic energy and the action of the hip extension spring, which spring also decelerates the balancing upper body.

**Figure 5b:** The second half of a step. A stance leg falls, accelerated by the body weight and decelerated by the action of hip flexor spring, which spring also accelerates the balancing upper body.

In our model, the inertia of the torso’s high and substantial mass is absolutely necessary as a counterweight for the pull of the spring. Observe also that this mechanism requires “horizontal” levers, which the shape of the human pelvis furnishes.

What makes our model revolutionary is the absence of energy-consuming engines (contracting muscles). If it is congruent in its fundamental principles with reality, it explains a way of walking free of energetic cost. Because we are not aware of any theoretical discussion or empirical documentation of such a design in human biomechanics, engineering, or physics, we refrained from offering our hypothesis until we were absolutely certain of our calculations. At first, we doubted that it was possible to maintain upper body balance with no more than these two springs. However, our calculations show that when the spring tension is correct, the design works perfectly.

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**Figure 6a:** The proposed hip erector spring – lumbodorsal fascia plus gluteus maximus muscle.

**Figure 6b:** The proposed hip erector and hip flexor springs – lumbodorsal fascia plus gluteus maximus and psoas major (tendon and muscle).
transverse processes, which are posterior and lateral to the central axis of the vertebral bodies.”18 Because this rotation between pelvis and spine enhances the stretch of the lumbodorsal fascia on the other side, we speculate that the degree of rotation might indicate the degree to which both the psoas and lumbar fascia are utilized; i.e., minimal rotation might indicate low utilization of the psoas and lumbodorsal fascia, while the considerable rotations we have observed in walkers in remote Africa might indicate high utilization of those structures.

**Practical Experiences**

Because we speculate that improper or inadequate use of fascia might lead to back pain, we are experimenting with both Rolfing structural work and Rolf Movement education to help our clients use the fascia to achieve what we see as an elastic style of walking. It is difficult, given the subtlety of the adjustments, the need to involve the whole body, and the fact that “putting a spring into the step” seems to produce – or perhaps to demand – a change deep in the client’s personality.

If indeed the lumbodorsal fascia is rhythmically stretched during walking, we would expect it to produce a swing in the lumbar region (see Figure 7). Of course, this reminds us of Ida Rolf’s ideal of the “psoas walk.” We are now developing an optoelectronic device, with which we will reveal itself by swinging lumbars. We have no choice but to succeed: the project is funded by the German government.

Our research has led us to a new and unexpected understanding of what “balance” actually means for the human body – an understanding reinforced by our practical experiments. The subtle adjustments to the springs before the start of each step are required in order to maintain not only spatial balance, but also temporal balance. This has compelled us to adopt a much more dynamic view of what human structure is about. As Rolfers, perhaps we should learn to perceive the specific appearance of elasticity in walking – i.e., the high-frequency oscillations at heel strike (and the resultant waves that ripple through the tissue) – as well as the appearance of harmonics and resonance. Perhaps we should be more attentive in general to the dynamic features of the body structure; as Bernstein observed as early as the 1930s, the human body structure is four-dimensional.19

Zorn and Hodeck are physicists as well as Rolfers. Further information on this model is available online at www.swingwalker.net and in the upcoming book Dynamic Body, edited by Erik Dalton.

All images in this article are by the authors.

**Endnotes**

7. Ibid.
Natural Walking and Running

By Owen Marcus, M.A., Certified Advanced Rolfer™

Introduction
The first thing I teach all of my clients is how to breathe. When I can get my clients breathing correctly, it helps them manage their stress, and hopefully they won’t need me anymore. After breathing, the next thing I work on is walking. Breathing is an instinctual behavior; walking is only partly instinctual – much of it is modeled. We watch our parents walk, and we copy their movement style as well as the emotional style embodied in their movement. Some of us may rebel against our parents to create an opposing style (think about the rebellious, slouching teenager). Either way, we are in some manner being affected by how and why our parents walk a particular way.

In this culture we study walking and running biometrically, yet we still don’t understand how to do either correctly. For whatever reason we adopted our walking style, we invariably create a limited approach to dealing with gravity. To compensate, we created high-tech shoes that soften our walk and encourage us to walk and run incorrectly. Propelled by these shoe companies and our mechanistic paradigm of human movement, we created reductionistic models of how humans are meant to move.

Why the Natural Walk?
As Rolfer, we all tend to agree that this “civilized” model of walking is not working. It might be good for generating clients for our practice, but it’s not good for human bodies. We’ve forgotten something so simple: how to walk and run like an indigenous person.

Possibly the most brilliant focus of Dr. Rolf’s work was her emphasis on gravity. As fish aren’t aware of water, we were not aware of gravity before Rolf championed the importance of not just relating to gravity, but using it. Back in the 1970s when I was training to become a Rolfer, I had sessions in Rolf Movement® (or, as it was called then, Pattern) with Megan James and Heather Starsong (Wing). Both instilled in me how to have gravity work for me. I’ve practiced Rolfing® Structural Integration [SI] for more than thirty years, with no injuries to myself, and I credit them. I also credit them with planting the seeds of “Natural Walking.”

Soon after I opened my practice in Scottsdale, Arizona, in 1980, I started seeing runners as clients. Their injuries taught me what not using gravity can do to a body. Regardless of orthotics, new shoes, or knee surgeries, their injuries would return. And it wasn’t just my clients: up to eight out of every ten runners are hurt every year. Rolfing SI and reorganizing their structures weren’t enough. With Rolfing SI they improved more, and they went longer between injuries, but the injuries could still return. I tried teaching our movement work, but I wasn’t getting through to them. Maybe it was too theoretical, or maybe it was how I was teaching it. Regardless of why, I needed to come up with a way to build on the principles of Rolfing SI and Rolf Movement that these runners would understand – and practice.

Maybe it’s my dyslexia, but I’m a simple man, so I look for simple solutions. One day as I was explaining these principals to a runner, I showed him how to just fall forward. In my exaggeration, he understood. He tried it a few times in my office. When he came back the next week, he was starting to embody the fall. Over the course of a few more sessions, he mastered falling forward. I knew I had something when he reported that he was running pain-free, faster, and enjoying it once again.

Why Now?
With the resurging interest in Rolfing SI and the barefoot running craze, there is a new opportunity to step in and help runners in a simple way. Who better to speak about gravity, structure, and movement than a Rolfer? I suspect you’re also seeing clients more frustrated than ever before with the institutional answers they have been given for years. People are smart. When you explain to them how something works, they get it. When you tell them that we’re meant not to fight gravity, we’re meant to use it, they get it. People want easy, low-tech, and inexpensive ways to enjoy their bodies.

From a professional and marketing prospective, I found working with runners very rewarding. Yes, some can be neurotic about running. The upside of that is they all are very aware of their performance, so when you improve their performance, they know it! Over the years I have done running clinics teaching Natural Running to clients and non-clients. Everyone gets it.

As you start teaching Natural Running, you’ll become a local expert and resource for the running community and beyond. My Phoenix practice took off once I started helping local runners. Until they receive this kind of help, runners’ injuries will continue to get worse and worse. Eventually, some will have to stop running. The runners you help will become your best advertising, telling all their injured friends how you did more good than the six pairs of orthotics or the running coaches.

The Development of Natural Walking and Running
I will not go into the biomechanical theories or research behind Natural Walking or Running as Rolfers Gael Ohlgren and David Clark wrote a thorough article on the science behind it. I used my clients as my beta testers, and began to see that the more I simplified what I told and showed them, the quicker they got it. I knew I was getting it when these clients were teaching their friends what they had learned from me.

After a few years of success with runners, Arizona State University’s Exercise Physiology Department approached me about doing a study with elite runners. They randomly divided the participating men into three groups: a control group, who received no treatment; a group who received ten regular massages; and the Rolfing group, who each received ten Rolfing sessions.

I warned the researchers that their measurements, such as shank angle (angle of the ankle), were just measurements of the parts and not the functioning of the whole body. They assured me that these biomechanical measurements would show any improvements there were. As it turned out, there were no significant differences in measurements between any of the
groups, yet every runner in the Rolfing group saw his injuries disappear and set new personal records. Unfortunately the researchers were focused entirely on biomechanical indicators, and did not measure the injury reductions or the performance improvements.

**Principles**

**It’s All About Gravity**

Using gravity to move forward is a simple concept, but teaching it can be tricky. The part my clients find the most difficult is to surrender to gravity, letting go and falling forward. It’s difficult to shift from decades of leaning back (“Stand up straight!” “Square those shoulders!”) to leaning into life, trusting that if you lean forward, you won’t fall. It’s no different than a new skier learning to lean into the “fall-line,” that imaginary line of gravity pulling him down the mountain. Every cell in your body is saying, “If I lean forward, I’ll fall flat on my face.”

I use Natural Walking as an opportunity to increase the ease of breathing and body-awareness clients have developed from Rolfing SI. As they start to get the walk, I keep reminding them to breathe a full, relaxed breath. I want their walk to be a subtle meditation of breath and gravity. This is a great way to metaphorically set the person up for bigger surrenders and changes. Inevitably, as a client starts to get the walk down, he or she starts to lean more into life.

**Core Movement**

Now that every trainer is a “core strength trainer,” we see clients come to us shortened and tightened from “strengthening their core.” I use Natural Walking and Running to teach clients what the core muscles are and how to use them for the ultimate core exercise. Sometimes, I tell them stories about Rolfs’s “psoas walk.” When they relax and let gravity do the work, the body is positioned in such a way that the core muscles are used and the sleeve muscles are only secondary supporters on level ground. Walking and running correctly will make a person’s core stronger without making it shorter or tighter.

**Simple Concepts**

A simple model allows the client to focus more on his body. These are the ways I communicate my key points:

*Breath:* A relaxed breath is required to fully embody this walk:
- A relaxed breath goes from the floor of the pelvis up the front, side, and back of the trunk to the neck.
- Allow yourself to feel whatever is tense, and then relax it. Once you relax one area, you may feel another tense area. Relax it. This doesn’t mean you are holding: It means either your old unconscious pattern returned and now you are aware of it, or that the next layer of chronic tension wants to release.
- Holding tension is wasted energy that restricts the body, making it less efficient. By letting go, your body eventually becomes more efficient.
- Breathe like a baby.

*Use gravity:* Let gravity do the work by pulling you forward.
- Feel how gravity wants you to move forward.
- Imagine you are a caverman man out for a walk. Forget all the other instructions others told you about how to walk. Go primitive.
- After breathing, learning to use gravity was the next behavior you started learning. Now you get to master it.
- To run, lean forward more, surrender more, and you’ll go faster. Let your legs be spokes on a wheel.
- Allow your body to be erect and relaxed while leaning forward from your ankles.
- Don’t work. Let gravity do it.

*Find your sweet spot:* Go to where you are in your zone of minimal effort and maximum results.
- Keep letting go with your breath, lean into gravity and let it get easier and easier.
- Use the negative feedback of tension or pain to direct you to pleasure and ease: i.e., when it hurts, readjust. (I have a client who knows when she is forgetting to lean forward while running, because she starts to get a headache. She adjusts her stride, leans into it again, and her headache goes away.)
- The entire experience becomes a movement meditation, surrendering and surrendering more.
- When you have surrendered, that peak experience can show up. This is where that runner’s high comes in.

**Cues and Shoes**

I tense every time I hear “experts” give postural and movement instructions like this (ostensibly about natural walking): “Pull your shoulders back slightly. Keep your body perpendicular to the ground and walk tall. If you walk in a confident manner, you will gain confidence. With each step, land on your heel. Flex your foot and allow it to roll from heel to toes.” Through the Rolfing process, I make a point of correcting misconceptions around good posture and proper walking.

I found that trying to teach the Natural Walking directly rarely worked, and that practicing an exaggerated form of it is the best way to create a new default walking form. By going overboard, you quickly extinguish the old proprioceptive anchors of what alignment is and what the correct walk is. When I demonstrate the exaggerated version, clients’ first comment is usually, “No way. I’m not doing that. I’ll look like a dork.” But then I contrast this to the “shoulders back” command quoted above, and show how this forces the head forward and trunk back, while restricting breathing even further. I show clients that when we walk while leaning back, there is a natural tendency to counterbalance by holding the shoulders. Understanding that shoulder, upper back and neck tension can come from their walk, and that they can release that tension just by moving correctly, clients are more receptive and less worried about looking stupid.

There’s also much to consider about our choice of shoes. Up until the 1950s and 1960s, high school cross-country teams training barefoot was a commonplace sight. Heel-striking became popular when that was what runners were told to do – particularly with the introduction of high-tech shoes. But heel strike transmits all the force of impact directly up through the leg, hip, and lower back and, over time, the weak links in a person’s structural chain start to break. (As Rollers, we are about the only practitioners who don’t keep trying to repair the weak links; rather, we strengthen the whole chain while, more importantly, decreasing the stress on it.)

We continue to create shoes either for the aesthetics (e.g., high heels), or we attempt to develop shoes to fix problems stemming
from our stride. But recent research shows that the more expensive the running shoe, the worse the runner’s injuries:

Dr. Daniel Lieberman, professor of biological anthropology at Harvard University, has been studying the growing injury crisis in the developed world for some time and has come to a startling conclusion: “A lot of foot and knee injuries currently plaguing us are caused by people running with shoes that actually make our feet weak, cause us to over-pronate (ankle rotation) and give us knee problems.”

As if the return of the Earth Shoe, with its negative heel, were not bad enough, now we are seeing the rocker sole shoes with rounded bottoms meant to make the walker roll through her stride. Obviously, they must work for some people in the short-term – and the promise of a tighter butt is a strong selling point. They certainly are not promoting a natural stride or the development of a person’s soft tissue and structure, however. As the antithesis of the Vibram Five Fingers shoes, they take away all instinctive muscular development.

Nevertheless, long-held beliefs about walking and running are being questioned now with the popularity of barefoot running and the book Born to Run. Writing about his experience with Vibram Five Fingers, one of the barefoot runner’s shoes, a popular blog author relates: “The way to walk, these new experts claim, is to shorten the stride, keep the hips over the feet as much as possible, and to land on the ball of the foot with the heel striking second. This method uses the foot and lower leg as nature intended – natural shock absorbers to minimize impact.”

However, they’re still missing the most important piece of the puzzle: the secret is leaning into gravity.

Metaphors

In teaching new concepts I always look for metaphors that people understand experientially. One I use for Natural Walking and Running is Nordic skiing. I explain that your stride will look much like the stride of a cross-country skier who is leaning forward, stretching his leg out behind him. The skier wouldn’t get anywhere if he were leaning back.

Many years ago while in Arizona, I had a golf instructor for a client. A fellow Vermonter, he told me he’d tried Nordic skiing, but could never get the hang of it. It was obvious why when you saw him walk – if he’d been leaning any further back, he would have fallen over. He struggled with the walk for several weeks. As his body released and realigned, it became easier. One day he came in to proudly show me that he finally had it down. The Natural Walk had helped him in other areas too. He told me that for the first time, he was able to practice what he was preaching to his golf students: he could now easily get over the ball and swing from his lower body.

With skiers, I tell them to walk like they ski. Lean into the fall line. I steal Moshe Feldenkrais’s line “stand like you are going to jump” as the setup for taking the first step, which is not a step. I show the client that the first act is not a step that puts him back; it’s falling forward, which puts you in front of the vertical axis. We all want to start the movement with a controlled stride of leading by extending the leg forward, rather than a fall. When the leg is forward, the torso shifts back behind the centerline. With the leg forward, we are leaning back – being pulled back by gravity, rather than leaning toward where we want to go and having gravity propel us forward.

I kid with clients that I am teaching them to regress back to their ancestors. Our developed world is finally taking an important step backward in our ability to walk and run: our ancestors and the few indigenous peoples left are the ones who know how to walk and run efficiently and correctly. Humans evolved to be runners – being pulled back by gravity, rather than leaning toward where we want to go and having gravity propel us forward.

Putting It Into Practice

I never see a client get the Natural Walk or Run without practice. There are a few that get it down in a week with minimal practice. Most, particularly us men, take weeks of experimenting to fall. The other leg remains behind you, not pushing off. Then that second leg becomes the pivoting leg as you continue to fall.

When the natural stride kicks in there is no sense of pushing off with the back leg on level ground. That leg pushes to pick up speed or to climb a hill. On level ground you feel very little effort coming from the rear leg. It is more like a rudder guiding the forward movement.

The hind leg first starts bending not in the knee, but in the toes, foot and ankle. The knee only bends once the weight is off the leg at the end of the stride for the rear leg.

Once you are doing the stride, then focus on secondary areas

- Keep your eyes on the horizon. Train yourself to increase your peripheral vision. Learn to trust that you don’t need to look down. You will see what you need to see. And because you are leaning forward, you will actually be better able to recover if you lose your balance.
- Elbows are out to your sides, not pointing behind. (Elbows rotated back promotes adducting the scapulae along with rotating the shoulders back. This pulls your whole body back as your head goes forward.) As you run, your thumbs should point towards each other, not up.
• Your knees are headlights – have them shine straight ahead. Everyone has some evasion of their feet. Don’t be concerned where your feet go. Focus on your knees going straight.15

• Relax your feet. Let them flop. At first, you have to make them flop. This is the high point of the exaggeration16 – making a flopping sound as you walk. Slap your feet on the floor. Don’t force them, just pretend you’re a kid trying to make as much noise as you can. If you’re flopping, you’re leaning forward properly, and you aren’t lifting your foot or toes,17 which is a consequence of leaning back. Virtually everyone mistakenly holds their feet at the widest of a gait.

• Push a cart. For my elderly clients (or anyone unsure of their balance), I encourage them to go to the supermarket and push the cart around to get the falling forward. A client who had been a marathon runner finally got the walk one day when she found herself running through an airport, pushing a luggage cart. She finally got what it was to fall forward.

• The forward falling momentum keeps us up, just as a bike will stay up once it is moving forward.

Let go

• Use pain or discomfort as a signal to let go or remember the Natural Walking and Running form.

• Don’t push through pain. It’s telling you something. Figure out what you need to relax or fix in your form to get the pain to go away. For example:
  - feels jarring – you’re landing on your heels
  - breathing is a strain – you’re holding your breath, tensing your shoulders, maybe you’re hunched over, or your stomach is tense
  - knees hurt – you’re not leaning forward, you’re lifting your toes, not letting hips and legs swing naturally, or taking too wide of a gait
  - shins hurt – you aren’t flopping; rather, you’re lifting your feet and possibly your toes

Common Symptoms and Benefits

After years of leaning back, with the calves never moving in a full range of motion, Natural Walking or Running may leave the client feeling discomfort or a pulling in the calves. As I tell my clients, if you went to the gym and did bicep curls by only lifting the dumbbell two inches, your bicep would shorten. Well, that is what happened to the calves; they shortened from years of never being fully extended. (In a supine position, you see that their calves pull their heels up, causing their feet to point down.) It’s as if we all wore high heels for years. After a few sessions of Rolfing SI and several weeks of practice, the calf muscles will start to lengthen.

A similar thing can occur with the plantar surface of the feet: the feet might ache as they release, particularly feet with high arches. One client gained two shoe sizes from Rolfing work, and from doing the walk as his feet unclenched and stretched out. Another client created a sustainable arch from developing his intrinsic muscles. Frozen joints can break loose. At first it’s painful, but once released, clients become ecstatic.

This walk will take a posterior pelvis and make it horizontal, thereby creating a lumbar curve. Some people worry about that, because they were told to tuck their pelvis to reduce its curve. People who never had a butt develop a butt. As the pelvis finds a balanced position, the lateral structures of the legs cease to propel the person forward, and the core muscles guide the fall, cellulite will often disappear. (This will be last thing to happen, usually from months of doing the walk).

Sometimes clients report their shoulders or necks hurt when they didn’t before the Rolfing sessions. I show them how in their old posture and walk, they were always holding them. After the Rolfing process releases the shoulders and neck, they are feeling the effects of the habits still being there. As they master falling forward and breathing, the shoulders find a new, relaxed home. Other than a frozen joint in the foot releasing, there shouldn’t be joint discomfort. If there is, it’s usually a sign that the person is not doing the walk correctly.

Even five minutes per day of going out and practicing the Natural Walk for a few weeks is usually sufficient to get it down right. I encourage people to learn it by themselves – not walking a dog or talking to a friend. Once they get it, they won’t need to concentrate on it. Again, exaggeration is the key. As strange as it feels and looks, it works. It takes time to unlearn a strong unconscious movement pattern and to stretch out restrictions.19,20 The biggest complaint I hear is that it doesn’t feel natural. I say, if it felt natural, you would already be doing it. We are creating a new set point for natural. Or more accurately, recreating an old, correct set point for natural.

Conclusion

The beauty of Natural Walking and Running is how simple it is. Clients might resist the exaggerated practice form, but they all understand it and feel it. Most will practice it. Many have transformed their bodies with it. Several of my clients who never thought they could run are running races and marathons.

Many years ago, I had a client who was a business executive in his sixties. Earlier in his life, he’d been a professional athlete. In his sixties, he was still athletic and loved his daily walks. Flat feet and back pain eventually brought him to me. Being a walker, he had ample time to practice the Natural Walk. As a fellow flat-footed man, I knew it could be a little more challenging to master this walk with flat feet, but he was determined. Every week he would come in showing me his latest accomplishment. He was slowly getting it. About seven weeks into the series, he came in beaming like a ten-year-old boy who’d hit his first homerun. You would have thought he’d had his first orgasm with how he described the first peak exercise experience of his life: that day he’d gone for his walk and he fell into a zone where time and space ceased to exist; he said he could have been out five minutes or five hours and he wouldn’t have known long it was.

You are welcome to take what I have written and use it or experiment with it. I created a free short ebook for runners that is equally applicable to walkers. Go to www.RunningFlow.com to download the ebook. Feel free to share it with your clients.

Endnotes


2. Ibid., pg. 9. McDougall gives a beautiful description of a Tarahumara Indian running his natural run.

3. Ibid., pg. 170. “Every year anywhere from 65 to 89 percent of all runners suffer from an injury.”


7. Ibid., pp. 168-179. The author weaves in several studies, expert opinions, and stories to show how the better the shoe, the worse the injury.


10. McDougall, op. cit.


13. With short, tight calves, the knee will bend early. But with this walk, the calves and plantar surfaces of the feet will release and lengthen, often more than from stretching, or as much as from Rolfin g SI. Additionally, even if there is a torque in the knee, it often doesn’t matter because the knee is not bearing any weight in this stride. The weight is on the pivot leg, where the knee is straight. This can be the key to eliminating a runner’s chronic knee problem.

14. Twenty years ago, an Olympic marathon runner came to me complaining about “weak shoulders.” I assured him the problem wasn’t weakness; it was tension from holding them up and rotating his arms back. Once he learned to drop his arms and his shoulders, his exercise asthma was gone.

15. The Olympic marathon runners I had as clients had the straightest legs I have ever seen, yet they had a little eversion. Anyone I see with straight feet is working at it – torquing their feet and ankles to create a straight or inverted foot.

16. Not allowing the foot to land in a relaxed and natural manner tightens the foot, particularly the plantar surface. Plantar fasciitis and heel spurs develop from the fascia becoming short, thick, and brittle. Flopping the foot allows its twenty-six bones to start articulating, as well as allowing the ankle to increase its range of motion.

17. McDougall, op. cit., 91. There is a quote from the highly-respected running coach, Dr. Joe Vigil, about the Tarahumara Indians: “Look how they point their toes down, not up.”

18. Lifting the foot causes the anterior tibialis to feel like the tibia. Eventually, many runners develop shin splints from the fascia being torn off the periosteum of the tibia as it keeps being traumatized and thickening from the micro-traumas of a muscle doing a job it is not meant to do.

19. McDougall, op. cit., 170 on how stretching does not work.

20. van Mechelen, W., H. Hlobil, H.C.G. Kemper, W.J. Voorn, and H.R. de Jongh, “Prevention of running injuries by warm-up, cool-down, and stretching exercises.” Am J Sports Med, Sept. 1993, vol. 21, no. 5, 711-719. Available at http://ajs.sagepub.com/content/21/5/711.abstract?sid=2ed54888-b116-4237-a122-7d6ba3df12d6. This study, with a follow-up study at the University of Hawaii, showed how stretching produces the same results as no stretching in terms of injury prevention. I continually see that stretching does not release the chronic fascial adhesions – and not just with runners.

Dr. Strangegait, Or How I Learned to Stop Worrying and Love Hip Extension

By Matt Hsu, Certified Rolfer™, Certified Egoscue Posture Alignment Specialist

I spent many an evening with classmates at the Rolf Institute® walking down Pearl Street in Boulder, making “Rolfer-esque” remarks about people’s supinated and everted feet, hunched shoulders, and wonky knees. But beyond being able to see those quirks of people’s gait, we weren’t able to talk in detail about what was going on and, more importantly, what to do about it. This article’s goal is to give you a quick overview of why gait is important, why we should break it down and analyze its parts, what to look for in a client’s gait, and how to begin to understand why someone’s gait is the way it is.

Why Gait Is Important

Gait tells us about the functional ability of the entire structure. It tells us what the body can and cannot do. Knowing that a body will conserve as much energy as it can in motion, we look for dysfunctions that cause the body to work inefficiently (i.e. in ways that put excess wear and tear on the body). If we can address these dysfunctions, we can improve a client’s sense of well-being and integration.

Before anything else, we should recognize that every individual’s gait is unique. Even two fully functional people would...
have different gaits based on their own emotional and physical predispositions. No two people walk alike (unless one is a particularly skilled ninja deliberately mimicking the gait of the other). This helps our brains not only identify different people but also identify specific traits about different people.

In other words, we look for quirks to identify people's moods, motivations, and states of health. For example, we all know that the way a woman moves her body tells you something about her internal state. If she's got her arms crossed, tapping her foot, chin up, and her brow is furrowed, you are probably late for date night. In this case, we are looking at moods and motivations. If a man is unable to get his shoulders back where they belong, if his pelvis is stuck in a tuck, if his head juts out like a piece of a Liebeskind building, and he's telling you that he suffers from constant fatigue, pain, and stiffness, then we’re talking about health. We are talking about functions and dysfunctions that affect the way this man feels physically.

Dysfunctions are deviations from normal biomechanical average potentials for movement – abnormal range of motion and usage of joints. We are looking for the things that cause pain, discomfort, and dis-integration in our clients’ bodies. A functional glenohumeral joint, for example, should be able to get 90 degrees of abduction with no problem. We’ve all seen the glenohumeral joints that get to only 60 degrees before pain sets in. That's a dysfunctional glenohumeral joint. If the left quadratus lumborum contracts to sidebend the trunk and elevate the arm to create the illusion of abduction, we then have a compensatory movement.

When we look at gait, we are looking for similar red flags. We want to know a functional hip from a dysfunctional hip from a compensating hip. We want to know a functional shoulder from a dysfunctional shoulder and how it relates to a possibly compensating pelvis. We need to know these things to be able to bolster our abilities to make speedy, intuitive, well-grounded judgments in our practices.

### Intuitive Gait Analysis in the Real World

If a small, scrawny guy comes limping at you, it’s not nearly as threatening as a big burly guy bounding at you with six-foot strides and a set of bulbous and well-defined arms punctuated with clenched fists. The former is clearly and immediately preferable to the latter. No careful analysis is required because your intuitive sense, based on years of experience, tells you that the latter character is a serious threat to the integrity of your body and life. The former is someone you may be able to simply sidestep.

Let's look at another example. From a distance, you can very easily spot someone walking with a freshly sprained ankle. Even as a child, you were likely able to see when a friend or family member had a sprained ankle, even if he or she wasn’t using a crutch. There is a telltale limp that alerts you to something being wrong somewhere in that person's body. Intuition is a handy tool for analyzing gait in these cases; but for many clients, this level of intuitive understanding isn't enough to help them really change their bodies for the better. Worse still, relying on this basic intuitive sense for more complex gait patterns may completely mislead us into thinking that many gait patterns are perfectly functional.

### Why Intuition Is Not Enough

Intuition, as a growing body of brain research tells us, is the shorthand syntheses of what we know, have experienced, and have imagined or extrapolated. In any given moment of decision or observation, we are taking a mass of data in our brains that would take about six years to catalogue and analyze and distilling it into a lightning-fast response requiring no deep analysis. It's a very handy tool, but it is by no means perfect, particularly when looking at gait.

As society becomes more technologically advanced and more chair-dependent, it’s getting harder and harder to get a good intuitive gauge on what good structure and posture really looks like. As modern sitting life foists abnormal structure and gait on a shocking majority of the population, our brains have a harder time measuring bodies in front of us against a truly functionally normal gait (or even static standing posture for that matter). Instead, our minds become numb to the very common rounded shoulders, gorilla hands, pelvic rotations and elevations, and deactivated hip muscles that create gaits filled with strong compensatory motions.

We are also plied everyday with truisms about the body like “always bend at the knees because backs are bad at lifting,” “your posture is genetically determined,” “your clavicles sometimes grow too long and impinge on nerves,” and – my favorite – “flat feet are of no consequence.” These truisms normalize and discount the effects of chronic and progressive deterioration of one's posture, making it difficult for everyone to see clearly what declining posture tell us. This difficulty arises for our clients (e.g. “I always figured this limp was genetic since my dad also limps”), and it can happen with Rolfers (e.g. “Your kyphosis is as good as it's going to get because it's part of your pattern.”)

So let's look at a very clear example of a gait with dysfunctions: a limping man with shoulder pain. On first examination, we’ll notice he looks slow and has that sense of “drag” about him. We can tell something's going on with his leg. His gait pattern so clearly deviates from what a normal walk looks like that most people with no professional training at all can figure out in a quarter second that he has a foot or ankle issue. But what does it have to do with shoulder pain? If we break things down to more detail, we’ll notice things in a way that can help us to guide him to a better understanding of his shoulder pain.

We might notice that the hip freezes in 30 degrees of flexion, and the knee stays bent to keep weight from going into the immobilized ankle. His head juts forward, and, with each step, the shoulder and
torso rotate in the transverse plane to get extra forward momentum. He rotates asymmetrically. One of the scapulae sits in constant protraction. This is the side where he feels pain in the area where his trapezius resides. On palpation, you can feel the hard, dense, inflamed feeling that tells you some soft tissues are working too hard. You now need only determine what it's going to take—globally—to get the shoulder complex moving the way it should to reduce the pain in the shoulder.

**Functional Gait**

For an in-depth view of gait, I recommend the book *Observational Gait Analysis* from the Pathokinesiology Service and the Physical Therapy Department at Rancho Los Amigos National Rehabilitation Center. It's very detailed and helps you mentally break down the different phases of a gait so that you can develop a more thorough understanding of the intuitive sense of “huh?” that you get when you see someone with a quirky gait.

Let's see what a functional gait looks like. After a quick, simplified explanation, we'll look at a quick assessment tool you can use to begin to figure out what's going on with someone's gait and how you can start your work with him.

Here are our two basic points when looking at gait:

1. **A functional gait is symmetrical:** From the anterior and posterior views, you should *not* see shoulders drooping to one side, elevation of a hip, asymmetrical rotation of the hips in the transverse plane (or much transverse plane rotation for that matter, as will be clarified later), or asymmetrical arm swing. Feet and knees should be tracking mostly in the sagittal plane. If the knees and feet are always laterally or medially rotated, there is a dysfunction.

2. **A functional gait provides smooth pull and push:** From the side view, watch one leg. It should swing forward in the air and land on the heel as the knee extends. The hip joint should extend to about 20 degrees as the body's weight comes onto the toes. At that point, the hip joint flexes, the knee flexes, and the forward swing begins. When the left foot is forward, the right hand and arm swing forward (contralaterally) without a significant amount of rotation or flexion of the upper body. The chest should remain up, the shoulders back (so that you see mostly shoulder and chest as opposed to scapula and shoulder), and the head level (see Figure 1).

A great many modern walks lack real hip extension. Without that, any significant forward push off the back foot is impossible. Common compensations include trunks flexed forward and/or rotating and pelvises rotating in the transverse plane in an attempt to elicit forward momentum (see Figure 2).

None of those compensations are great for the long term (inefficient energy expenditure and lots of myofascial compensations that will eventually become range-of-motion and pain issues of their own).

Being able to see deviations from proper gait helps you understand not only the pain your client reports, but also where to start looking to make some big changes.

**A Functional Test to Identify Dysfunction**

Here is a general test from Egoscue® posture alignment therapy that is extremely useful for building an understanding of your clients’ structures. It will help you differentiate the deep-rooted dysfunctions from the compensations that will unravel once you’ve dealt with the dysfunctions. It's called the Hands-On-Head test, and it's a fantastic sleuthing and client-education tool. It helps you determine how much of a role the shoulder girdle and thoracic flexion are playing in what's happening in the pelvic girdle and the range of motion in the hip joints in gait.

Let's say you have someone come in who, from the A/P view, has an asymmetrical transverse plane rotation in the pelvic girdle (left ilium stays more anterior than right ilium), a left knee and foot that stay laterally rotated throughout most of the gait, a slight trunk lean to the left (abduction of left hip joint and adduction at right hip), a trunk that is slightly flexed, shoulders that are rounded forward, and forward-head posture (see Figure 3).

To start the test, you need a baseline to make a comparison. Therefore, have your client walk back and forth. Ask questions about how things feel, how his weight is being distributed, how the bra strap feels as she's walking, whether his shoulders feel or look even, etc.

This is a very easy process for clients with a good kinesthetic sense. Often, the kinesthetically aware client will tell you that he feels like he's leaning to the right, that his legs aren't doing the same thing (e.g., it's almost as if one leg is longer than the other), that he feels like he's slouching, and that some body part or segment feels like it's taking on lots of strain. That is your baseline.

If you get a more visually oriented client, you're going to need a mirror or be very comfortable taking videos and showing them to your client. If you don't already
have it at your disposal in your office, I'd recommend having a full-length mirror with a decent amount of open distance in front of it so that your client can walk in front of it. With the mirror, she'll be able to spot what's going on. You may need to cue her for landmarks to watch and compare as she's walking. Remember, she's probably never done this before. Break it down using some of the information you now know about proper gait. Have her watch knees, feet, hips, shoulders, or any other bony landmark that appears to be relevant.

If the client is not kinesthetically in-touch and can't really see what you're talking about, she may be more auditory oriented, in which case you can try cueing her in to the sound of her gait or the internal sound of the impact of her joints or body segments. Failing that, you may just have to start telling her what you see.

Now that you have your baseline (make sure you take notes so you don't forget what you saw), you're ready to do the test. In Seeing Made Easy (the workshop I co-teach with Isaac Osborne), we talk about this as a very useful alternative to the “crest test” of the eighth session of the Rolfing® Structural Integration Ten Series, as it shows you whether working on the shoulder girdle or the pelvic girdle will have a more significant effect.

1. Have your client interlace his fingers (see Figure 4).
2. Have your client put his palms on the back of his head and pull his elbows posteriorly (see Figure 5).
3. Have your client walk again while maintaining the hand and elbow positioning.

Observe what difference this makes to the client's gait. Is there a noticeable or significant change in the gait that you or your client feels, sees, or hears? If so, you know you have a pretty significant relationship between the shoulder girdle positioning, the thoracic spine flexion, and the pelvic girdle. It means that for this particular client, the dysfunctions in the upper body are causing the lower body to compensate in significant ways while in motion (and very likely while standing still).

For kinesthetic clients, this can be a revelation on par with the introduction of the iPhone. The obviousness of the connection between the upper body and lower body will literally change their understanding of their pain. I've had people with sciatica who were absolutely “gobsmacked” by the fact that their nerve pain suddenly decreased by doing this simple test (and could be aggravated by dropping their arms again). This is a huge educational piece that demonstrates the beautiful ways in which the human body can accommodate and adapt to varying dysfunctions.

For a visual client, that mirror will come in handy. Have him compare and contrast the walk in front of the mirror. If the knee and foot no longer rotate laterally as much (or at all), you have yourself a great sign. If the pelvis stops rotating the way it was, you have a good sign. Those are things your client will be able to see and tell you. Just make sure you ask him questions to get him to pay attention to those things. Again, once he sees the difference, you’ve helped him discover something priceless.

For auditory clients, the sound of foot fall might sound more even, and that'll be a great victory. Otherwise, you may just have to tell them what you see changing and be okay with that.

### Understanding the Hands-On-Head Test

When you have the client position the hands and elbows behind the head, you’re requiring some thoracic extension and scapular retraction/stabilization. This gives you and your client the chance to see what effect improved shoulder girdle stabilization will have on the body below. Again, if there is improvement in the lower body, you have a positive sign that shoulder-girdle work will give you big bang for the buck – whether you’re working in the Ten Series or going non-formulaic. Congratulations, you just saved some sweat on your brow and skin from your knuckles and elbows! You’ll probably still have to spend time on the pelvis (as it’s almost certainly not going to just mend itself right back to perfect function without some nudging in the right direction), but you’ll be working much more efficiently.

If doing the Hands-On-Head test doesn’t change the gait, then you know that whatever the dysfunctions of the shoulder girdle and thoracic spine may be, the ones in the pelvic girdle are not going away by just working on the upper body. That may be no fun, but at least you’re now armed with some knowledge that will help you make informed decisions about the relationship between the pelvic and shoulder girdles and how to proceed with the planning of your sessions.

Further functional tests can then help you assess to what extent the pelvic girdle is responsible for the shoulder girdle’s issues. This exploratory process with your client helps her understand the value of seeing the body as an integrated unit and helps you train your analytical and intuitive brains. And it all starts with a little walk in your office.

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Your Fate Is in Your Gait

By Brian W. Fahey, Ph.D., Certified Advanced Rolfer™

Life is only an idea until you feel it in your body.

Zeb Lancaster

When we observe the animal kingdom in its natural habitat, we see that the more agile, the more fit, and the more swift an animal, the longer its life expectancy, as it can maneuver better and avoid being killed by other predators. Modern science suggests a similar scenario for human beings. Many studies conclude that the quality of human gait dynamics is a marker of a person’s current state of health and a predictor of degeneration and aging processes in the future. A recent report in JAMA: The Journal of American Medical Association found that the speed at which people walk is an excellent indicator of their well-being and longevity. “Researchers found that predicting survival based on gait speed was as accurate as predictions based upon age, sex, chronic conditions, smoking history, blood pressure, body mass index, and hospitalization.”

Scientists recently discovered that the angle and variability of our stride while walking can tell us a great deal about how our systems are aging. If your stride angle, variability, gait cadence, and speed diminish, you may be on the fast track to physiologic breakdown. The new biomedical pioneers even go so far as to postulate and statistically demonstrate that by analyzing gait dynamics they can predict the future health of other physiologic systems. Some data suggest that evaluation of gait dynamics over time is a more effective predictor of cardiovascular and neurological well-being than more traditional systems of measurement. “Aging is associated with a number of neurophysiological changes that may alter the locomotor system’s ability to generate stride-interval correlations.”

Energy Cycles

If you want to know how efficient and effective someone’s structural organization is, just have him walk. Movement quality demonstrates how well energy is being used in each of the body’s systems. Energy constantly flows in and out of our bodies. Our bodies capture, store, and transfer energy. The human system is a perpetual motion – perpetual energy return system. The energetic flow of capture, storage and transfer creates a continual motion cycle that is constantly interacting with all of the matter, information, and energy flowing through our world. The more we keep the perpetual return cycle flowing, the more dynamically balanced we will be. Healthy systems are in a state of perpetual motion, perpetual interconnectedness, perpetual expansion, perpetual intercommunication, perpetual spiraling motion, perpetual polarization – and perpetual pulsation in their journey through space. The quality of the energy flowing through our perpetual-motion system is directly related to the quality of organization in our body’s structure.

Everyone creates their own structural organization from the movement patterns they repeat over time. The gait that each of us has is not a random act. Healthy gait dynamics are a direct reflection of healthy energy metabolism. Healthy structural organization keeps energy flow coherent in the body, which means energy can be stored and then effectively metabolized to do work. Structural disintegration/disorder can cause energy to become incoherent, stagnant, sporadic, or randomizing, which contributes to dysfunction and inefficient motion. Coherent energy has a centralizing quality, whereas incoherent energy is more diffuse and unconnected. Most human systems are a blend of centralizing and diffusing forms of energy. A balance of local freedom and global cohesion is a defining quality of a successful aging process and represents a harmonic blend of centralizing and diffusing energy flowing through our bodies in a balanced equation. The expression of local freedom and global cohesion, or its lack, demonstrates the quality of integration in a person’s structure and movement function. How well one is organized determines how well that person will use space in the present and in the future. As long as there is no loss in integrative, physiological responsiveness, the local components of movement in the body can do their individual thing. For example, if a knee joint is tracking somewhat variably over a short period of time, it probably will not affect global cohesion. If a knee joint continues to move out of a functional, tracking plumb line over time, this influence will spread to adjacent myofascial structures and cause a reduction in global cohesion/integration.

For a high level of integration in movement, the local parts must “remember” their connections to the whole and stay aware of their “neighbors.” Whether or not a high level of integration exists is dramatically revealed when you watch a person walk. In healthy gait dynamics, we can see that each part gets to do its own local thing as long as it contributes to the greater whole. Intercommunication is the key to a reciprocally maintained system and the key to dynamic balance in our movement life. Too much local freedom in any body structure or function creates an enclosure state in which the “free” part loses its integrative connection with the whole, thereby diminishing global cohesion, flow, adaptability, and connectivity in the entire system. Fortunately, Rolffing® Structural Integration (SI) can alter how people organize themselves and provide a more efficient way of using space, which will result in a more integrated gait dynamic.

Complexity Rules

Surprisingly, scientists are now telling us that homeostasis is not a hallmark of healthy physiologic function. The steady state may not be a healthy state. Instead, the new physics postulates that system self-regulation is maintained through complexity and variability. New science is suggesting that when human systems become more periodic and rhythmic in their energy dynamics, and too constant in their movement dynamics, over time this can be predictive of system abnormality leading to pathology, disease, system failure, and accelerated aging. Medicine is using the wrong term by calling disease a “disorder” when, in fact, breakdown in the body arises out of too much order and a lack of complexity – often referred to as “pathologic periodicity." A body that has become too regular and too rhythmic in its movement dynamics loses its cadence of centralizing and diffusing rhythms.

Excessive regularity in movement and structural order may be a precursor to breakdowns in the functional capacity of other body systems. Diminished variability and short-term excessive regularity is
referred to as “mode-locking,” which we see in joint wear-patterns and changes in fascial pliability resulting from repetitive usage. A shuffling gait is an example of “mode-locking.” I have, for example, repeatedly injured my ankle while playing sports, which caused torn ligaments and created bone spurs in my left ankle. Over the years, I experienced a mode-locking phenomenon in my gait pattern, such that I could not fully articulate through my lateral and transverse arches. Rolfing SI and backward-walking patterning have restored normal motion and variability to my movement rhythms in my ankles and feet, allowing me to move more like my younger self and no longer need an ankle brace when I play competitive sports.

Systems seem to have an inherent drive for organizing themselves toward increased complexity and variability in their structural and functional geometry. A certain portion of irregular fluctuation is normal for a healthy, complex, variable system. We can’t rely on short-term evaluations of anyone’s body as our only assessment. Variability in a system must be observed over a long range of time. For example, in the short range, mild irregularities in beat-to-beat intervals in our heart rhythm may be seen as negative or unhealthy, but if it occurs only from time to time and not over the long range, it is probably a sign of healthy variability in the system. Science is finding that human systems function best through short-term variability in structural and functional components within long-range parameters of order. It has been observed that bodies fluctuate over short-time intervals and then become more rhythmic when a behavior (heartbeat, breathing cadence, stride interval) is viewed over a longer time-frame. Human beings are pattern makers and pattern seekers. Some patterns are more functionally efficient in the short-term evaluation – but, if they become too periodic, linear, and predictable, and diminish complexity, they will actually reduce system variability and function quality over time. This suggests there is a range of healthy fluctuation, but there are also limits to the structural and functional variance any given system can handle. So a healthy heart rhythm is a variable heart rhythm within an acceptable range, a healthy respiratory rhythm is a variable breath cycle within acceptable ranges, and a healthy gait rhythm is a variable gait rhythm within acceptable limits.

We can conclude from this new information that the laws that support optimal functioning in healthy human systems are: the greater the variability in a system, the greater the complexity; the greater the complexity, the greater the adaptability; the greater the adaptability, the greater the polarization; the greater the polarization, the greater the sustainability; the greater the sustainability, the healthier the aging process.

**Functional Plasticity**

Along with a breakdown of functional order and integrative motion we also see in our age-fifty-plus clients a breakdown in muscle/fascia/ligament/tendon composition (sarcopenia) as well as bony changes (osteoepenia). Structural disintegration can be seen as a functional marker or predictor of bone and muscle changes. Structural order and function break down first. A loss of functional plasticity or adaptability precedes disease processes or conditions that eventually get labeled by western medicine. Structural disintegration begins and balance and stride variability start to falter way before the bones thin out or the muscles shrink, eventually causing osteoporosis and the increased likelihood of fractures. From the molecular to the organismic level, healthy function is best supported by complex, dynamic, nonlinear, multidimensional performance in any of the body’s systems (cardiovascular, neurological, musculoskeletal). This is best maintained through SI.

In our work of improving structural order and function, physiologic laws of variability and integrated complexity are beautifully illustrated in the observation of human gait mechanics over varying time periods. Complex fluctuations are part of healthy gait dynamics. We need only watch people in our practices walk a little bit and the movement focal point of their complaints begins to emerge in their gait dynamics – and, as the scientists say, we can predict future disintegration in their systems. In observing the phenomena of the aging-predictive value of walking style in the larger population, just watch young children move, then observe teenagers walking, then observe the “weekend warriors” on your local softball team, and finish up with a visit to an assisted-living facility. Each of these groups exhibits different patterns of gait variability. The residents in a nursing home may have a variety of conditions from arthritis to Alzheimers to chronic pain to congestive heart failure – but they all have the shuffle of the elderly in their gait patterns as a common denominator. They usually exhibit a significant forward lean of the head and a subsequent drop in their visual horizon line with a narrowing of peripheral vision and a retraction of their personal kinesphere. This forward lean puts increased strain on the cervico-thoracic junction leading to myofascial splinting, fibrosis, and compression of discs/vertebrae and a shortening of the anterior longitudinal ligament creating the classic “dowagers hump,” a common site of osteopenia and osteoporosis. These adaptive changes influence their balance function and cause increased susceptibility to falls and fractures. It is hard to conclusively determine the line of cause and effect in this scenario, but we know that structural disintegration was a primary contributor to the lessening of gait variability and subsequent lessening of adaptive capacity during movement.

The new science suggests that the gait variability of these seniors diminished before their bodies manifested various pathological states, which were then given labels by a medical doctor. Bodies that break down with age are dominated by a steady-state frequency instead of a variable frequency. As we have all observed in our practices, as structural integrity, flow, and connectivity diminish, the functioning of human gait dynamics (stride length, stride angle, stride variability, stride tempo, and stride tracking) rapidly disintegrates and these imbalances quickly spread compensatory responses to other joint and myofascial structures. Observing gait dynamics gives us information on how the system is using energy, the degree of variability and adaptive capacity in the structure, and it gives us predictive clues as to where the body is starting to break down and how it will progress in the future.

SI increases movement variability through ordering, realigning, and improving functional relationships in the human system. Structural order and function, as represented by gait dynamics, is the movement metronome synchronizing and entraining other systems of rhythmic cadence in the body (heart, lymph, nerve, cerebrospinal fluid, etc). Human gait dynamics can be regarded as a physiologic control system (the conductor of the orchestra, the regulator of all body systems) keeping us in a complex, nonlinear, variable, and dynamic state of health. These new
discoveries as to the role human gait dynamics plays in overall health moves the benefits of SI and function to the head of the line for health enhancements. This information should be shared with health professionals as being a first priority in seeking and maintaining health. The narrower our functional responsiveness, the faster we age. Functional plasticity is a hallmark of healthy aging and indicates enhanced structural and functional integration – and this is what we provide with our work.

**Fractal Motion**

There is a mathematical formula for efficiency in human systems. To understand how dynamic functions are represented in the body we need to know a little about fractals – very little, as I am not a mathematician. A fractal is a geometric or functional pattern that repeats itself at many scales of magnification. Science tells us that the body is very fractal at the level of many scales of magnification. Science tells us that the body is very fractal at the level of magnification and thereby improve healthy gait dynamics. Rolfing SI is a structural and functional anti-aging technology. The goals of SI should not just be to maintain constancy in structure and function, but, rather, to support the expression of complexity and variability, which, experts are now saying, is the hallmark of healthy human functioning.

We’ve always known that our work is important, but incorporating the implications of the new biomedicine information makes me even more impressed with the crucial role that SI can play in promoting human well-being. Our system has a greater likelihood of contributing to human functional plasticity (and, by extension, anti-aging properties) than any other therapy. We are trying to organize human structures, not only to prevent injury or alleviate symptom complaints and pain, but also to promote dynamic responsiveness and rapid integrated recovery when the system is challenged by illness, injury, or disease. Each person has a unique harmonic, or signature, frequency that should inform his body’s movement rhythms. Supporting this unique frequency should be a major goal of our work.

In our movement and structural work we need to capitalize upon the inherent yearning for connectivity, flow, and high-level integration in our moving bodies. Rolfers’ eyes are trained to see when distortions of norm stand out – when, in fact, from the perspective of fractal dynamics, these may be healthy variants. Perhaps we need to look for what is the next step into variability as opposed to looking for the next “recipe” point towards imposed order. Rolfers must flow back and forth between local and global vision and touch to achieve a balance between a form-based and flow-centered perspective of balancing structural elements while enhancing functional processes that support system complexity and adaptability. With this type of focus we are more likely to assure a holistic outcome from our input. We need to be able to find the long-term order beneath the short-term confusion without suppressing or imposing limitations upon the system variability. We need to help our clients stomach the short-term dissonance to achieve the long-term harmony that the experts say will lead to the healthiest aging scenario.

**Retromotion**

Understanding the predictive nature of gait dynamics has led me to spend a lot more of my session time on the legs and feet than I was originally instructed to do by Ida Rolf’s “Recipe.” I follow the instructions that Jan Sultan gave (from my notes during my basic training in 1977), “Be observant and adapt accordingly.” My new understanding that gait dynamics are predictive of functional aging has also led me to develop and promote to my clients a variety of walking integration/locomotion exercises designed to restore complexity and variability to their gait patterns.

Of all the new movements that I have been sharing with my clients, the one that stands out as being the most beneficial and achieves the quickest results is teaching them backwards-walking patterns. In my thirty-four years of practice, prescribing different patterns involving backward-walking, skipping, short- and long-diagonal and contralateral striding, high-leg side-striding, and spiralic eversion/inversion foot plants with backward striding has provided wonderful results for a variety of knee, hip, ankle, and low-back problems, as well as improving stride-angle, stride-length, and stride-variability and creating more integrated and dynamic movement.

One of my clients was scheduled for a lumbar fusion and a knee “clean up” surgery in mid-July of 2010. He agreed to use the six weeks prior to his surgeries to follow a five-day a week backward-walking program in a swimming pool and to get a
Rolfing session once a week. His results were so great that he canceled both surgeries and as of the writing of this article (February 2011), no surgeries are planned. I strongly believe that the backward-walking patterns he practiced enhanced the structural work and broke him out of longstanding patterns of inefficient movement. Backward-walking breaks down inefficient patterns by eliciting novel movement in underused structural/functional relationships. Backward-walking fits the criteria for high-level integration by supporting variability, complexity, adaptability, polarization, and sustainability in our moving bodies.

To break old patterns, our systems need novel input that challenges our nervous, vestibular, and musculoskeletal systems. Backward-walking engages ligaments, tendons, and fascial planes through the major joints in unique ways, and recruits new levels of movement integration that challenge the vestibular system and create neural complexity.

One of the highlights of backward-walking is that we get out of our eyes and into our vestibular and kinesthetic systems and begin to trust the feedback from our feet as a primary mode of perception. Visually-dominant perceivers have a more difficult time inhibiting their over-aroused nervous and vestibular systems, and their structure and function tend to age much more quickly. Backward-walking interferes with the visually dominant paradigm and makes you start exploring and trusting your vestibular integration capacity. Our relationship to gravity and space through our balance system is critical to the health of all movement patterns. Good vestibular balance helps to maintain a harmony between signals that facilitate, and signals that inhibit, movement adaptability. If our balance system is on hyper-arousal, our nervous and muscular systems idle at too high a pace and we will get tired more quickly, as we are pressing on the brakes and the gas at the same time. When we walk backwards, the back of the body becomes the predominant kinesthetic perceiver and tracker of movement and spatial dynamics. We are such a front-dominant culture. Anything we can do to improve the embodiment quotient or capacity of the back body will improve general functional integration in all structure and movement. Backward-walking is fun. It makes you laugh (or be laughed at by others as you walk “against the grain” or dominant motion paradigm).

If we want to move through life in a state of complexity, variability, and dynamic balance, our movement repertoire must be more variable. The more variable our movement activities, the more complexity we add to our nervous system, and the better our balance and gait dynamics will become. To break old patterns we must find new forms of movement input. The quality of the input that flows into our nervous system determines the complexity of our brain structure and body integration function. The law in neurology is “as you fire so shall you wire.” Our nervous and balance systems become smarter when we introduce new variability and complexity into our movement repertoires. This leads to a more adaptable, integrated and sustainable system. Any lessening of dynamic balance and movement variability in our bodies is a signal that our functional capacity is being lowered and that the aging process has sped up in that area.

It also seems to me that we could be doing more in promoting walking as a way for our clients to enhance the benefits of their SI work. You may wish to try taking your clients for a short walk during the first session, and you will learn all you need to know about their alignment, gait dynamics, and general functional adaptive patterns in motion. Exercise, such as walking, is great on so many levels, but walking in a structurally integrated, dynamic body is bliss! We must see ourselves as providing benefit way beyond the medical model of symptom alleviation and educate our clients as to how they can achieve health enhancement and longevity promotion as suggested by the research cited in this article. Our profession is ready for a breakout in its recognition as being invaluable important to contributing to the well-being of human systems by improving our clients’ gait dynamics with SI.

As I was completing this article, more articles related to the beneficial effects of healthy walking style came across my desk. These articles report that regular walking can improve brain volume (nerve growth in the hippocampus, the learning and memory area), diminish memory loss, and lower ratios of dementia and other forms of cognitive decline – all valuable contributors to human well-being. Perhaps these articles are a confirmation or just a coincidence. At any rate, for now, I’m going to relax and take a brisk walk!

Movement is the freedom between time and space.

Ann Ree Colton

Endnotes
5. Goldberger, op. cit.
7. Ibid.
9. Polarized function refers to the quality of structural and movement integration in a body. Systems that manage space effectively will perform better in gravity and hence age more efficiently. A body that can polarize space is effective at maintaining balance between alternating states or forces: e.g., yin/yang flows, contraction/expansion, centralizing/diffusing energies, core/sleeve, left/right sides of the body, front/back embodiment balance, trunk/leg integration, axial/apendicular stability, inflow/outflow of metabolites, uplift/grinding thrusts, local freedom/global cohesion.
On Gait

It’s Hard Looking from the Inside Out

By David Clark, Certified Advanced Rolfer™

When first asked to do an article about gait, I wondered what could be added to what we already have recently said about Natural Walking® without “jumping the shark.” Then as I fretted about this, it occurred to me that Natural Walking is really the “zero gait” in a potentially infinite series of possible gaits. The Natural Walk is the gait where there is no active holding against the action and, therefore, it is the most economical way for humans to walk. That is not to say the only way. The most economical is not the wisest choice when it comes to getting out of the way of a bus.

How would holding against the action help you get out of the way of an oncoming bus? It’s like when an inexperienced person gets out of a small boat at a dock without first tying it off. As he steps forward the boat moves back (Newton’s Third Law of Motion), sometimes with hilarious consequences. If, however, he ties the boat off first (holds against the action of stepping off), then he may step off the boat as if he were on land. So the muscles that act to “hold against the action” aren’t holding back the movement of other muscles; rather, they are acting to stabilize a base of action so the other muscles can accelerate some part of the body, just like tying off the boat at the dock.

The holding against the action actually gives us a basis for a definition of gait. Rather than “the pattern of movement of the limbs of an animal, including man, in locomotion over a solid substrate,”¹ we could say something more useful to Rolfers: “Gait is the pattern of movement that develops in the whole structure, from the holding point outward from which the walk is launched.” For Rolf Movement® practitioners, the action of the holding is the “pre-movement,” the preparation for movement that we learn to watch for.

Do all humans, being bipeds, hold against the action of walking in the same place? Not at all. I love Gael Ohlgren’s statement that “…our walk is our signature in space.”³ That signature is composed of many layers. Injury, both traumatic and degenerative, causes unique adaptive changes that influence the signature. (An example would be a limp.) While genetics may contribute a part of the signature — in the length of the bones and mass of muscle — body image/personality is a huge and preciously (though unconsciously) held part.

Our signature communicates not only our identity, but also our condition, to our group. Certainly culture has a huge impact that is at first difficult to see. The human tendency is to assume the self as the norm, and the enculturation process ensures that the “norm” gets spread throughout the subgroup. Some norms are very local, like accents, and some are very widespread, like holding patterns in the body. In western civilization there has taken root a holding pattern in the pelvis — a holding against the action that I assume is from our walking patterns, since that is the primary action of the pelvic girdle. This holding has spilled over to become a norm, and even a trademark, of western civilization. We have proof of this everyday in our Rolfing® Structural Integration [SI] practices, where all roads lead to the pelvis.

Since I believe this point to be important, I offer another proof from an entirely different field. The software program Poser®, version 6, offered by SmithMicro,¹ is a three-dimensional CGI rendering and animation program optimized for models that depict the human figure in three-dimensional form. The program is easy to use, but it has one requirement: one of the segments into which the CGI body is broken up must be fixed. The default is the pelvis, betraying the underlying cultural bias.

So why all this in a piece to Rolfers about gait? Simply that we are looking at gait from the inside out. We are immersed in and part of the background of obviousness. If we are to offer to our clients something more than pain relief, something toward the promise of Rolfing SI, we need to become aware of our own gaits. Daily. We have the laboratory in our own bodies to experiment endlessly with our own theories of motion. We have to know our own assumptions, and it’s hard looking from the inside out.

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Endnotes


3. Private conversation.


The Arches of the Feet in Standing and Walking, Part 1

By Lael Katharine Keen, Certified Advanced Rolfer™, Rolfing® SI and Rolf Movement® Instructor

Author’s note: I would like to thank Hubert Godard for his vision in synthesizing a model of understanding that has contributed so much to Rolfing Structural Integration (SI), and for his help with this article. In Part 2 of the article, in a future issue, the relationship of the foot to the rest of the body will be discussed.

The Feet

The feet are a fascinating and vital part of the human structure. They have the double function of adapting to the transmission of weight from above and the irregularities of the ground below. As adaptive structures they will shape-shift to reflect what goes on above them in the rest of the body, and as support structures they are also responsible for the quality of movement that ensues throughout the body during gait and other activities. In this article, we will be considering the arches of the feet to better understand how the feet function in standing and walking, and how we, as Rolfers, can intervene to help them. We will also be taking a look at the three-dimensional movement that occurs across the feet as we walk. However, there is a finely orchestrated movement of the foot that occurs in all three planes that helps the foot to propel the leg forward and adapt to the ground and that sets up core stability and contralateral movement throughout the rest of the body. For discussion of this tri-planar movement, we will speak of the foot in three different sections: the hindfoot (composed of the calcaneus and talus); the mid-foot (composed of the navicular, cuboid, and three cuneiforms); and the forefoot (composed of the metatarsals and phalanges).

The hindfoot is composed of the calcaneus, the cuboid and the fourth and fifth metatarsals and phalanges. The lateral arch maintains contact with the ground and gives support to the entire lateral line of the body. The medial arch is composed of the calcaneus, the talus, the navicular, the three cuneiforms, and the metatarsals and phalanges of the first through third toes. It is built for and rests upon the lateral arch. The transverse arch consists of the navicular, the cuboid, the cuneiforms, and the metatarsals. Its function is to transfer weight, support, and propulsion, and to modulate the relative softening or stiffening of the foot in the various moments of the gait.

Many times the study of the feet and the gait is limited to thinking of the anterior/posterior movement that occurs across the feet as we walk. However, there is a finely orchestrated movement of the foot that occurs in all three planes that helps the foot to propel the leg forward and adapt to the ground and that sets up core stability and contralateral movement throughout the rest of the body. For discussion of this tri-planar movement, we will speak of the foot in three different sections: the hindfoot (composed of the calcaneus and talus); the mid-foot (composed of the navicular, cuboid and three cuneiforms); and the forefoot (composed of the metatarsals and phalanges).

The Hindfoot, the Mid-foot, and the Movements of Inversion/Eversion

The hindfoot and the mid-foot are built to move between the movements of inversion and eversion. According to Kapandji, inversion/eversion occurs at the subtalar (subtalar: the articulation of the talus and calcaneus) and midtarsal (midtarsal: the articulation of the navicular and cuboid on the talus and calcaneus, respectively) joints. The midtarsal joint is also known as Chopart’s joint. Inversion is composed of supination, adduction, and plantar flexion, while eversion is composed of pronation, abduction, and dorsiflexion.

For structural integrators, the movements of inversion and eversion represent two different qualities of support, which affect the entire structure, and they also represent distinct moments in gait. The foot was made to be able to move easily between these two extremes, allowing the capacity for the best possible stability and the best possible mobility. It is common, however, to have a preference for the movement of inversion or the movement of eversion, and this preference will set up a series of predictable changes throughout the rest of the body. When the foot moves into inversion it stiffens, becoming a structure that is built for stability and cohesiveness. When the foot moves into eversion, it becomes looser and more elastic. Both of these qualities are needed for a healthy functioning foot.

Inversion and eversion are movements in which the tibia participates as well. Inversion involves the external rotation of the tibia, and eversion the internal rotation of the tibia. Psychobiologically speaking, inversion and eversion each have their own character. Those clients that have difficulty in finding space orientation often have a preference for inversion. Thus, the functions that come with the movement of grounding, such as the capacity to let down, breathe out, and to surrender may be more challenging for them. Clients who find it hard to engage space orientation often have a preference for eversion. With space orientation comes the capacity to move up and out, to breathe in and to engage relationally – and the client who gets held in eversion may find these functions more challenging.

The alternation between inversion and eversion that happens within each step cycle is also the alternation between the active movement of touching the ground and the passive movement of allowing oneself to be touched. When the foot is in inversion the rigidity needed to support the weight of the body and lever it forward across the foot makes for a movement where the client has the active sense of touching...
the ground with his foot. As the foot goes into eversion, phenomenologically the tide turns. This is a moment when the foot becomes receptive; thus, the foot has the sense of being touched by the ground. Only then can it make the necessary adaptations to the irregularities of support and surface that come from below. The elasticity of eversion happens when the sole of the foot is alive and sensing, as the firmness of inversion happens when the foot is actively reaching towards the ground.²

The “Suction Cup” – The Three-Plane Movement of the Forefoot

The forefoot – the metatarsal-phalangeal region – is a key area of support for the whole foot and the stability of all three arches. If we look at Figure 2, we will see that because the joint space between the first metatarsal and the first cuneiform is diagonal, when the first metatarsal plantar flexes, the movement of plantar flexion is accompanied bypronation and abduction (movement of the first metatarsal towards the center line of the foot). Likewise, the joint interspace of the fifth metatarsal is also oblique, in such a way that when the fifth metatarsals plantar flexes, it is accompanied by supination and adduction (movement of the fifth metatarsal towards the center of the foot).³

Now, maintaining the contact of the lateral arch, lift the first and second rays (metatarsals and phalanges) all the way back to the articulation of the metatarsals with the cuneiforms. Slowly, keeping the contact of the lateral arch and especially the cuboid on the ground, lower first the second ray and then the first ray, allowing the base of the metatarsal to lengthen floorwards out of the cuneiforms, until the whole first and second rays come to rest on the floor, long and easy.

If you managed to keep the contact of the lateral arch while you did this, you will feel the suction cup activate. After doing this one or two times, stand up and walk and notice what changed.

What Happens in the Feet During the Gait?

Now that we have reviewed the tri-planar movement, we are ready to discuss what occurs in the feet during the various moments of the gait. The movement of walking is a continuous alternation between stability and elasticity, rotation and counter-rotation, and active and receptive sensing functions.

The biggest factor that determines the structure of a foot is the way that it is used during the gait.⁶ According to Dananberg,⁷,⁸ during a day that includes only eighty minutes of weight-bearing activity, each leg completes 2500 cycles. It is easy to imagine, from a Rolfer’s viewpoint, how even a small dysfunction in the feet can create problems throughout the body, as it is multiplied by constant use. It also makes sense to think that a healthy functioning foot, with its movement repeated many times can be a potent force for well-being.

The transfer of weight and the foot’s responses to it are different in walking and running. In this section the responses for a slow to moderate pace of walking will be discussed.

We can think of this trajectory of weight and movement across the foot in terms of five different moments in gait:

- Heel strike
- Preparation for receiving the weight of the center of mass (COM) of the body directly over the foot
- Full weight-bearing (COM directly over the foot)
• Preparation for toe-off

Heel Strike: As the foot prepares for heel strike it supinates, and as the weight comes down at heel strike it moves into inversion. As the foot impacts the ground, it needs a certain quality of stability to sustain it. The impact of the foot at heel strike is an important moment in the walk, and has been shown to be a factor in creating healthy bone mass in the leg.

Preparation for Receiving the Weight of the COM – Softening, Palpation and Adjusting: Immediately after heel strike, as the weight of the body begins to transfer forward over the foot, the tibia rotates internally creating a movement towards eversion (not full eversion, just enough to soften the foot). This is a moment where the foot becomes flexible, a moment where it receives the information from the ground, almost as an organ of palpation. This sensing capacity in the foot is essential for the foot to be able to adapt to any irregularities in the terrain. Without it, the smallest pebble can be a cause for injury or loss of balance. In a healthy foot, at this moment, the lateral arch is planted on the floor and the medial arch softens down towards the ground. As the foot palpatates the ground, it is able to adjust to any irregularities in that surface. The midtarsal region widens and drops and the foot lengthens longitudinally. This widening and dropping sets off a stretch reflex that causes the stirrup muscles (tibialis posterior and peroneus longus) to contract, taking the foot into its next moment. The lateral arch plants first, then, as the medial arch comes down the palpation and adjustment happens.

Full Weight-Bearing (COM directly over the foot): As the COM comes to be supported directly over the foot there is a movement back in the direction of inversion – once again, not full inversion, just enough of the turning of the bones to make the foot a more stable structure for weight-bearing. The tibia begins to rotate externally, taking the hindfoot and mid-foot into inversion. The stirrup muscles help this by lifting the transverse arch of the mid-foot, while, as the weight crosses the foot, the forefoot becomes active in a slight planter flexion that causes the transverse arch in the forefoot to lift and narrow. The whole movement can be viewed somewhat like what we see in a toilet plunger that has been pressed downward and returns upwards on its own.

Moving towards Toe-Off: The COM continues to move forward over the foot. As the big toe begins to dorsiflex, the plantar aponeurosis (which attaches at the base of the calcaneum and the proximal metatarsal phalangeal joint of the big toe) is passively stretched. This creates a tightening that travels along the sole of the foot and brings force closure (healthy, physiological joint compression) at the calcaneal-cuboid joint. This stabilizes the foot from ankle to mid-foot and to forefoot, just as it is undergoing a considerable amount of force, caught between the resistance of the ground and the transfer of the COM forward. This keeps the foot from wobbling as it goes into toe-off. The foot remains firm, while the plantar aponeurosis stretches like an elastic band – a movement that will release kinetic energy at toe-off and help propel the body forward.

As the heel begins to leave the ground, the fully extended stance leg internally rotates at the hip joint, a movement that transmits down through the tibia into the medial arch, creating a movement of eversion. The forefoot, which is still in weight-bearing function, continues in the stiffer, suction-cup mode that accompanies inversion. There is a twist that occurs along the longitudinal axis of the foot, as both the mid-and hindfoot soften evert, counter-rotating to the forefoot which is still in the high narrow movement of the suction cup. This counter-rotation stores kinetic energy and moves the weight of the COM forward across the foot, and medially towards the big toe and in the direction of the other foot as the other lower limb prepares to become the new support for the body weight.

Toe-Off: At toe-off, everything changes. Going into toe-off, the spring of the foot, along with the release of the plantar fascia, propels the lower limb into the swing phase of the walk. As the leg begins the swing phase, the knee goes from full extension to flexion, the hip also flexes, and the gastrocnemius gives a phasic burst of activity, just before the foot leaves the ground. This, because the knee is now flexed (and the weight of the body is being supported on the new stance leg), causes the leg to swing forward. There is a short burst of psoas activity at this moment as well, which was ideally set off by a stretch reflex as the psoas was passively lengthened by the extension of the hip in preparation for toe-off. The alternate pulsing and releasing of the psoas, as it stretches, contracts, and then releases for the leg to swing through, is an important factor for maintaining a healthy lumbar spine. It is dependant on the functioning of the toe hinge. Any curious Rolfer can feel this for himself, simply by walking with the toe hinge immobilized and noticing what happens to the action of the psoas.

The Feet in Standing and Weight-bearing

In this section we look at what happens in the feet while standing, weight-bearing, and in the crucial moments of preparation for, and full support of, the COM over the stance foot in the gait. This is the moment when the weight of the whole body is supported over one foot so that the other leg can swing through. The quality of support in the foot in this instant either sets up or breaks down core stability throughout the rest of the body. It is also the beginning of contralateral movement and an important factor in balance of the pelvic floor. A stable relationship of the arches at the moment when the weight of the body is supported on one leg engages the transverses abdominus / multifidus system, allows the hip joint of the swing leg to release, and the psoas to work. By the same token, if the foot wobbles at this moment or is unable to soften towards the floor, the global muscles will grab and tighten, the hip joint of the contralateral leg will shorten, and the psoas will not be able to perform its function.

As the alternating movements of inversion and eversion happen when we are walking, so this dynamic relationship also comes into play when we are standing. Remember that movements in the direction of inversion stiffen and raise the arches and movements in the direction of eversion soften and lower the arches. As weight comes into the foot, the lateral arch is meant to support the medial arch and the forefoot is meant to support both of them. In the mid-foot and subtalar region, this support for the medial arch from the lateral arch occurs where the talus rests on the calcaneus, at the sustentaculum tali, and also where the navicular and third cuneiform articulate with the cuboid. If you look at the medial face of a cuboid bone you will see that it falls in a diagonal line, and that it contains two articular surfaces, one for the navicular and one for the third cuneiform, which rest upon this diagonal support from the cuboid.
In terms of the myofascial elements, there are many that contribute to the support of the three arches. Some of the best-known are the spring ligament and the deltoid ligament, which support the medial arch, the flexor digitorum brevis and the plantar fascia, which act like bowstrings to the bow of both of the longitudinal arches of the foot, and the tibialis posterior and peroneus longus, which act as “stirrups” underneath the transverse arch of the mid-foot to support and connect. When Dr. Rolf spoke of the problem of flat feet really being “flat shins,” she was speaking about these stirrup muscles. When the tibialis posterior and the peroneus longus become incapacitated by an immobile interosseous membrane, caused by lack of appropriate motion through the foot, ankle, and leg, the arches of the feet lose their right relationship.

In the best of all possible worlds, when weight goes into the foot there is differentiation and width across the transverse arch in the mid-foot, and in the metatarsal arch as well. Each longitudinal arch is able to maintain its function and has enough elasticity and spring to release towards the ground with loading. The lateral arch gets longer and makes contact with the ground – the cuboid, specifically, resting more floorward. The lateral arch stays in contact with the ground and the medial arch is also able to lengthen and release its weight floorward, while still remaining on top of and supported by the lateral arch. The whole mid-tarsal region widens. The forefoot activates, supporting the mid-and hindfoot.

The action of the transverse arch, both in the mid-foot and in the forefoot, is an essential part of the relationship between the longitudinal arches. When the mid-foot is not able to widen, either the medial arch collapses inward, pulling the lateral arch up off the floor as it goes down, or the lateral arch holds the medial arch captive, not allowing it to soften and lengthen. When the forefoot is not able to activate, support for the rest of the foot is lost. The importance of the forefoot as support for the mid- and hindfoot can be understood if we use the analogy of an architectural arch. In an architectural arch the keystone – the stone that sits in the middle of the arch itself – is held in place by the balanced gravitational forces coming from the two lateral pillars of the arch. If you remove the keystone, the lateral pillars fall and, likewise, if you remove one of the lateral pillars the whole arch falls. By the same token, if we think of the longitudinal medial arch of the foot as an architectural arch, we will understand that the keystone (the navicular) is able to stay at the apex of the arch exactly because of the downward movement of the calcaneus in the hindfoot and of the first and second metatarsals in the forefoot. If the first and second metatarsals become held – either by coordinative habit or structural fixation – in a pattern of dorsiflexion, then the front pillar of the medial longitudinal arch gets lost. This leads to valgus (pronation) of the calcaneus, and collapse of the medial arch.

Three Variations on the Theme of Less-than-Optimal Function

For the purposes of this article, we will examine three patterns of less-than-optimal function and discuss some tips for working with them.

1. The flat foot – the one that has little arch or spring in either the lateral or the medial arch. In weight-bearing we do not see the diagonal line of collapse towards the inner arch – instead both arches are fully in contact with the ground. This is the foot that makes a footprint where the whole sole of the foot is visible in the sand. In medical literature this foot is not distinguished from the valgus foot (the collapsing inner arch), but for the Rolfer, it is worth making a distinction.

2. Varus – the high fixed arch. There are two kinds of high fixed arches, one in which the immobility of the arch is the baseline pattern, and another in which the high, rigid structure of the arches is a reaction to an underlying pattern of collapse. (The latter will be discussed in Part 2 of this article in a subsequent issue.) The high fixed arch foot has a preference for the movement of inversion. Both arches are rigid: the lateral arch is in contact with the ground, but the medial arch does not release its weight floorward. The footprint that this foot leaves on the beach is one in which only the lateral border of the foot and the toes appear.

3. Valgus – the collapsing arch. In this case, when the foot is in weight-bearing mode, the weight falls in a diagonal line towards the inner arch, and as the weight falls into the inner arch, the outer arch loses its stabilizing contact with the ground. This is the foot that has a strong preference for the movement of eversion. It is a soft elastic foot and generally goes with valgus knees (“X knees”).
maintain the alignment of the joints of the leg as he works on waking up the stirrup muscles). He starts the exercise with his heels hanging down below the level of the step and then rises up until all his weight is on the balls of his feet. Then down, and up again. When teaching this exercise, the best results will be obtained if the Rolfer educates the client to pay attention to the overall alignment of his body. If help for balance is needed, the client can steady himself with a hand on the wall.

Figure 5: Exercise for developing the stirrup muscles.

**High Fixed Arches (Varus)**

When working with high fixed arches, a lot of soft-tissue and articular intervention is needed to soften the plantar fascia and interosseous membrane and to mobilize joints of the feet that may have become fixated. This is frequently accompanied by a coordinative pattern in which the client has become accustomed to using his foot more like a hoof than like a foot. Once the mobility of the joints of the feet and the myofascial elements have been addressed, it may be necessary to spend some time helping the client to feel how his foot is now able to work and how to incorporate that into his daily movement patterns.

![Figure 6: High fixed arches.](image)

A very simple solution to this is to ask the client to do the movement of toes up and down while you are working with the sole of his foot, and to help him to be conscious of allowing movement to flow through the places that he tends to brace and hold rigid. This addresses the coordinative, proprioceptive component together with the structural component. At the end of the session, to take this a step further, you can work with the client seated on the edge of the table: have him rock forward in such a way that his weight falls into his feet, and use the loading of the feet to help him feel the mobility that can occur in the joints where his tendency is to not allow movement to occur.

Remember that the client who has a preference for inversion often has the tendency to touch the ground with his foot but not to allow himself to be touched. Thus any work that helps him to feel with the sole of his foot, and notice the nuances of movement that are available, will be welcome. Often, the problem begins at an even more basic level – the client with an inversion-preference foot is often a client who has difficulty allowing the weight of his body to reach the ground. He holds himself up off the ground and braces in the hip, knee, and ankle joints so that the weight does not flow downward. This habit is something that needs to be addressed throughout all interventions with the client.

Paradoxically, there are a certain percentage of clients with high fixed arches who, once they allow weight to come down through the feet, will manifest collapsing arches. In this case, the underlying pattern of the collapsed arches will have to be addressed for the client to be able to stop holding himself up through his arches and be able to find the ground.

**The Collapsing Arch (Valgus)**

The client who has a collapsing arch is a client whose foot has a preference for the elastic moment of the gait when the foot adjusts to the ground. In the mid- and hindfoot we find eversion, and in the forefoot a tendency for loss of support from the first and second metatarsals. In the client with valgus feet, tissue work needs to address the alignment of hip, knee, and ankle, with special attention being paid to the adductors and their connection into the pelvic floor – the classic “Fourth-Hour” line work.

In this foot type, which tends to be overly flexible, attention needs to be paid to any eversion fixation in the subtalar or midtarsal regions, or joint restrictions between cuneiforms and metatarsals that may prevent the first two metatarsals from plantar-flexing. In the valgus foot, the need to increase stability is a very big part of the conversation and this is an issue that has a large coordinative component.

When speaking of stability for the valgus foot, there are two issues: one is the relationship of the lateral and medial arches, and the other is about the stabilizing activity of the forefoot for the calcaneus. When the diaphragm of the forefoot is working, there is support for the mid- and hindfoot portion of the medial longitudinal arch. The capacity of the first two rays to drop towards the floor creates the front end of this arch. When the first two rays lift up off the floor, the arch falls, the calcaneum rolls medially, and the mid-foot portion of the medial arch collapses. Thus, although it may seem counterintuitive, the problem behind many collapsing inner arches is the incapacity of the first two rays to come down towards the floor.

Support for the medial arch also comes from the lateral arch. In Rolf’s words: "As we have observed, the inner arch rests on the outer arch. Contrary to the usual notion, it is the latter that breaks down first, the inner arch follows. Establishment of a normal foot demands a secure establishment of the outer and lateral arch first."

What is it, however, that securely establishes the lateral arch? Often it is a coordinative...
issue, which involves the client learning to contact the ground with the lateral arch and maintain this contact as weight loads into the rest of the foot. It has to do with the relationship of medial to lateral arch and the capacity for the suction cup of the forefoot to activate while the transverse arch in the mid-foot widens. It also has to do with the size of the neutral zone of the subtalar joint and the joints between the third cuneiform and navicular with the cuboid.

The neutral zone of a joint is defined as the range of movement near the joint’s neutral position where minimal resistance is given by the osteoligamentous structures. Once movement of the joint takes it out of the neutral zone, the elastic zone is engaged. The elastic zone is the part of movement that goes from the end of the neutral zone to the physiological limit of the joint. In the elastic zone the myofascial elements that come into play on the joint are engaged. When there has been injury, degeneration, or simply poor coordination patterns, the neutral zone becomes too wide and the joint becomes less stable. There is a longer interval of time between the beginning of movement and the action of the stabilizing structures around the joint. In the case of the foot, what this means is that as the foot prepares for loading, there is a wobble that destabilizes the foot and sets off a chain of undesirable reactions throughout the rest of the body.

This configuration needs to be addressed at the coordinative level, by helping the client, to establish a firm connection of the lateral arch with the floor and activate the forefoot. Once this support is in place, without losing that connection he allows the medial arch to receive the weight and release groundwards. The decisive moment comes when the lateral arch and the first and second metatarsals are in contact with the floor and the medial arch prepares to release – this is the moment that the stabilizing muscles need to engage a millisecond earlier so that the medial arch widens but does not collapse and the lateral arch maintains contact while the whole foot stabilizes. This new coordination needs to be taught to the client and then practiced on a regular basis until the client’s system has had time to own the new possibility and make it part of daily movement.

### Meditation for Stabilizing the Valgus Foot

This meditation is done standing. Start standing with one hand on the wall or some kind of stabilizing surface. You are going to lift one foot off the ground and notice what happens in the supporting foot. What happens here will tend to be what happens in the one-leg-stance portion of the gait, which either sets the stage for core stability throughout the body or breaks it down.

The most important moment to notice is the moment that the stabilizing foot prepares to receive all of the body’s weight. This is the increment of time before the other foot comes off the floor. What happens in the supporting foot as you prepare to take the other one off the floor? Do you feel a wobble? Do you see the tendons on the anterior face of the ankle pop up? If you have a valgus, collapsing foot, chances are that you will notice one or both of these phenomena.

Now, to play with the new option, start by standing in such a way that you can feel the forefoot engage with the floor. This may mean that you need to shift the weight of your upper body forward enough so that you can feel the pad of each toe come alive as it takes its share of the weight. Next, find the cuboid bone with your awareness and notice how it, and the whole lateral arch, rest floorward when you let the weight of your upper body come through it.

With full engagement of both forefoot and lateral arch with the floor, prepare to raise your other foot, while maintaining this contact. The second you feel a wobble, stop, go back, and find your contact of lateral arch and forefoot once again, until you can maintain the presence of metatarsals and lateral arch while the medial arch softens and drops. When this works, you will feel stable and solid in the whole foot as the other foot comes off the ground. You will probably also notice a sense of lifting and lengthening that occurs through the whole body, which we Rolfers call “finding the ‘Line,’” and which happens as the major coordinative players of core stability come on line. A hand on the wall can lend support while you play with finding the stability of the foot.

### Endnotes

2. Author’s notes from a class with Hubert Godard.
5. Private conversation with Hubert Godard.
6. Ibid.
9. Private conversation with Hubert Godard.
10. Dananberg, op. cit.
11. Ibid.
13. Ibid.
Four Fundamental Relationships in the Foot

And Why You Need to Work with the Ligaments of the Foot to Effect Change

By Michael J. Salveson, Advanced Rolfing® Instructor

All Rolfers™ know that the feet are important for structural integrity. Looking at the feet pictured here, you can predict that there will be trouble above, at the knee, pelvis, spine, thorax, and neck. You could even make inferences about the way in which structures above the feet would be displaced based on how the feet are distorted.

Figure 1: Disorganized feet.

All Rolfers also know that it is possible to change the structure of the feet so that they distribute the weight coming down from above in a balanced way. Dr. Rolf taught us how to do it by using our hands to alter the structure and tonus of the connective tissue that is holding the feet in an aberrant pattern.

In the ten-session series that Rolf originally taught and that forms the basis of the Rolf Institute’s® basic training, the work in the first session on the feet is designed to release strictures in the compartments of the lower leg and the retinacula of the ankle that prevent full range of motion of the foot in plantar and dorsal flexion. Additionally, this work will allow for the relatively independent motion of the tibia and fibula across the interosseous membrane of the lower leg. Directly working in the foot is focused primarily on the release of restrictions in the retinacula around the medial and lateral aspects of the malleoli, across the dorsal surface of the foot, and along the plantar surface of the foot.

To do this we rely on the assumed plasticity of connective tissue. Rolf told us we could change tissue with our hands and we have been doing it for fifty years. It is important to remember, however, that the laboratory evidence of the plasticity of connective tissue is sparse. Only recently, at the 2008 Research Conference on Connective Tissue at Harvard Medical School has evidence been presented that connective tissue can alter in ways and at speeds that we assume we see in our practice. The osteopath John Upledger has made a good case for the viscoelastic nature of connective-tissue membranes, which will allow for some responsiveness and movement, but not of the degree that Rolfers regularly produce. We need more evidence here.

Rolf taught us that the work of the basic Ten Series is designed to go only to a certain depth in the body. Going deeper, into the complex structures of ligaments around joints was, she said, territory “where even angels fear to tread.” She designed the basic series in this way to protect the practitioner and client from the destabilizing and decompensating consequences that can result from careless release of deeper ligamentous structures. The goal of the basic series is to create a web of organized tissue that reaches down to the deep fascia and its interface with the body’s bony surfaces. Organization at this level will provide a profound supportive matrix for deeper structures, which will mostly adapt by releasing and mobilizing.

When Rolf created the advanced training, she advertised it as training in taking the work of Rolfing Structural Integration to a deeper level. The question, of course, is: “What did she mean by a deeper level?” There is much to discuss here, which this article is too short to contain. But, staying with the connective-tissue hypothesis, it is obvious that going deeper into the connective-tissue system would involve working at the level of ligaments and joints. It also turns out that work at this level is usually necessary to normalize structural displacements that occur within the larger segments of the body that Rolf was working to balance, as depicted in the Little Boy Logo (Figure 2).

Figure 2: Little Boy Logo.

For example, it is often difficult to get the pelvic segment horizontal or the feet balanced without working on the relationships within the pelvis or within the foot, i.e., torsions between the two ilia, sacrum, and lumbar or rotations between the talus and navicular, etc. To do this requires working with ligaments, which together with the anatomical shape of the joint surface define the motion of the body’s joints. (This article is too short to go further into the very interesting properties of motion that occur at this level in the body, and I am hoping to expand on this discussion in another article in a future issue.)

I can briefly say that normal motion of the joints of the body depends on the ability of any joint to move equally in all the dimensions that the shape of the articular surface of the joint and the associated ligaments allow. This will often involve mobilizing a joint and its associated ligaments in ways that are not possible using the voluntary musculature that controls the joint. For example, normal, voluntary motion of the knee joint is flexion and extension, with slight internal rotation of the femur on the tibia on full extension. However, in releasing ligamentous restrictions that are inhibiting normal motion of the knee joint, it is usually necessary to subtly shear the knee joint in the transverse plane from lateral to medial or medial to lateral. This is a non-anatomical motion, meaning that the client cannot do this voluntarily. It can only be done by the application of an outside
force. It turns out that working at this level can also be very useful when balancing disorganized feet, such as we see in Figure 1. With this in mind, I will discuss four fundamental joint relationships in the foot: tibial-talar, talo-navicular, talo-calcaneal, and calcaneo-cuboid.

The basic “Recipe” works primarily with the talo-crural joint, also called the tibio-talar joint, where the tibia sits on top of and to the side of the talus, the site of dorsal and plantar flexion of the foot. But, the significance of the talus for normal function and structure in the foot goes far beyond flexion and extension at the ankle. The talus is the central structure in the foot guiding the weight coming down from above appropriately onto the medial and lateral arches and the anterior and posterior weight-bearing structures. It also has no muscular and hence tendinous attachments, so it is not available for voluntary motion. Its ligamentous structures are complex.

Because the talus articulates with the tibia above and with the fibula laterally via ligaments, it is important to notice that any torsion in the lower leg will displace the talus, by twisting the tibia on the superior and medial surface of the talus, which will significantly alter the way weight is distributed in the foot, forward to the toes and backward and inferior to the calcaneus.

In Figure 3, imagine what happens to the arrows representing weight distribution when the talus rotates even slightly.

Rolf emphasized the disorganizing consequences of a fibula that has slid downward, which always happens in a sprained ankle. As the fibula slips downward, it will also usually rotate slightly posterior and the tibia rotates slightly anterior, causing a twisting on the talus. This is routinely corrected by Rolfers by putting an elbow or knuckle on the anterior surface of the distal tibia with the client standing and asking the client to bend at the knees, while the Rolfer holds the distal tibia back against its tendency to move forward, thus taking some of the rotation out of the tibia on the talus, which will take the talus with it, de-rotating the talus.

It is not possible to put your hand directly on the talus. It is buried deep in the foot, between the distal ends of the tibia and fibula and concealed behind the navicular bone in front. When Rolf emphasized releasing and organizing the medial and lateral retinacula, she was indirectly making space for the talus to normalize, as the tibia and fibula are freed to separate from the talus, especially in dorsal and plantar flexion. I use an additional technique designed to release the ligaments linking the talus with the tibia and fibula. It involves simultaneous compression of both the medial and lateral malleoli inward toward the talus, while rocking the lower leg along its longitudinal axis to initiate movement in the interosseous membrane of the lower leg.

The central role of the talus in normal motion of the foot is further emphasized by its relationship with the calcaneus via the subtalar joint. The calcaneus sits beneath the talus, which rides on the calcaneus much as a saddle rides on the back of a horse (see Figure 4). Again, Rolf’s prescription to work the fascia on the medial and lateral sides of the calcaneus directly affects the relationship of the calcaneus to the talus.

The calcaneus is subject to significant distortions coming from above via the common gastrocnemius-soleus tendon, and from the plantar fascia. What is most disorganizing, however, is abnormal adduction or abduction of the calcaneus on the talus. This is seen most easily from behind with the client standing. We have all seen it many times. The calcaneus can be either pulled medially and forward, such that it rolls toward its lateral surface into supination, or the calcaneus can be pulled laterally, rolling toward its medial surface, which will give the foot a tendency to move into pronation.

Much of the distortion in the calcaneus can be relieved by organizing the connective-tissue pulls coming from the common gastrocnemius tendon above and from the plantar fascia in front. However, it is usually necessary to release the ligaments holding the calcaneus in its aberrant position at the inferior surface of the talus. To do this, I hold the calcaneus in one hand and compress the navicular toward the talus with the other hand. This will disengage the ligaments and create a momentary “neutral” position of the subtalar joint, which will initiate slight involuntary movement of the calcaneus on the talus. We refer to this as “motility” or “inherent motion.” This inherent motion will have a direction. By following the direction of the motion and adding a well-timed impulse in the direction of normal, it is possible to release the ligaments and restore normal motion to the joint.

Figure 3: Weight distribution through talus (from The Body Moveable by David Gorman (www.bodymoveable.com), used with permission).

Figure 4: Talus and calcaneus relationship (from The Body Moveable by David Gorman (www.bodymoveable.com), used with permission).
Inversion and eversion are possible because of the transverse tarsal joint. This is called Chopart’s junction or, more simply, the transverse tarsal joint. The front of the foot is anterior to the anterior surface of the calcaneus. There is a joint space formed by the anterior surface of the talus and calcaneus. This means that restrictions of the navicular at the anterior surface of the talus and restrictions of the cuboid at the anterior surface of the calcaneus have significant consequences for normal motion in the foot. This can be easily observed by taking the foot and passively moving it into inversion and eversion and by observing the motion of the navicular and cuboid bones. I almost always find either the navicular or the cuboid restricted, and often both. I have not been able to mobilize restrictions of these significant bones in the foot without using techniques designed to work with the ligamentous matrix in which they are embedded.

Knowing the nature of normal motion for any bony ligamentous complex will allow you to infer what needs to happen when normal motion is not present. Just restore normal motion. In the case of the navicular bone, I often find it stuck in a position that prevents the full range of motion in inversion – meaning that the navicular does not move easily all the way down and medially through its range of motion. Careful positioning of my fingers and compression of the navicular against the anterior surface of the talus will initiate inherent motion and I can then begin what I call the “stuck drawer” technique. Like a stuck drawer that you cannot just pull straight out but have to jiggle, the bony and ligamentous elements of a stuck joint will not usually release if you just pull on them. You have to compress the joint, wait for a hint of inherent motion, follow into the direction you think it is pulling you, wait again, look for a sense that the joint takes a breath or sighs as it moves into a sort of neutral position, and then coax, wiggle, and push it home.

This is the essence of working in the ligamentous bed. The technique is the same for all joints and the ligamentous matrix in which they are held. It has great advantages compared to the high-velocity techniques of other bodywork schools in that it works directly with the tonus of the controlling ligaments. By tailoring our touch to these deep connective-tissue structures and working in a way that restores motion of the joint through all its axes of motion, we restore the neutral position of the joint, which will make for a more stable correction. Working with joints and ligaments in this way is also consistent with our fundamental way of touching, which we learn when we are first taught to restore order to the connective-tissue matrix. Once one is intimate with this aspect of structure it becomes second nature to modulate touch to include ligamentous restrictions that prevent normal motion of joints.

Figure 5: Anatomy of the medial and lateral arches (obscure French anatomical text).

Normal motion of the foot relies on a combination of inversion/eversion and pronation/supination. Normally, inversion and supination are linked and eversion and pronation are linked. It is useful to look at these two motions separately because it reveals the importance of normal motion of the navicular bone on the anterior surface of the talus and the normal motion of the cuboid bone on the anterior surface of the calcaneus.

Remember that the foot has a very distinct structural division between the medial longitudinal arch and the lateral longitudinal arch. As you can see from Figure 5, the medial arch is formed by the navicular on the anterior surface of the talus and the three cuneiform bones on the anterior surface of the navicular bone, with the first three toes off the cuneiforms. The lateral arch is formed by the cuboid coming off the anterior surface of the calcaneus, with the lateral two toes coming off the front of the cuboid. There is much to discuss here but what I want to briefly emphasize in this article is the movement of the navicular and cuboid when the foot moves into inversion and eversion.

We will also make a distinction here between the front of the foot and the back of the foot. The front of the foot is anterior to the anterior surface of the talus and calcaneus. This is an important distinction as the anterior surface of these two bones lies on the same transverse axis. This is shown in Figure 6.

There is a joint space formed by the anterior surface of the talus with the posterior surface of the navicular and the anterior surface of the calcaneus with the posterior surface of the cuboid that lies in the same frontal plane. This is called Chopart’s junction or, more simply, the transverse tarsal joint. Inversion and eversion are possible because of the possibility of movement across this joint space. In inversion, the navicular moves inferior and medially on the talus and the cuboid moves medially and rotates internally on the calcaneus. They move together. This movement occurs across the transverse tarsal joint. The movements are reversed in eversion.

This means that restrictions of the navicular at the anterior surface of the talus and restrictions of the cuboid at the anterior surface of the calcaneus have significant consequences for normal motion in the foot. This can be easily observed by taking the navicular bone, I often find it stuck in a position that prevents the full range of motion in inversion – meaning that the navicular does not move easily all the way down and medially through its range of motion. Careful positioning of my fingers and compression of the navicular against the anterior surface of the talus will initiate inherent motion and I can then begin what I call the “stuck drawer” technique. Like a stuck drawer that you cannot just pull straight out but have to jiggle, the bony and ligamentous elements of a stuck joint will not usually release if you just pull on them. You have to compress the joint, wait for a hint of inherent motion, follow into the direction you think it is pulling you, wait again, look for a sense that the joint takes a breath or sighs as it moves into a sort of neutral position, and then coax, wiggle, and push it home.

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Figure 6: Bony anatomy of the foot, showing Chopart’s junction (the transverse tarsal joint) anterior to the anterior surface of the talus and calcaneus (illustration by John Lodge from Rolf’s Rolfing: The Integration of Human Structures).
Barefoot Walking Inspires Healthier Shoe Choices

By Karin Edwards Wagner, Certified Rolfer™

Author’s note: This article is based in part on the work of Dr. Ray McClanahan, DPM.

The advantages of barefoot walking can teach us how to choose footwear that follows the body’s biomechanics. A detailed look at foot biomechanics guides the recommendations for minimalistic footwear.

The foot has twenty-six bones, and each of these bones should move separately when you walk. For a hands-on experiment, twist your foot to see how much motion is possible. Now turn your shoe upside down and twist it. Grab it at the heel with one hand, and just two inches toward the toe with the other hand, then twist. You are checking for torsional rigidity, a trend in shoes that limits the ability of the tarsal bones to move naturally. Shoes need to be flexible to allow your foot and ankle to adapt to the ground. Most shoes that are flexible will also be lightweight, which allows natural hip and leg motion.

As you walk, your brain seeks proprioceptive information from the ground. When footwear is too cushioned or supportive, those sensations will be dulled and you will subconsciously strike the ground harder. This causes damaging weight load in the knee, increasing the risk for osteoarthritis.

A scientific study (see references) shows increased joint shock when wearing oversized sneakers or stiff clogs but significantly less when barefoot or in flip-flops. When walking barefoot, these heavy steps are punishing, so you quickly adjust your gait. For this reason, it’s essential to feel the ground through your shoes.

There is a second reason why this is important. Sensory feedback from your feet is essential for the correct firing of motor nerves. The nervous system demands quite a bit of sensory data to guide its motor commands: the neural bandwidth for sensory data is about five times more than for motor data. Your brain wants to sense your environment before deciding how to move, so it can make adjustments accordingly. One example of this is the tibialis posterior muscle, which does the job of lifting the arch of the foot, but will tend to be lazy if there is a lack of appropriate sensory information. When the tibialis posterior is doing a poor job of raising the arch, it is often further weakened by wearing shoes with too much arch support. The arch is meant to be supported by the foot’s bone structure, ligaments, and muscles (tibialis posterior and flexors hallucis and digitorum longus). When the arch of the foot is not undermined by artificial arch support, it will be stronger and more capable. A stiff arch support interferes with the natural pronation stage of walking, when the medial arch of the foot spreads and flattens. The peroneal muscles will still attempt to pronate the foot against this obstacle, which can cause peroneal tendinitis and even IT band strain.

Your foot will be allowed to regulate its own arch support when you choose shoes with minimal arch support.

The next step in following foot biomechanics is to seek a shoe with a completely neutral heel. Most athletic shoes, sports sandals, and even “flat” dress shoes have a half-inch heel. (Look at Figure 1a to see examples of nonminimal shoes, and Figure 1b to see examples of minimal shoes.) Even a small heel contributes to tight calves and hamstrings and increased heel strike. A “negative heel” is also not neutral, and I have not heard a scientifically-based argument for why it would be an improvement over nature’s design for the heel. Exercising in an athletic shoe causes the calf to be strengthened in a limited range of motion. Outside the gym, muscles shorten if your daily footwear has a raised heel. When the calf is short, the Achilles tendon is vulnerable to tears instead of being strong and resilient. Shortened calves limit ankle freedom, and also impact the rest of the body. Since there is a continuous line of fascia from the bottom of the foot up the back of the body to the forehead, it makes sense that short calves could contribute to many problems. Tight hamstrings and lower back trouble are obvious consequences, and perhaps this pull from the calves could even cause neck tension and headaches.

Figure 1a: Nonminimal shoe choices.

Figure 1b: Minimal shoe choices.

Athletic shoes can set runners up for plantar fascia pain. In one case, an athlete had run many marathons and even a 100-mile race, and wore athletic shoes daily with no problem. However, spending just one day barefoot at a water park triggered severe, lasting plantar fascia pain. The tissue had been overstretched by normal motion after being held short for so long. The typical podiatric recommendation is to avoid being barefoot, but that answer is only a makeshift solution. A better healing plan would be to calm and free the tibial/plantar nerve (between the gastrocnemius heads and along the inner ankle), to lengthen the calf muscles and fascia, and to transition to neutral footwear to support full calf length.

As athletes transition to reduced heels and then neutral heels, proper stretching is necessary to avoid injury. Stretching should occur after calf exercise that fully warms the muscle tissue. Stretch the calf by dropping the heel off the edge of a curb. Start slowly, feeling for the first place of resistance, and pause for ten to twenty seconds to let that resistance ease. Sink deeper and look for the next resistance. Once in the full stretch, hold the position for sixty seconds or more. This measured approach to stretching will prevent injury and support the calf in adjusting to shoes with a neutral sole.
A neutral sole will also be flat through the toes. In the past decade, athletic shoes commonly feature a 15 degree upward slant, called toespring. Toespring was added to facilitate the rolling action of the foot, but our legs naturally perform this motion without changing shoe shape. If the shoe is flexible, toespring can be reversed by bending the shoe in the other direction for a half hour. Toespring may contribute to deformed toes because it holds the toes in a lifted position. Toespring also limits the ability of the flexors and extensors of the toes to work properly.

Your toes will enjoy having a foot-shaped toe box, which means the toe box needs to be wide at the end of the toes. Narrow toe boxes cause bunions, neuromas, and distorted toes. Watch out for a toe box that narrows too quickly. Athletic shoes are commonly wide at the ball of the toes but narrow at the tips of the toes. If you remove the insole and stand on it, check whether your toes go over the edges of the insole. Avoid sandal straps that cross the toes and pull the toes inward. Narrow toe boxes are a sneaky contributor to overpronation. If the big toe is pushed toward the other toes, the foot is more likely to overpronate. Try it by holding your big toe in toward your other toes, and then out away from your toes, and attempt to collapse into your medial arch. In the natural position, the big toe helps limit pronation to an appropriate level.

Poor-fitting sandals or flip-flops can also contribute to deformed toes. Footwear needs to stay on your feet without having to use your toes. Common culprits can include flip-flops, clogs, Crocs®, and Birkenstock® shoes. Over the years, gripping or lifting your toes will contribute to hammertoes, claw toes, and squished-together toes. Choose a version with a heel strap, or with a design that stays on easily as you walk. Examples would be a Birkenstock or a Croc with a strap behind the ankle, or Mary Jane style dress shoes.

Indigenous peoples who have been barefoot since childhood show us how to walk and run correctly. Allow your foot to stay on the ground longer, rolling through the toes, then swing your leg forward only to the point where it is just a little in front of your body. (Contrast this to reaching the foot far in front of the body; striking the heel, and pulling the rest of the body forward.) This new stride will be shorter but with a faster cadence. Each step will feel lighter, minimizing both impact and effort. Keep the feet fairly close to your midline, in line with your center of gravity. This prevents side-to-side rocking, for reduced impact and improved balance.

Say you’ve found shoes that are wide at the end of the toes, but when you take out the insole and stand on it, your big toe or little toe still extends past the edge. Your toebox needs a little more room. You can re-lace the shoe, skipping the first pair of eyelets, to allow more room at the toes. You can try to stretch the leather in specific places, using a tool such as the blunt end of a pen.

If the toebox is spacious but your toes are still inactive, you can wake them up by wearing toe socks, which have a separate pocket for each toe, like a glove. This stimulation will increase sensory information coming from your toes and help you learn to use them. Injinji® brand (www.injinji.com) has longer toes, neutral colors, and wicking fibers appropriate for sports. Sock Dreams (www.sockdreams.com) has many styles for women, with shorter toes and fun colors. Of their products, Feelmax anklets have an excellent fit for average-sized women. Toe shoes by Vibram Five Fingers® are available online and at REI. The original four models (Classic, Sprint, KSO, and Flow) are built with extra-long toes, while the newer models fit people with average toe length.

Bringing This to Our Practices

I use this information in my Rolfing® Structural Integration practice to educate clients about their shoe choices. Feel free to pass out this article to your clients (or use the short client-friendly two-page version entitled “Healthy Shoe Choices” on my website www.portlandrolfer.com/index_Workshops.html)! I teach a ninety-minute class on healthy footwear that I call a “Shoe Clinic.” This is a hands-on lesson in evaluating shoes and even modifying them to optimize foot health. I ask people to bring an assortment of their shoes (one shoe per pair is fine). The shoes are a great visual aid as we go through the various points in this article. People leave the clinic motivated and clear on how to improve their foot health during their daily shoe choices. My target audience for this class is young people with healthy feet who want to stay active their entire lives.

Then, for clients making the transition to minimal shoes, I find the following Rolfing work very helpful.

• **Freeing the calves** – including gentle work to free the tibial nerve deep between the heads of the gastrocnemius and at the inner ankle – will help the calves be able to operate at their full length, instead of the shortened position when wearing athletic shoes with a raised heel. The result should be improved talar glide, easier hip extension, and less effort in walking.

• **Sculpt the metatarsals** into their natural transverse-arch shape. Some Rolfers do this using both hands, the fingers creating the shape by pushing into the bottom of the foot. I find it easier to put the knee up, foot flat on the table with a racquetball under the transverse arch. Then both of my hands are free, and I can even use my elbow if needed.

• **Awaken the toes** with detailed work to help each toe find its own role. Simply having the sensory input from your work will help the toes operate independently.

• **Look closely at clients’ shoes and socks.** Perform “fascial release” on the toe seam of tight socks, and teach clients to do it. Encourage them to cut, stretch, and otherwise modify their shoes to fit their feet and optimize their foot function.
CONSIDERING THE FEET

Why I Got Foot Surgery
Hallux Rigidus and Functional Hallux Limitus

By Robert McWilliams, Certified Advanced Rolfer™, Rolf Movement® Practitioner

Introduction

In this article, I describe hallux rigidus and functional hallux limitus from a clinical perspective, as well as from my own experience with the condition, and my recent surgery and postoperative regimen for recovery. My wish is to educate practitioners so that they can potentially recognize budding symptoms in clients and address underlying conditions and causes, perhaps preventing the full onset of this debilitating condition.

Pre-surgery Notes

From Figures 1a and 1b, the boney deformity and limit to my left foot’s range of motion (ROM) are apparent. The bunion (hallux valgus) is sizeable on the right foot (Figure 1a), but it gives me no pain in any direction of motion. On the left foot, Figure 1b shows that I was unable to hinge in big-toe extension at my first metatarsal-phalangeal (MTP) joint on that side. X-rays revealed it to be a hallux rigidus condition, an obstruction in the joint caused by spur growth limiting toe extension. Note that the shape of the bone spur reaches upwards, not sideways like the bunion on the right foot. This is one of the key identifiers of the condition, as well as ROM testing showing the restrictedness in extension, as in my case.

The Medical Perspective

According to the website of the American College of Foot and Ankle Surgeons:1

Halux rigidus is actually a form of degenerative arthritis . . . Many patients confuse hallux rigidus with a bunion, which affects the same joint, but they are very different conditions requiring different treatment. Because hallux rigidus is a progressive condition, the toe’s motion decreases as time goes on. In its earlier stage, when motion of the big toe is only somewhat limited, the condition is called “hallux limitus.” But as the problem advances, the toe’s range of motion gradually decreases until it potentially reaches the end stage of “rigidus,” in which the big toe becomes stiff, or what is sometimes called a “frozen joint.”

Common causes . . . are faulty function (biomechanics) and structural abnormalities of the foot.

References


Figure 1a: Right foot – no pain.

Figure b: Left foot – pain, extension restriction in big-toe, swelling.

Men’s and women’s designations simply indicate a slight difference in width.

New shoe purchases need not be expensive. Just keep these principles in mind as you shop, and you will find many minimalistic shoes for $80 or less. Look first for shoes that have a reasonable toe box and a neutral heel. Pick up each of these shoes, turn them over, and twist specifically at the tarsal-bone area to check for flexibility. If they pass the twist test, pull out the insole (if not glued in), which allows you to see how the shoe is constructed and whether it can be worn without the insole for increased sensory feedback and toebox room. (Doing these tests, you are spared trying on shoes that may seem initially comfortable but work against your biomechanics.) Then, try on final candidates for fit and comfort.

You don’t need to throw away any of your shoes, just put some of them in the back of your closet, and be reasonable about when you wear them. If you have healthy feet, you may wish to use non-minimalistic shoes for specific activities. Examples include: tall heels for tango, salsa, or flamenco; hiking boots for extreme mountaineering, especially using crampons for ice; work boots for climbing ladders, using a shovel, or other dangerous tasks; rock climbing shoes, which pinch the toes; and ski boots, which closely resemble an ankle cast. For people who love these activities, it is even more important that the rest of your shoe wardrobe is minimalistic. Bring a lightweight shoe to change into immediately after the activity, or go barefoot if possible. Spread your toes and stretch your calves to restore full motion to your legs and feet.

Please contact me at 503-230-0087, or see my website www.portlandrolfer.com for more information, including a link to a thirteen-page list of recommended shoe brands and styles with photos, as well as links to scientific studies on feet and shoes.
that can lead to osteoarthritis in the big toe joint. This type of arthritis...
posteriorly tilt my pelvis through that side more than the other. This put even more strain into the toes and forefoot in many frequently performed dance movements that involved rising on the toes and forceful deep squats.

The Surgery and Aftercare

I decided to try visualization work with the toe to begin a process of “re-membering” the foot even before surgery. Basically, this involved imagined movement into a fabulously free toe hinge, accompanied by micromovement through the bones of the feet in all directions. I also decided, in advance, to use all painkillers offered, as studies show that this seems to improve recovery.1 I was supposedly going to be conscious during the procedure; it was done with a nerve-block injection plus Versa, a mood altering narcotic that was supposed to only relax me, but seemed to put me right to sleep. In the first five days of post-operative recovery, I experienced flu-like symptoms. After about three weeks, notable swelling was fully normal gait pattern. The postoperative release. I used pain meds for the first three days, mainly to help me sleep in a position that allowed the substantial postoperative swelling to drain (supine, knees and feet raised on pillows).

As time went on, limping with weight only going through the heel gradually progressed into more and more normal motion through the foot in gait. After about three weeks, notable swelling was still there, though a lot less, and I could get into soft slip-on shoes. Physical therapy self-care treatments as instructed by my physician have me working to deeply stretch and distract the joint, working at the ligamentous and joint capsular level.5 (Like treatments received from a Rolfer before I got the surgery had given me a glimpse of the added freedom in my hip, spine, and ankle obtained from freeing the MTP joint by even a very small amount. Unfortunately, it was clear to me at the time that the boney block to normal motion was too great for these treatments to suffice without surgery.) I continue to perform these prescribed “distract and stretch” exercises on an “as tolerated” basis, as they are pretty painful. The podiatrist told me that this was to prevent the stiffening of scar tissue in the ligaments and joint capsules. I can now allow more and more weight through the joint, hopefully moving into a fully normal gait pattern. The postoperative X-ray shows my MTP joint capable, when manipulated by the doctor, of 30 degrees of toe extension with me in a totally unconscious state. This is approximately five times the ROM I had there before the surgery, though far short of the normative 90 degrees in passive bending. It should, however, hopefully improve my walking gait enough for more normal activities, like hiking, and walking with my clients.

Psychobiological Musings

At this writing, I am about ten weeks along in my recovery, and it feels slow. I can report that weight-bearing stretching in the joint is just now becoming tolerable – which is a huge improvement, even compared to my condition pre-surgery. Emotionally, I have had to come to grips with the fact that, because I have very little cartilage in my MTP joint, I may never really have a full pain-free gait again, let alone be able to return to a higher-demand use in dance. I realize that my sense of calling as a dancer, teacher, and choreographer intensifies this for me, though it perhaps does not make me unique in this world of avid skiers, runners, and others with physically demanding, and often injurious, pastimes. My preference for dance forms that used a lot of thrust through the toes (modern dance and contemporary ballet) certainly played into my situation. I imagine that someone very involved with post-modern dance (as represented by the likes of Trisha Brown or Yvonne Rainier), contact improvisation, or African dance could also incur a turf-to-type injury that could cause this, as opposed to minimal risk for someone whose passion is, say, ballroom dance.

From a philosophical perspective, two things seem to have been the root causes of my long-term MTP joint damage: the basic objectification of my body as a Kunstfigur at the service of dance as an art form, and a general “tough-it-out attitude” common to gainfully employed yet financially poor professional dancers. If I could, I would do over my earlier approach to this, and other dance injuries. I can still hope to find ways to help people in similar circumstances make better, healthier choices. I believe that better and earlier treatments of my turf-toe and hip injuries – rest, manual therapy, rehabilitation, and muscle repatterning (especially in regards to pelvic tilt) – would probably have prevented the degree of tissue damage, bone spur formation, and arthritis at my left MTP joint.

My main goal now is to be able to enjoy walking and hiking again, and continuing the investigation of fuller foot motion and coordination through Rolf Movement work and other forms, such as Chi Walking.2 The latter is a technique that de-emphasizes the toeing-off gesture in favor of a well-supported forward lean at the ankle, allowing transverse-plane rotation of the shoulders and hips, while de-emphasizing sagittal plane rotation of hip, and of the foot (and ankle) over the MTP joint. Though not allowing the fully upright spiraling undulation movement through the spine/pelvis sagitally and coronally that is considered a hallmark of Ohlgren and Clark’s Natural Walking,3 Chi Walking does potentially activate the “smart spring” necessary for SI-joint force-closure (referred to in Vleeming and Stoeckart’s discussion of gait in a broader article on lumbo pelvic stability). In any case, I know that in teaching dance, demonstrating movements may prove difficult sometimes. I trust my ability to adapt, in movement, while adjusting performance expectations according to the healing and adaptability in my left MTP joint.

The long-term results from the procedure are not to be seen for at least six months afterwards, according to my surgeon. Not all of the “word on the street” is good, as evidenced anecdotally by Internet postings.4 Because I do not have the same condition on the other foot, I should not require surgery there, and I believe this is because my condition was caused by use patterns and as a result of injuries, rather than being an inherited, bilateral issue.

Endnotes

Widening Our View of the Fascial Net

The Significance of Visceral and Cranial Work for SI

By Certified Advanced Rolfers™ Peter Schwind, Allan Kaplan, Anne Hoff, and Certified Rolfer Gabriela Arnaud

Editor’s Note: The following dialogue took place in Seattle in October 2010 when Advanced Rolfing® Structural Integration (SI) instructor Peter Schwind was on his way to Mexico to teach his fascial and membrane technique curriculum at Haramara Retreat Center for the Barral Institute, assisted by Gabriela Arnaud.

Anne Hoff: I notice that Rolfers who have done visceral work for a long time and are teaching it have a form of it that fits in the Rolfing paradigm. Except for you, Peter, I don’t get a sense that people are doing that with cranial. It seems like there are Rolfers teaching cranial, but they are teaching [standard] cranial rather than a form of cranial work seen through the Rolfing lens.

Peter Schwind: I think that happened probably out of the fact that the original visceral approach was already pretty close to what Rolfers have been doing anyway – we have been treating viscera without knowing it. I can tell you a funny little story that will tell you what I mean. When I first had my first contact with the visceral modality as Jean-Pierre Barral developed it, and I was with one of my friends who studied osteopathy in the U.S. way back in Kirksville, he told me “that stuff fits much more in what you are doing; I’m just shifting around bones, what the hell am I going to do with all those organs?” That was his impression and there’s a little bit of truth in it. You should not forget that Barral ran into a tremendous resistance in the osteopathic community when he started visceral manipulation, it took quite a while until people became aware that visceral work is more than a technique, that it is a meaningful concept for various schools of bodywork.

AH: Was there any visceral work back in the original days of osteopathy?

PS: Definitely. When you look at the first class that Sutherland taught you see manipulation of the liver, mobilization of the kidney, and there were certainly healers in Europe who did that. But it never went to this level of sophistication and general application to the complexity of the whole organ system that Barral found. The roots of it were pretty much that Barral was working in a hospital where many [patients] were from the French colonies and were suffering from very severe diseases, and quite a few would die pretty quickly. Because Barral worked closely with the dean of the hospital, who was a fanatic about doing dissections, they did a lot of dissections of fresh cadavers, and Barral was able to recognize that what he palpated as articular restriction was embedded within a context of visceral strain. He would see the signs of heavy tuberculosis in the right lung of the dead person and find inside the neck of the same individual strong motion restrictions of the facets of the whole cervical spine. And then he would say, “What the hell am I doing when I mobilize the cervical spine – the cause of that motion restriction seems to be visceral.” That was the starting point. There were certainly other people who worked on organs before, he has always stated that very clearly. For example, the famous doctor Ludwig Schmidt in Germany was a pioneer like Ida Rolf in the 1930s – he was teaching what he called “gymnastics for organs,” which was a sort of modified yoga. But somebody like Barral had to come who had this tremendous capacity for practical research, going so deeply into the system that he could make it into something that is simply not comparable any more to what the others tried to do.

I want to go back to your question of why visceral work found its way into Rolfing [SI] and actually stimulated something while cranial remained cranial. I started visceral work before I knew there was cranial work. When I was a very young Rolfer – after one year – I treated a person who had an accident. I tried everything, and was not successful. Then I put my hands on the frontal bone and I realized that one half seemed to come up and down after a while but not the other side. I fiddled around a little and the other side also came up, and then the person said his headache was gone. That was for me sensing something like cranial motion. Then I heard about cranial work in 1980, Upledger had just founded the Upledger Institute [and I immediately contacted him and organized a sequence of classes in Munich]. I was fascinated by that work, but I never gave up Ida Rolf’s traditional “Seventh Hour,” [which I came to think had] a potential to evolve: a hidden dimension to it, more than what we understood from Ida and the teachers of the first generation. And then later, much later, when I realized that some European osteopaths started to use a much...
more intense touch in cranial work, that encouraged me to go further, far away from Sutherland’s and Upledger’s concepts and see in which direction the original work, Ida’s seventh hour, will guide us.

As important as visceral work seems to be for me, my fascination for cranial work has become almost an obsession during the last thirty-two years. What excites me the most is how the cranial system is not separate from the fascial system, the cavities inside the body, and the visceral system, how it actually interacts with those systems and how the fascial system plays the role of a mediation between all those systems.

Allan Kaplan: There’s been a discussion for years of what is the place of visceral, what is the place of cranial, what is the place of Rolfing [SI], how do you incorporate it into your practice, when do you know when to use this or that. For me it’s not a question, because the perspective I come from is that it’s all fascia. It’s a continuum. If you talk to the cranial osteopaths (the French tradition and Canadians), they are talking about fascia, whether it’s visceral or cranial. I think the big problem is we are isolating them as three separate entities as opposed to saying “we are talking about the fascial system that involves the organs and the fascial system that revolves around the cranium.” One of my biggest awakenings in terms of cranial work was when I first went to a cranial osteopath. I was saying my lumbars or knee or something was bothering me, and he did his thing and then went to my head and was working on my knee or lumbars from my head. I said “what are you doing?” and he said “I can feel the connection [through many places] and I’m dealing with the whole strain pattern.” He wasn’t just doing cranial work on my head with the sutures and making sure the bones were free, he was dealing with the entire pattern. And that’s [what we do in Rolfing SI] at its most sophisticated. Think of it as, “we have the fascia of the body: what’s the best way to get to what we want to get to?”

I had a client last week whose chair had collapsed in a meeting and her back was killing her. When she hit the ground her left kidney kept on going and ptosed and was pulling into her lumbaris. I mobilized the kidney, and that was 80% of the trauma right there. Then I did some back work and this that and the other. If I’d gone at it through the traditional Rolfing way, I would have done a lot of stuff out on the surface, and gone in and maybe worked in her belly a little, and possibly inadvertently have moved the kidney. [Visceral and cranial work are] dealing with those parts of the fascial net that we weren’t really aware of or taught about – it’s just the other end of the whole body of knowledge that you can’t fit into the training. Back when Ida was around, she knew about cranial and visceral work, but it wasn’t her forte.

PS: In the old days we would have tried to solve that situation of your client by working on the psoas, and sometimes we were successful and sometimes not. I know from practical research – using ultrasound – that most of the time when we try to work on the psoas we had an effect on the kidneys but not on the psoas – especially when I think about the techniques from the old days where the client would sit on the bench and as [he leaned] forward you went in – where Ida would say “think horizontals and lift up.” Hopefully our fingers were underneath the kidney and not on the kidney and we would mobilize the kidney. I remember one of my first teachers saying “whenever you do the psoas the vitality goes up” – but it’s not the muscle that came to life, it’s the kidneys that came to motion.

The great thing is that many times during the old days we had little understanding of that what we did, but quite often we arrived – intuitively – at great results. That was such a great inspiration that I got from these guys in America, a practical inspiration, as I came more from an intellectual European background. Once I got in contact with the French osteopaths, it was interesting not to kick out what we Rolfers were doing, like the “Fifth Hour” or the psoas work, but to say “How could we do Rolfing [SI] differently, more efficiently?” Certain things we don’t do anymore, but quite a few things we may have to continue while things we don’t do anymore, but quite a few things we may have to continue while the machine is so good we can watch the individual fibers of the psoas and see if there’s a spasm of a subgroup of psoas fibers and how we affect that. I’ve just taught a two-day course in how to use the ultrasound to observe what we do with the psoas.

AK: I remember back in the late 80s Emmett Hutchins telling me – we must have been doing a Fifth Hour – “if you feel this, that’s the root of the mesentery; before we knew what that was, we used to try to ‘Rolf it away.’” It’s the influence of visceral manipulation – if nothing else – to give a picture of what’s going on inside the abdomen or thorax. As I was taught, we were dealing more with the outside of people. But if the strain is going through the abdomen, it’s going through the abdominal structures which are the suspensory structures of the organs, so you have deal with that stuff. It’s like the organs are the handles or a lever to deal with things – like the cranial work. That’s what that osteopath told me in that session – “it’s like you get a long lever, I could work it down there, but I can work it up here and often get a better result.”

PS: He was not treating the cranial system as a separate unit from the rest of the body, he was using it as an entrance into everything that is present, working from there to connect into other systems that are not part of the cranial system but related to it.

AK: Exactly. He told me about a seminar with a bunch of osteopaths – some were direct students of Sutherland. He said with some patients the long-time students of Sutherland couldn’t resolve the problem, and when he looked at it, it was a very simple visceral problem. My question was “How could this person who is so good at cranial not be able to treat that thing?” He said, “It just wasn’t within the paradigm” – it just didn’t even register. It’s as though if you are listening to an orchestra and all you ever hear are violins, you don’t even notice the trumpet over there.

PS: I like that! – We only see what we know to look for. I remember one dissection course where I asked a very experienced professor of anatomy – who had been doing dissections for twenty-six years – how to find the suspensory ligaments of the lungs, and he looked at me and said “Are there any? I have never seen them.” He doubted that there are suspensory ligaments of the lungs. But we had four cadavers, and we found the ligaments, it wasn’t that easy but we
found them. And he realized that his way of looking at that region of the neck and upper thorax was prescribed through a certain tradition where you wouldn't look for that, so he didn't even know they existed. In the German-language literature about anatomy there is only one book, from Switzerland, where this anatomical unit is mentioned.

AH: The way you are talking about this it's a whole fascial system, visceral fascia, cranial fascia, muscular-skeletal fascia not being different things. It seems obvious that as Rolfers that would be part of our territory.

AK: We preach that there's a fascial continuum through the body but we limit how far that goes. The truth is that it goes through the body.

Gabriela Arnaud: What's really interesting for me about how Peter works is the relationship between the container and the contents. For me what is interesting in Rolfing is [that] the fascia is all over, I'm dealing with the whole human being, I'm not closed to anything. The fact that Ida Rolf didn't have the time or the clarity or whatever to pass it on doesn't mean that she didn't feel it. For me [Rolfing SI] is the widest door to body therapy. These things – cranial work, visceral work – make my work richer, I can help more people because I can listen to more things, I have to listen to the system as a whole. I like the concept of the tensions of the inside – how much should I work with the viscera that the outside can adapt to that.

AH: Would the Rolf Institute faculty like to bring more of this into the trainings?

PS: We are starting a dialogue. I think all of us are aware that we need to widen our perspective a lot. We are sometimes concerned about the identity of our own discipline, because the discipline itself may be enriched by other methods, techniques, and perspectives, but it does not grow per se through that enrichment. Some of us are really aware that there is another step that is also important, not only putting more and more tools in our bags, but that we must understand what it means for our method if we put this tool in our bag, what is the impact it has on the basic and advanced concepts of our method. There are two dangers: one is blind orthodoxy, and the other is just copying whatever is up, then everything seems to be structural integration – I can do plastic surgery, energetic massage at a distance from the body, cold laser, anything. I'm sometimes not so sure about the speed of how we try to use things coming [from outside]. In my view, visceral and cranial and movement work are certainly the main modalities that add to our original work without leaving the field of it.

AH: Peter, I took a class with you in Santa Fe in the early 90s where you taught what you called the “drum technique,” which seemed to work with strain patterns in the thorax but didn't name specific organs. I'm curious how much can we accomplish in the visceral layer with a general picture if our touch and sensitivity are precise, and how much we need the precision of understanding the visceral anatomy, inspir/expir of the individual organs, things like that.

PS: The drum technique was a very simplistic first approach for me to go especially in the inner depth of the thorax, because I knew that Ida Rolf had stated that she always felt like something would pull her down inside the thorax behind the sternum. When I looked at photos of her, I always felt people did great work with her but nobody knew really how to go inside the thorax and release its inner dimensions. So the drum technique was a very naïve – efficient up to a certain degree – first approach to get inside: subtle compression, support from behind, compression from the front or the side, modification of the different directions, getting releases in there. My interest was not to reproduce what I had already learned from Barral about the organs, I was trying to work with the inner walls of that drum and the inner subdivisions – what I call nowadays the inner shape of the thorax. Those two Santa Fe workshops were a starting point to say there must be more than anatomy, because anatomy helps only to localize certain layers. Anatomy is very important to know, especially anatomy of the living body, to recognize where we are with our hands, but anatomy does not teach us what to do, that's a big illusion. Anatomy is important just for the topographical orientation.

AK: “The map is not the territory.”

PS: Exactly. What started in Santa Fe was a very stimulating investigation. We had this very simplistic block model at the beginning, and I think behind it there was a true question of what are the most significant components of shape that make the organism – and that's not anatomical units, it's not the muscle starting here or this and that. These components of shape, when we put it down to a very simple three-dimensional perspective, are units that are cavities into cavities into cavities, and their inner subdivisions. So there are cavities and there's a container around them, and the container is mostly the muscle fascia, the bones act as spanners as Ida Rolf said.

For a long time we treated only the container, mainly muscle fascia. When you look at certain traditions of osteopathy you see that they treat the contents, they look at one unit and see how it moves in relationship to the other. But on both sides there is something missing, because there must be something like the maintenance of human form, not just of movement and function but also of form. If there weren't form and inner shape, one evening the liver would be on the right side and another evening on the left side, or inside the buttocks. I think that the human body doesn't manifest in straight lines – you can relate it to a line, but there are no straight lines in the body. It's all curvatures, cavities and curvatures.

For me the most interesting thing to say is “How does the container, which is the muscle fascia, relate to the contents? And how does the membrane system on the inner walls of those cavities build a bridge between the container and the contents? And how do I find those important areas of transition where one container meets the other container? – like the peritoneal meets the subperitoneal, and the peritoneal meets the retroperitoneal, and the peritoneal meets the endothoracic, and the endothoracic goes in the pipe of the neck goes into that cavity of the head. What is extremely important to investigate is that at those areas of transition we find key points where we are able through touch to treat the container and the contents at the same time. That's very different both from traditional osteopathy and traditional Rolfing work. We try by minimizing our approach in a very precise way to treat the container and the contents at once.

At the level of the spine, that means that we don't need to get lost in the individual fixation or rotation or translation of a few bones; it means that we are treating curvatures instead of joints. So we treat larger units but in a very precise way. That means we are looking at how one cavity of the body meets the next cavity of the body. Why is it still Rolfing [SI]? – Because it's related to gravity. Just as we look at cavity to cavity, we look at the curvatures in the back, we have a bunch of kyphosis and
a bunch of lordosis there. My experience tells me that quite frequently if we try [to make] those transitions from one curve into the next curve more fluent (instead of throwing everybody into more extension and making them longer and straighter, or reducing spinal curve), if we just focus on the transition between one curve and another, we get very stable results.

When I talk about shape, the body is composed of bags into bags into bags, and I have to recognize the innermost construction of the most important spaces containers and how they wobble on each other. The peritoneum is like a fluid-filled synthetic bag that balances on another bag which is the subperitoneal space, and then there's the retroperitoneal, and they have a micro-capacity of motion up and down. If one slides, for example if the peritoneal slides down as a whole bag in a relationship to the whole retroperitoneal space (where you have the psoas and kidney) and gets stuck there, and you cannot make it slide up again, you can do whatever you like for the individual restrictions inside of the container, or you can work for ten sessions on the outside container, but you will never arrive at a true improvement. That's my very personal statement about the shape of the body and how to do Rolfing [SI] out of this. How does this sound to you?

AK: Having done several of your classes, I like the idea, and it's part of the continuum. Even if you have restrictions between organs within the bag, you can work on the bag for a long time and if you don't deal with the restriction you aren't going to be able to change the shape of the bag.

PS: If you come from the right angle, and you talk to the inside of the bag and the outside of the bag, you may be sometimes lucky that that very specific fixation of the organ will let go.

AK: That brings us full circle back to [the question of] what is the best way to enter the body, whether through this system or that system or that one. And is there one best way – it depends on the person, it depends on the strain. . .

PS: I have a very provocative answer for that. I would say you can enter it from wherever – as long as while you work at the entrance point, touching one system (for example, a boney articulation and its related ligaments, like between the talus and calcaneous in the foot), you talk to that connection, those units, in a way that you are connected to all the other subsystems in the body at the same time. So while we are working in one place, and might feel some opening there, we will not be able to feel the whole body at the same time, but what we should try to feel is how the main restrictions of that body, that shape and individual pattern of strain, how those react to what we are doing in that local place; we sense whether those restrictions close down more or open up a little bit more. Then we can modify what we do locally in that ligamentous strain between the calcaneous and talus in a way that they open more and more.

AH: So what you are saying is very much like what Allan described the osteopath doing, except he was using the head to reach through, but you are saying you could just as easily be at the foot and work through that.

PS: I agree, however we go far away from the true area of conflict, like sneaking into the system, and talk to these very few critical places.

AH: Peter, you said it doesn't matter where you start. One thing I wonder about is with certain clients, is a certain doorway “better”? PS: I think that if you want to have an impact, you need a handle. There are people who have absolutely no visceral restriction and if you start to work there you have simply zero results. When I said before you can start wherever you like, that's not the full truth. You can start wherever, if there is a manifestation of the strain. And you might use that strain far away from the larger strain as an entrance. There are some people who you might just touch related to the viscera, and there's a beautiful door, and if you don't walk through that door you won't get any result at all. Or there are some other people where the cranium has been nailed together like a coconut for fifty years and you can do whatever you do but if you don't go to this specific layer of fixations there will be no results. But even this person, if you find a true restriction, even in a ridiculous detail, like let's say in the right cuboid, there is a chance that if you talk from the cuboid fixation to the coconut head and you get it somewhat to open, and then you work diagonally from the right foot to the left side of the cranium all the way through. We need a handle.

What's funny about the Rolfing approach that's certainly different from any good osteopathic approach is that aside from the most significant restriction, we want to do something else. A good osteopath leaves the system the way that it is, and will only go to the most significant restriction and trust that with the minimum of stimulus the organism will repair itself up through the level that is necessary. That's a beautiful concept, and it's very, very efficient when it's done precisely. However, it is a therapy of the status quo. It is fantastic to get the person who is totally stuck in certain inner dimensions out of this being stuck, but it does not necessarily mean that there is any personal evolution. And this is the big challenge of the Rolfing concept. [Putting aside the] naïve development of the human potential movement of the 1960s – which was a funny combination when you think that Ida's early ideas were in the 30s, and in the 60s we tried to be opposite to the 30s, politically – aside from this illusionary aspect of trying to create a better human being, there are a few grams of truth that we should not lose, which have nothing to do with the desire to create a better human being but have a lot to do with the desire to create more inner freedom – and that's something different from helping somebody to be able to raise his right arm again after it was stuck with a frozen shoulder for two years. For me, a good practitioner should be able to deliver both, or at least offer both, be able to help [the client] use the shoulder again and still offer to the organism a few items that offer a little bit more of freedom in expressiveness, movement, emotion, whatever. That's of course a very big project that we have to be very careful with.

GA: For me, that's what's different, that's the inspiration that made me study this. I think that's the difference between Rolfing [SI] and other methods. If you get the shoulder free in one session in osteopathy, that's it, but you don't see the development of the client. [Rolfing work] is a chance to feel different. Why else would someone go to a Rolfer? I work in Mexico City . . .

PS: . . . She's the only Rolfer in all Mexico . . .

GA: . . . [I've had a client] tell me it's the first time he's been touched like that, just from me putting my hands on his back. That's worth it, when I doubt what I'm doing, whether I'm really helping people, when I encounter this kind of “thank you” in a deeper sense. It's not that [the client's] knee doesn't hurt anymore, it's something healing inside. But how do you talk about why do people go to Rolfing sessions?

AH: Maybe that's back to what you said about process. Maybe part of why we hold to the ten-session model is not just because
Incorporating Visceral Work

of its formality as a model but because the ten sessions allow us a process, which potentially allows something to happen that does not happen necessarily if you are, say, just trying to fix somebody’s shoulder.

**AK:** One thing with “fixing,” say you are dealing with someone’s knee, there’s a difference between just concentrating on the knee and that’s the session and looking at the knee in the context of the entire body. That’s the Rolfing approach to dealing with an injury. You might make the knee feel better, and you install a lift or integration to the body. I think it’s important for people who don’t buy into the idea of Rolfing first aid to consider that approach, because that’s where it’s really effective.

**PS:** Like some of us I do two completely different things in my practice. I have a straightforward Rolfing practice, that of course uses other things I have learned, but the people come for a sequence of treatments, many for ten, some times it’s only seven or eight; for post-ten [work], usually three maximum. And aside from that I have a practice of what you could call manual medicine, where doctors send people with very specific issues. For me it is really two very different things. I do manual medicine with very limited intervention for a certain problem, and that sometimes works quite well, and sometimes it doesn’t work, where people need more all-over treatment to have a stable result, and then I ask them to come for Rolfing sessions. I do these two different things, and I teach these two different things. When I teach for the Munich Group and for the Barral Institute, I teach my personal approach to manual medicine – which is strongly influenced by osteopathy and other disciplines, but mostly techniques I developed myself that are out of thirty-two years of practice. I think Rolfers can benefit, but it’s not necessarily a part of Rolfing [SI], it just makes your Rolfing work more effective if people have very heavy symptoms which can’t be resolved with traditional Rolfing sessions. In Rolfing sessions I of course will include these other techniques but the goal is really to treat the overall fascial and membrane system.

I just announced an advanced Rolfing training together with Christoph Sommer in Europe for 2012. The theme of this class is: “what does alignment mean for the container and the contents?” – alignment in the sense that a human being can be upright not using permanent control or struggling, but somehow settling down – and respecting the fact, to quote Hans Flury, that every human structure is individual. The aim is to find the best solution for that one individual structure in the field of gravity that has a certain amount of ease and balance between all the subsystems, whether the lymphatic system, the arteries, the nerves, the membranes, the organs, the fascial containers of the muscles. To use that fascial system as the mediation between these systems so that they all work together in a better way. We want to teach people to treat the organism as an orchestra, not as single voices or single instruments.

For me the fascination has never stopped about this project. I am still – after twenty-three years – a student of Barral, and I teach some of my stuff for his club, and I have so much respect for his mode of working. But I am as well interested in another concept. If I would name that concept it has to do with the fact that on a very modest level I want to give my very personal interpretation of Ida’s thought. Barral told me one day, “of course Ida was very good, but nobody knows what she was doing, we only got interpretations of that” – that’s a great statement.

**AH:** Already so many Rolfers in their individual practices are doing their own interpretation. The question is how much room do we have to keep a cohesiveness but also allow an evolution to incorporate things that Ida Rolf didn’t have time herself to develop and incorporate, to bring in other people’s mastery. We have a lot of brilliant people in our community.

**PS:** It’s very interesting, this question of how much we can open ourselves. I remember one of my teachers in the field of psychotherapy, before I became a Rolfer, said: “A therapy is a contract between two people and nobody from outside has the right to intervene in it, otherwise you can’t master the psychotherapeutic situation.” For me that’s true, if somebody is certified as a Rolfer, they can do what they like to do in their office, they do their best from their perspective. The problem arises as soon as you have an organization and you are a teacher, you have a responsibility not only for what you like to do and think you are good at, but you also have a responsibility for the concept, otherwise the concept gets lost.

The Culture of the Viscera

By Liz Gaggini, M.A., Certified Advanced Rolfer™

Author’s Note: This article assumes a basic knowledge of the relationships of viscera to structure and structure to viscera. If you would like to learn more about that, see the Appendix “Why and How the Viscera Affect Structure” at the end of this article.

Working with the viscera requires that we develop our kinesthetic abilities to sense a more complex arrangement of textures, densities, and movements. Understanding the tissue qualities of visceral anatomy can help us. The fundamental materials and organizing principles of these tissues are the same as those of the myofascial tissues we know as Rolfers. Yet the tissues of the myofascial system are exponentially more homogenous than the tissues of the visceral system.

Let’s look at what we have come to understand and be able to sense about tissue quality from working with the myofascial system.

- There are many layers of connective tissue wrapping and compartmentalization from superficial fascia, septum barriers between muscle groups, and the connective-tissue bags that wrap individual muscles.
- Kinesthetically we have become completely familiar with the gradual changes in density and elasticity as we feel from the insertion to the body of a muscle. Our touch can discriminate between bone, ligament, tendon, spindle, and sheath.
- We can kinesthetically sense adaptability between muscle compartments, and see adaptability in muscle lengths and the range of motion in joints.
- We can trace with our hands and see with our eyes long lines of connective tissues that connect and define the shape and alignment of the major sections of the extrinsic structure.


**Scope of Practice**

When working with the viscera it is important that we keep our goals and techniques within the structural integration (SI) scope of practice. In SI we use fascial manipulation, movement education, and awareness to achieve improvements in somatic alignment, function, and presence. These improvements can lend to, but not guarantee, a better quality of life.

Our work is with those elements that give shape and function to the architecture of the body, the connective-tissue matrix, and the nervous system. Visceral work, though it often utilizes indirect assessments and treatment techniques, remains a work with, to, and for the connective-tissue matrix and autonomic nervous system.

People often ask if work with the viscera can help with physiological illnesses. If the physiological problem is caused, in whole or in part, by fascial restrictions, then visceral work might help. Any promise beyond that is beyond our scope of practice. As most standard and complementary medicine is biochemical and/or energetic, structural improvement can be a vital contribution.

- And we can feel with our hands and see with our eyes areas of ease and tension. Over time we come to know, or at least suspect, which of these places of ease and tension are beneficial and which are not.

There are kinetic challenges when approaching the viscera:

- There are many abrupt changes in the textures, densities, and adaptabilities of the tissues. So we cannot be looking for homogeneity.

- For the most part we get little assistance from our sense of sight.

- In many cases there are boney or muscular structures extrinsic to the viscera that we need to feel through or around.

- The viscera are also layered and intertwined so that we often need to feel through one organ to sense another.

- The organ tissues are far more fragile than myofascial tissues. To find and assess them we have to change the pressure and pointedness of our touch.

- The visceral system is more autonomically innervated than the myofascial system. This requires us to be selective, as well, with the speed and amount of our probing.

There are some qualities in visceral tissue that make it a little simpler, relative to the myofascial system, to identify and assess:

- Much of the visceral tissue, both of the organs and their attachments to the structure, is highly elastic allowing for more adaptability and movement. However, there is an important characteristic we see in the visceral core; more so than with the extrinsic body: any organ will still itself to match another organ, particularly if it is in the same vicinity as or in the same system with the primarily restricted organ. Some bodies we are trying to assess have multiple visceral dysfunctions. In these bodies the expression of visceral adaptability can be seriously diminished.

- Many organs feel distinctly different from one another. For instance, it is much easier to tell the liver from the stomach, even where they cross one another, than it is to tell one adductor from another.

- Any part of the extrinsic structure that is near to an organ or its primary or secondary attachment sites will become firm and protective if that organ has lost its normal adaptability. This can help us know where to expect a loss of adaptability in the viscera.¹

**The Qualities of the Visceral Tissue**

Let’s look at how the visceral body is composed and arranged. There are many organs with many different shapes, densities, and functions all packed together inside compartments that are all different as well. Some of the compartments are hard, some soft; some are adaptable and some hardly adaptable at all. Inside of the compartments, the organs are rubbing against one another, folding over and around one another, and accepting and adapting to the passage of various materials and fluids necessary for life’s processes. The compartments are held close to one another and close to the boney and muscular surfaces of the structural body. Some organs can be found tightly attached to compartmental walls and some are floating free of such attachments.

There are tubular passageways, functioning as both conduits and support structures that interconnect all of the organs and compartments. Sometimes these tubes are firmer than the organs they connect and sometimes softer. Some organs join together into systems and subsystems to handle various physiological functions. The compartments separate these functions from one another and the tubular conduits connect them in precise and purposeful ways.

**Visceral Culture**

We can understand much about the organic qualities of the visceral body by studying its structure and function in words and images. However, working with the viscera can teach us about the deeper culture organizing these tissues and systems. Over time, the visceral body can show the receptive and polite tourist how to interact with its culture if that tourist wants to become a welcome agent of change. In the manner in which the organs are arranged, and in the composition of the various tissues throughout the visceral region, we can begin to know the primary tenets of this culture. This culture has come about by the process of evolution selecting out the most sustaining designs and arrangements and occasionally making a fortuitous mistake. Two qualities seem to be fundamental to this culture. First, a precise and unrelenting discrimination has to be primary and sacrosanct for the organs of the viscera to contain their different tissues and perform their different functions while residing so
close to one another. Then, in order for all the different components and processes to occur in these compact spaces and still sustain life, an ongoing harmony of the whole must rise above the needs or capacities of any one part.

**Discrimination**

The organs discriminate themselves from one another by distinct differences in their tissues. To maintain these distinctions in close quarters, the fascia that externally wraps each organ prevents adhesion to other structures. Effectively, the boundary of each organ is saying to the other, “don’t become me.” The stomach can lie next to the spleen for a lifetime and never become adhered. The tubes of the small intestine entwine with one another and within and around the tubes of the colon and remain free. The flexures of the colon come up behind the liver on the right and stomach on the left and never adhere.

These boundaries can be violated with injury and illness. The organs can become adhered to one another by the introduction of a binding connective tissue, i.e. blood from internal bleeding or from blood spills during surgery. Prolonged inflammation can also cause a proliferation of binding connective tissue between organs. If an organ is inflamed for some time, gossamer fibers of connective tissue can attach between it and the other organs in constant contact with it. Blood adhesions are like thick scars or wads that lie between the organs they are adhering. Adhesions from inflammation are not as profound but still serve to create immobility between two organs that once were able to freely slide by one another.

**Harmony**

There are many different functions striving to happen within the visceral cavities. There are bags that can fill and empty by respiration, peristalsis, blood circulation, and consumption. All of the organs are in continual production of vital substances that need to be transported and arrive on time. At the same time, the organs need to allow the movements of the extrinsic structure to shift them around. Many organs are involved in tightly orchestrated physiological processes that need to have the steps occur in the appropriate sequence to adequately handle the body’s nourishment and cleansing. If any one organ would perform inappropriately for the situation, illness and even death could occur. This cohabitation and sequencing requires that a guiding harmony be maintained throughout the visceral core.

The harmony of the visceral core is regulated by a vast number of neurological and biochemical factors. A primary mechanism by which the status of any part of the viscera is communicated to the whole is mobility. When an organ is not able to function well (whatever the causal agent), there will be a change in its capacity for motion. Peristalsis can slow with constipation or speed up with poisoning. The liver can become sluggish with cirrhosis and toxicity. The kidneys can become sluggish with injury or over-activated by imbalances in the blood. No matter the cause, when an organ becomes more or less mobile it has an effect on the organs (and the extrinsic structure) near to it and within the same system as it: those neighbors and family members will respond, and their capacity for motion will change as well. These changes in the capacity for motion will mean a change in the overall health of the body. Because the body honors the needs of the viscera as primary, the extrinsic body will not place demands for motion on distressed organs.

**Integration**

Integration is the harmonious working together of distinct parts. Integration is an ongoing give and take between discrimination and harmony. With structural integration we are used to balancing the capacities and needs of one part of the body with the capacities and needs of another. This is also what needs to happen if we are going to attempt to transform the visceral tissues. We have to take into consideration the needs and capacities of all of the parts in transforming any one of them. Without that type of care we may get a random freedom but we will not assist with integration.

**Working with Discrimination and Harmony**

The challenge in working with the viscera is to honor the fundamental capacity and need of each organ for discrimination and harmony. One reason this is so important is that if we do not work within these limitations, we are more likely to create distress and disease. Another reason is that we can accomplish more transformation and integration for the organ, the viscera, and the entire body if we work these primary tenets.

**Basic Guidelines**

- Get to know each organ. Learn where it begins and where it ends, where it is attached and how it moves.
- Don’t mistake one organ for another. This may sound obvious, but when it comes to hand placement, etc., it can take some care to not mistake a rectum for a uterus or a transverse colon from a stomach and so on.
- Don’t assess just one part of a system or one organ in a “neighborhood.” Before you create change, understand the needs for change in the entire system and neighboring organs.
- Include in your work, or at least stay in touch as much of the entire organ as possible. Don’t break the organ apart with your touch or with your intention. You don’t have to be physically in contact with all of an organ to be in touch.
with its entirety. With referential touch (sometimes called “end feel”), we can create a kinesthetic field that has great acuity in sensing what is beyond our physical touch.

- Use the long-tide motion of an organ to assess and to treat whenever possible. Long-tide assessments give information about the whole organ while keeping it discriminated from its neighboring organs. Long-tide inductions have more integrative potency and potential than do mid-tide inductions.2

- The Rule of Percentages: when we get a certain percentage of change for one part of a system, we should try to get the same amount of change for the rest of the parts of that system within the same session. The time available for work will determine how much transformation we attempt in any one part. It will be more harmonic for the body if we get 30% improvement throughout a system or neighborhood than if we get 100% improvement in just one organ.

- The Rule of Feathering: If you do get a good deal of change in a part of a system or neighborhood, you can make it more acceptable to the body if you get diminishing amounts of change out from that one part. That is, don’t open up one spot and leave it sitting next to totally unaddressed tissue.

- When releasing parts of a system, work with the expelling end of the system first. If you are not going to be able to modulate your percentages of change, try to make the greatest percentage of change at the expelling end.

- Always work with both organs of a bilateral pair or bilaterally balancing pair. For example, if you work with one kidney, work with the other; if you work with the stomach, work with the liver also.

- Begin with, end with, and utilize whenever appropriate whole-body assessments. Whole-body assessments include holding on to the feet and sensing through the body, diaphragm holds, walking assessments, fold tests, etc.

- If you have used a technique to assess a dysfunction, always do the same assessment again after you addressed that dysfunction. This is truly the only way we ever learn to work in any way, with any type of tissue, in any part of the body.

Liz Gaggini is a Certified Advanced Rolfer who practices in New York. She teaches a series of basic and advanced classes on her own approach to visceral work. She also teaches a series of basic and advanced classes in biomechanics. Information on her classes can be found at her website www.ConnectiveTissue.com. Her previous articles on visceral work and other subjects can be found online at the Ida P. Rolf Library of Structural Integration (www.pedroprado.com.br) and at www.ConnectiveTissue.com.

**Endnotes**


2. For further information on long-tide techniques, see Liz Gaggini’s article, “Advanced Indirect Techniques” available on the Articles page at www.ConnectiveTissue.com.

**Appendix: Why and How the Viscera Affect Structure**

There are two very significant ways in which the viscera affect the structure. One is that the body will shape itself, even to the point of misalignment and restricted movement, to protect and assist an internal organ. It is as if the body honors visceral ease first and structural wellness second. Secondly, the viscera reside in the center of the body. Any restrictions in visceral fascia are directly transferred to the myofascial and body structures of the torso. This is especially true of the pelvic, respiratory, and thoracic diaphragms. The brain is also a visceral organ. The relationship of restrictions in the intracranial fascia to the structure of the cranium has the same local and global consequences for the structure. The major diaphragm of the cranium is the fascia associated with the sphenobasilar junction.

The organs are designed to cooperate with the body’s needs for alignment, balance, and movement. In general, there is a high elastic component to the visceral fascia and the visceral ligaments, which allows the viscera to move with the myofascial and bony structure without injury or inhibition. When there is a restriction in an area of the visceral fascia, it will interfere with that area’s capacity to move with the body. Any forced movement through the visceral restriction could injure or greatly inhibit the function of the viscera. It is rarely the case that the body will allow the viscera to be affected in this way. Instead, the body will inhibit the myofascial and bony structure to protect the viscera.

The body will go even further in its protection of the viscera. It will actively use the structure to create ease and assist with the function of a restricted organ. One common instance of this active use of the structure for the benefit of the viscera is seen when there is tremendous restriction in the stomach. The myofascial and bony structure will bend and twist to put the stomach into a position that creates ease for the stomach tissue and creates an optimum position for the stomach's function. It is a hierarchy in the effort for survival – stomach function is more important than joint alignment.

As structural practitioners who work to align the myofascial and bony structure, we are often frustrated when all of our good work to resolve the sidebends and rotations or to create support and transmission seems of no avail. In these cases, we are often working against the survival hierarchy. Until visceral problems are resolved, structural changes will not hold.

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**In Memoriam**

Structural Integration: The Journal of the Rolf Institute® notes the passing of the following members of our community (in alphabetical order):

Richard Hoska, Certified Rolfer™

Nina McIntosh, Certified Rolfer and author of The Educated Heart: Professional Boundaries for Massage Therapists, Bodyworkers, and Movement Teachers.
Pelvic Organization and Psoas Function as Influenced by Inflammation and Pregnancy

By Dorit Schatz, Certified Advanced Rolfing® Practitioner

In this article I want to facilitate an enhanced awareness of major physiological conditions the body goes through that highly influence the internal and external organisation of pelvic structure and psoas function. Some of the bony and functional dysfunctions are protective patterns associated with organs ranging from kidneys to the ovaries and the prostate. These patterns allow for better organ function. If eliminated without first helping the inner tissues, this will cause an inflammatory episode of a chronic inflammation or malfunction of the organ. If treated with respect and care for all tissues, we can help the body to come to a higher level of reorganisation and recuperation of its own healing properties.

The Case of Inflammation

Inflammation can be caused by microbes (such as bacteria, virus, fungus, etc), physical trauma, and overuse of tissue. All of us have undergone intestinal inflammations; many of us have had infections of the bladder, kidney, ovary, spermatic duct, prostate, and others that directly influence the organization of the pelvic ligaments and musculature crossing the pelvis and thus the spatial arrangement of the pelvic bones. Many of us have gone through inflammatory processes caused by physical trauma of various origins.

All of these inflammations have typical stages with typical physical reactions to them:

- **Acute** exudation phase: increased circulation in the area of microcirculation, change of the permeability of the blood vessels, leakage of the exudate, emigration and transmigration of inflammation cells to the area of lesion, all of them leading to swelling, redness and heat.
- **Subacute** or **Subsequent**: other tissues get overused by trying to bridge joints that are lacking normal motion and function of tissues in a functio laesa-state or after necrosis.
- **Chronic** defects are, among others: ongoing chronic inflammations, with swelling, heat, pain; and adhesions in the surrounding tissues, which cause irritation and pain. These irritations trigger uncoordinated muscular activity, fascial strain patterns, and exaggerated muscular responses, or there can also be a remaining protective pattern of avoiding any tonus of the surrounding musculature and fascia.

It seems to me that many imbalances in the body are caused by remaining patterns of functio laesa, where body and often psyche are stuck in the stage of an inflammation or trauma reaction and have somehow not come to the full end of the healing cycle. Thus body and soul have not come to the realization of the fact that it is over.

If we have a look at the effects on the surrounding tissues, we find that inflammations have a tendency to travel along certain routes. Different bodies seem to have different preferences. For some it will mostly be the lymphatic travel-paths, including interstitial liquids; for some, the nerves or blood vessels; for some, the ligaments, and for others the muscular fascia.

Glands normally will have a lymphatic activation, but the prostate, for example, often causes direct co-inflammations of the ligaments from sacrum to prostate/urethra (the male equivalent to the sacrouterine ligaments). Inflammations of the intestines (the male equivalent to the sacrouterine ligaments). Inflammations of the intestines or tubes / ovaries, spermatic ducts / prostate, and even bladder have a tendency to be stronger on one side of the body than the other. The inflammation will first cause an activation and shortening of the ligament. Thus a co-inflammation of these ligaments will cause an inner pull on the sacroiliac joint that leads to a block of movement there. The sacrum will deviate from its normal position, and all muscles of the area will have to form stabilization chains to counterbalance. Due to the inner swelling of the tissue in the whole area and the increased circulation, there will be a dull pain in the lower back. Figure 1 shows the uterine ligaments.

With a chronic inflammation the body can come to the other extreme of reaction: repressing all nerve information coming from an area and deactivateing the local ligaments and structures to stop the constant alarm. A reactivation through Rolfing® Structural Integration and Rolf Movement® work thus might reawaken an old pain or cause an episode of a chronic infection. Both have to be seen as opportunities for healing. In case of the chronic infection, the body might finally
have the power to heal, or the person can see a health practitioner who treats the disease. Reorganizing the area through fourth-, fifth-, and sixth-session work from the Rolfing Ten Series might help bring the organ to a spatially more healthy position, where the body’s own properties of healing can work better.

With kidney infections, or trauma in the back at the level of the kidneys, we often have an influence on the psoas (see Figure 2). It can either be stuck in hyper- or hypotonus. It can also be completely deactivated, generally on one side more than the other. Delicately applied psoas work can considerably help a kidney that is in trouble. As we all know, when a psoas is not active, the iliacus will try to help the situation; thus, depending on which portion of the iliacus is more active, the ilium might get pulled into anterior tilt or the hip joint might get fixated. This will influence the position of the sacrum and influence all other ligamentous and muscular balances of the pelvis.

**The Influence of Pregnancy**

Another example I want to roughly sketch out is changes due to pregnancy. Ligamentous stretch through the influence of the hormones starts right at the beginning of the pregnancy. Muscular stabilization has to take over. Some women create stabilization in upright position more through muscular action, while others lean into their ligaments a lot. For the latter, already in early pregnancy, this represents a big shift in the method used to stabilize the body. They have to realign stabilization, and will have a tendency to sacroiliac joint problems early in pregnancy, when the increasing weight cannot yet play a sufficiently explicative role. The pubic symphysis can increase its physiological deviation from a few millimeters to a whole inch (2-3 cm.) and in some cases up to 2 inches. This of course influences all surrounding tissues and is a major task for stabilization in motion.

*In utero,* most babies have a preferred position. If the baby’s back is on mother’s left side, the mother’s psoas on that side will have to react, because the head of the baby is being pushed towards the ilium more often and more strongly than on the other side. At first that muscle might react with contraction, but over the course of time it will become more deactivated. According to gynaecological literature, 60% of babies prefer their back to be on mother’s left side. The push of the baby’s head will often cause the ilium to come into anterior tilt: the ligaments of the sacrum, and the organization around the sacrum (including the piriformis), will try to counterbalance. Many times these patterns will persist after delivery. Rolfing work can help a lot to support the client coming back into balance.

**Conclusion**

Knowing our clients’ histories will help us to make an informed assessment of where to work and what to expect as probable reactions to our work. It will also help us prepare our client’s awareness for physiological healing reactions.
Assessment and Thoracic Viscera in Structural Integration

By Jeffrey Burch, Certified Advanced Rolfer™

Connective tissue in the human body is a single three-dimensional web comprising approximately 20% of the weight of the body. Dr. Rolf taught that, collectively, this web is the organ of support, defining and maintaining spatial relationships among the other 80% of our body's constituents. In her work, Rolf worked with much less than this essential 20% of the body. This article humorously explores more of this splendid connective tissue.

Rolf’s doctorate was in biological chemistry and most of her published scientific work is on transformations of the lecithin molecule. During her biochemical studies she gained no more than a passing acquaintance with human anatomy, nor is she known to have taken any coursework in anatomy. Her human anatomy, learned largely or entirely after she received her doctorate, was self-taught, and her knowledge of anatomy remained limited.1

When Rolf began working with human structure, she first worked as an artist with a visual perspective. She maintained throughout her Rolfin® Structural Integration (SI) career that it was possible to know everything one needed to know to structurally integrate a person from visual inspection of contour alone. In her work she demonstrated the truth of this statement; however, Rolf was working with myofascia, superficial fascia and investing fascia, a fraction of the body’s connective-tissue matrix. In recent years, Rolfers have begun to work with additional portions of the connective-tissue web – meninges, bone, joint capsules, organ support membranes, nerves, and blood vessels. When these other, and often deeper, portions of the connective-tissue matrix are included, visual inspection of contour remains an essential feature of SI assessment, but is no longer sufficient.

Sufficient in what sense? Rolf also taught that we should continuously ask the question, “Where can I work on this person that will make the greatest positive change for the whole system?”2 This article will illustrate how additional assessment methods become necessary to answer this question of where to work most fruitfully, when additional portions of the connective-tissue matrix are to be addressed. Aspects of organ support membranes, vasculature, and dura in the thorax will be reviewed as a platform for illustrating this viewpoint on assessment.

Thoracic Organs: Pleura and Walls of the Mediastinum

The thoracic contents include the lungs, heart, and thoracic duct as well as portions of the aorta, esophagus, vagus nerves, and phrenic nerves. A partial description of these and some of their support membranes will be given.

On the inner surface of the chest wall lies the endotheracic fascia, which is well-adhered to the periosteum of the ribs and the myofascia of the intercostal muscles. It also continues above the first rib as part of the pleural cupula. Just deep to this lies the parietal pleura. The parietal pleura is adhered to the endotheracic fascia; however, in dissection it is substantially easier to separate the parietal pleura from the endotheracic fascia than it is to separate the endotheracic fascia from the ribs and intercostals.

To trace the principal membranes supporting the thoracic organs, imagine a small creature, which will crawl along the membranous surfaces. This creature, Geekus Anatomicus Rolfinensus, somewhat resembles a centipede but has interesting behavior – it has great curiosity, but is also monomaniacal; it likes to walk, but only knows how to walk in a cardinal plane, and will always keep its feet on the same surface, never picking up all of its feet to...
switch to a different surface. While Geekus will only walk in a cardinal plane, it will occasionally change to a different cardinal plane, but only at its birthplace—which, for the particular specimen in question, is on the interior of the lateral wall of the thorax.

Our Geekus begins its journey at its birthplace on the lateral aspect of the inner surface of the left chest wall. Its feet are on the lateral aspect of the left parietal pleura along which it begins to walk anteriorly. At the sternum the parietal pleura reflects posteriorly to form the left wall of the mediastinum. The left wall of the mediastinum is followed more or less posteriorly. Through the translucent membrane of the left wall of the mediastinum our small creature may see under its feet the mediastial contents including the heart, esophagus, aorta, thoracic duct, and portions of the phrenic and vagus nerves. As the left wall of the mediastinum reaches the spine, it follows the anterolateral curve of the bodies of the vertebrae until it transitions again onto the parietal pleura. With variations in contour, this circumferential path may be followed in the transverse plane at any level in the thorax. On the right side the same essential continuity and contour exists modified only by the asymmetric positioning of the heart.

Beginning at the original position on the inner surface of the left chest wall, our creature, still with its feet on the parietal pleura, can walk inferiorly to the lower limit of the rib cage where the parietal pleura reflects superomedially on the superior surface of the respiratory diaphragm. Following this membrane superioply and then medially along the superiorly curving surface of the respiratory diaphragm, our crawling creature arrives again at the left inferolateral margin of the left wall of the mediastinum. Turning superiority to follow the lateral surface of the left wall of the mediastinum our creature will arrive at the hilum of the lung where the bronchial tree, the pulmonary vein and artery, the lymphatic vessels, and nerves enter and exit the lung.

Now, with its feet facing superiority in the person, our small creature walks briefly laterally on the inferior surface of the hilum of the lung until it must turn inferiorly to walk along the visceral pleura of the lung with its feet facing the left side of the person.

Arriving at the inferomedial surface of the lung, Geekus now turns laterally to follow the inferior surface of the lung, first laterally and then inferiorly, along the respiratory diaphragm to the person’s back. At the inferolateral margin of the lung, our creature, feet still on the lung, begins to crawl superiorly until it reaches the oblique fissure. Entering the fissure it walks superomedially until it encounters a different surface of the hilum of the lung than before. Here it must make a quick turn so that it is now walking inferolaterally on the inferior surface of the upper lobe of the lung.

Arriving again at the lateral surface of the lung, the creature continues its superior journey, feet still on the lung. Rounding the apex of the lung the creature again walks inferiorly to the hilum of the lung, where it must make another quick turn to resume its superior walk, feet on the wall of the mediastinum. This transitions superolaterally into the inner surface of the pleural cupula where Geekus now finds itself with its feet toward the sky, assuming the person being traversed is standing. Continuing inferolaterally from here, our creature walks, feet on parietal pleura, back to the starting point of its journey on the left lateral chest wall where it takes a well-deserved rest.

In its travels Geekus has seen that the parietal pleura, the walls of the mediastinum, and parietal pleura are all continuous, the various names describing geographic regions, not discontinuous structures—just as one can drive from Scotland to England without leaving the United Kingdom. Pushing its way through these tight places, Geekus has also seen how these various surfaces lie essentially adjacent to each other separated only by a thin film of serous fluid. With its feet always on one portion of the surface, Geekus’ back was always against another portion.

Since this terrain is a living person, Geekus has also observed how these membranes are in constant motion. During inhalation the parietal pleura moves superiority along with the ribs while the lung elongates, stretched inferiorly from its functional fixation within the pleural cupula. As the person who Geekus inhabits looks over his shoulder to back up the car he is driving, the parietal pleura and visceral pleura glide over each other more or less in a transverse plane. Similarly, with any movement that changes the shape of the thorax, there is glide in the fissures between the lobes of the lung.

Also in his travels Geekus noted that portions of the parietal pleura were stiffer and more fibrosed than its neighbors. He also walked past areas where the parietal pleura and visceral pleura were adhered to one another. Fortunately, Geekus did not walk directly into one of the adhesions, as then, in order to stay in the same plane, he would have had to reverse direction much as he did at the hilum.

Geekus further noted the presence of the internal thoracic artery running vertically on the inner surface of the anterior thoracic wall, connecting to the subclavian artery at its superior end. This artery gives off branches laterally and medially in each intercostal space and diverges into the musculophrenic artery and superior hypogastric artery at the inferior margin of the thorax.

Thoracic Organs: Contents of the Mediastinum

In a series of text messages, Geekus learns from his cousin, who inhabits the mediastinal space, that the pericardium, esophagus, and aorta all lie adjacent to each other within the mediastial space. These bits of plumbing have some loose tethers between them that allow substantial glide. As in the lateral compartment of the chest, contractures in each of these structures are observed as adhesions between tubes. The two phrenic nerves are also found in the mediastinal space. These appear to terminate in the musculature of the large central portion of the respiratory diaphragm, but from a half sibling residing in the abdomen Geekus also learns that the phrenic nerves penetrate the respiratory diaphragm to innervate most of the abdominal organs, including, among others, the liver. In the specimen in question the right phrenic nerve is observed to be quite tight and, intermittently along its course, adhered to the wall of the mediastinum, and thus unable to glide.

Also from his mediastinal cousin in the lung, Geekus learns that the two vagus nerves innervate the heart and lungs and then both nerves disappear into the walls of the esophagus. The mediastinal Geekus has gone so far as to carefully shine light into the wall of the esophagus revealing that the two vagus nerves spread out and interweave with each other to form a lace-like network within the wall of the esophagus. From his abdominal sibling Geekus learns that the two vagus nerves
emerge from the wall of the esophagus, not left and right as they were at the superior end, but anterior and posterior. From there the vagus nerves diverge to innervate a list of abdominal organs, heavily overlapping with, but not quite identical to, the phrenic nerve. Portions of the vagus network within the esophageal wall are observed to be fibrosed, thereby reducing the apparent elasticity of the esophagus.

The subspecies Geekus Anatomicus Rolfinensus has that name because it is telepathically connected to Rolfers with whom it communicates the anatomical information it collects, including pathologies and anomalies. This is a great advantage to the Rolfer. Imagine the plight of a Rolfer viewing a body from the outside. With visual inspection alone he would not be able to tell if a vertical contracture in the front wall of the chest is due to local stiffening of the parietal pleura, or to contracture of the right thoracic artery. He would be unable to know if there was also a parietal pleura-to-visceral pleura adhesion in this area, or an adhesion in any combination of these three tissues. Similarly, how would the Rolfer distinguish a contracture in the right wall of the mediastinum from a tight phrenic nerve to the liver, or a tight aorta with a tensional continuity into the hepatic artery?

All of the issues described previously will produce shortening in the front of the thorax. With this thoracic foundation the head will be displaced forward. If the issue were in superficial fascia or myofascia, classical Rolfing approaches, guided by visual assessment, would be marvelously successful in lengthening the front of the chest. If the central issues lie in the thoracic contents, tension in the muscles and myofascia on the front of the chest will be compensatory and defensive. For example, if the phrenic nerve has reduced stretch and glide, it will be vulnerable to tearing in any event that snaps the head back. A torn phrenic nerve is potentially lethal, so the body, in its wisdom, will tighten muscles and myofascia to protect this crucial nerve. The body will not easily give up this protection, and if this protection is softened through the persistent and vigorous efforts of a Rolfer (they are like that), the body will promptly put the protective shortening back in a well-considered effort to protect the person’s life.

Assessment and Treatment

If the Rolfer is aware of the thoracic contents and their powerful role in shaping bodily alignment, and if he has learned effective treatment methods for these, the question remains, “Which bits of the thoracic contents should be worked with?” It is possible to just treat them all. Another possibility is to mobility test each internal structure and treat the tight ones. Neither of these solutions turns out to be satisfactory.

Treating all the structures is a great waste of time, not following Rolf’s directions to work with that bit of the body that will produce the most change in the whole structure. Treating everything in the neighborhood will also irritate tissues that should not have been treated, leading to unfortunate results. This is bad enough when myofasciae are involved, and if nerves, arteries, and organ support membranes are more reactive, unpleasant fireworks can be expected from gratuitously treating, or over-treating, them.

Compared to treating everything in the neighborhood, treating the tightest bits has the advantage that fewer parts are treated, so fewer delicate tissues are ruffled. However, ineffective and/or undesirable results will still frequently follow. The tightest parts are seldom the most effective parts to treat. This is key. We are looking for structures we can work on where the change will spread out through the rest of the person in the most beneficial way. Working on the tightest, most defended areas is seldom the answer. As an example, in paired structures such as the facet joints at a particular spinal level, it is usually advantageous to free the less-bound side first. This will soften the more bound side and make it more accessible for change. However, this is not always true – occasionally it really is best to work on the tighter side first.

The question then is, “How do we gain the assistance of a Geekus Anatomicus Rolfinensus to tell us which bit is most fruitful to work on at any given moment?” A solution lies in the listening assessment methods taught by Jean-Pierre Barral, D.O., developer of visceral manipulation and its outgrowths: vascular manipulation, joint mobilization, and neural manipulation. These listening assessment methods, discussed below, were originally developed in the 1930s by high-level osteopaths in the United States. Very little has ever been written about them – for a long time they were passed around by word of mouth among these osteopaths – and exactly who originated them is lost in the mists of time. Barral is the first to teach these in an organized way to a larger audience. Still, there is little written about these methods.

There are several variations of the listening assessment methods, all of which must be learned and used in concert to discover which area to work on to achieve the most benefit for the whole person. Major variations include: general listening, local listening, and layer listening. The basics of these methods are described below. Much more can be learned – the various courses offered by the Barral Institute are highly recommended.

General Listening

To perform general listening, the therapist stands at arm’s length facing the client’s back. The therapist checks himself to make sure he is at an energetic neutral, neither projecting into nor drawing energy from the client. The therapist’s hand is placed on top of the client’s head and a slight compression is given straight down. Within the first five seconds, and usually less, the client’s body will bend. The client’s body can be considered as a structural column – in response to the downward pressure the column will fail at some point. This lack of support (lift) points to the most fruitful place to work on the body.

The deflection, in response to the downward load, may be in any direction. The deflection may occur at any level between the point of contact on the head and the floor. This point of deflection is detected by the therapist using two senses: proprioception and vision. A check is performed by contacting the client’s body at the presumed point of deflection with the therapist’s other hand. If this subtle support results in the body righting itself back closer to vertical (or at least its original alignment), then the area of interest is confirmed. The second contact for confirmation is called an inhibitory contact. The image is that the lesion is temporarily taken out of the system. In effect, an “as if” treatment is performed. General listening can usually narrow the field to a few cubic inches of the body. Local listening and layer listening can be used to refine this.

Local Listening

To perform local listening the client may be in any position – standing, seated, or lying down. The therapist contacts a part of the body with the heel of his hand. If
immediately upon contact the client’s tissue engages the therapist’s hand and pulls it in, this indicates there is an active lesion in the area. An active lesion is one that is in the process of change. Two characteristics of areas that will produce the greatest change for the whole person are:

a) the restriction is already in the process of change (as therapists we can assist the body with this change and provide it with information on how to change even better), and

b) the restriction is well-connected to a substantial number of other restrictions, allowing pathways for the benefit to spread out.

When an area of tissue pull is found, the speed and direction of the tissue pull are noted. The therapist’s hand is lifted from the body. A new contact is made nearby to see if there is a different pull there. A succession of nearby points is tested in this way. If a second point is found, the two points can be compared to find out which of the two will be the more powerful in changing the whole body. For convenience, in this example, one point is given the name Sally and the other Morris. To compare the two, touch one of them, for example Sally, and feel the direction of tissue pull. Leave the hand in contact with this point and continue to observe it while touching the other point (Morris) with the other hand and following any movement. If Sally moves again, changing her position in response to contacting Morris, that means that if Morris is treated Sally will also change. If on the other hand Sally does not respond in any way to touching Morris then treating Morris will not alter Sally, and Morris is clearly not the most fruitful point to work on. Pair wise comparisons can be made between any number of points.

Layer Listening

Once the most fruitful area has been found first by general listening and then refined with local listening, a question remains – at what depth in the body to treat. To determine this, note the direction and speed of tissue movement when it first engages the hand. If this is not felt within five seconds of contact, break contact and start again. After five seconds other movement may occur as part of unwinding but this is not useful for the present assessment.

After the direction and speed of movement are noted, break contact by removing the hand. In a moment make contact with the hand again with a combination of depth of touch and intent focus on the skin. Is there a tissue engagement pulling your hand into the skin? If so, does it have the same direction and speed as before? If so, treat the skin. If not, gently sink into the superficial fascia. Does it have the speed and direction of the tissue pull originally felt? If so, treat the superficial fascia. If not, proceed to the investing fascia with the same questions. If the investing fascia does not have the original pull, continue layer by layer into the body until the layer is found that has the original pull. This is the layer-to-layer treatment protocol.

Mobility Testing

Once the most fruitful area to treat has been found by the different listening methods, mobility test the tissue found, as well as neighboring tissues. Details of mobility testing will depend on the type of tissue found. After the tissue is treated, again mobility test it and the neighboring tissue. Also stand the person up to look for alignment change. Do this after every move to gain adequate feedback on the effects of the intervention.

Additional Thoughts

On the way to developing Rolfing® SI, Rolf studied extensively with several osteopaths including prominent osteopaths Kenneth Little, D.O. and Amy Cochrane, D.O., as well as John Wernham, D.O. Everything in Rolf’s philosophy of working with the body is osteopathic. Her genius was to bring the relationship of the body in gravity to the foreground, a minor and often forgotten aspect of osteopathy.

The listening assessment methods described in this article were in use among high-level osteopaths at the time Rolf was developing her work; however, these methods were not widely known and were treated almost as secret inner knowledge, and it seems Rolf did not have access to these assessment methods. The listening methods were originally developed for working with musculoskeletal issues. Barral adapted the listening methods for use on other tissues, first the internal organs and later neurovascular structures.

Conclusion

When meninges, organ support membranes, nerves, and blood vessels are included in SI, use of the listening assessment methods is imperative for efficient and safe work. Working with these tissues, the listening assessment protocols discussed in this article become the primary guide to treatment order. The “Recipe,” which has value when working only with myofascia and superficial fascia, is not a useful guide when the rest of the body’s membrane systems are included. Following the listening assessment methods, the hallmarks of SI will efficiently appear, but in an order unique to each person, generally not the order described in the Rolfing Recipe.

Jeffrey P. Burch, Certified Advanced Rolfer, has been in practice since 1977. He is also trained to the instructor level in Barral Visceral Manipulation and teaches introductory CranioSacral Therapy classes for the Upledger Institute. He is a past member of the Rolf Institute® Board of Directors and Ethics Committee and is the founding editor of the IASI Yearbook. He practices in Portland and Eugene, Oregon and offers continuing education classes to structural integrators and other practitioners. For more information see www.jeffreyburch.com.

Endnotes

1. Richard Demmerle, D.C., N.D., personal communication. As a physician, Demmerle has a solid grasp of anatomy. He describes conversations with his mother (Ida Rolf) while he was assisting her in teaching Rolfing classes, in which he asked her why she did not quiz student Rolfers on anatomy, to which she replied, “Because I am not qualified.” He gave other illustrations for the fact that her knowledge of anatomy was limited.

2. Author’s notes from a basic Rolfing training with Peter Melchior, held in Boulder, Colorado in July and August of 1977. Melchior repeatedly quoted this statement of Rolf’s during the training.

3. Personal communication with Alain Croibier, D.O. After fruitlessly searching the osteopathic literature for the origins of the listening assessment methods, I finally consulted Croibier in 2008. He gave the description used in this article.

4. Personal communication with Jean-Pierre Barral, D.O. Barral graciously supplied me with the descriptions of the different listening assessment methods.
An Informal Case Study of Using Other Maps to Explore the Rolfing® Territory

By Allan Kaplan, Certified Advanced Rolfertm

Through her study of Alfred Korzybski and General Semantics, Dr. Rolf became familiar with the catch phrase, “The map is not the territory.” While one could apply this to Rolfing® Structural Integration (SI) in the sense of keeping our conceptual working frameworks relative to the reality of what is presented in the individual, by extension I find that it is often useful, or even essential, to use multiple maps to get a clearer picture of the territory in question.

I recently had a fellow who was going to be in town from Europe email me for an appointment. He was in chronic back pain, stemming from a luggage-carrying incident coupled with heavy coughing from pneumonia after a case of swine flu. He had exhausted the possibilities of his country’s health system, and was finally getting some relief from his second or third physical therapist and a chiropractor he’d happened upon previously in Seattle. The D.C. suggested that he check me out.

I had the opportunity for one session, with a possibility of a follow-up, to do what I could to help the fellow’s situation. He was 6’3”, 250+ pounds, noticeably overweight with a large belly, not in the best of physical shape, fed up with allopaths, and somewhat frustrated. His thorax was acutely left-rotated and forward bent, with his lumbar spine reflecting this leftward, forward lean, and had a sharp recovery of his spine to the vertical at the level of about L2-L3. This was in addition to a strong lordosis exacerbated by the pull of the bulk of his abdomen.

It was apparent to me on looking at him that the major postural restriction was deep. There was something very deep inside associated with the dramatic, sharp bend in the lumber spine that was hanging things up, and that doing a “First Hour” or superficial work was not going to address the problem with lasting results. Certainly, doing a Ten Series would do this fellow a ton of good, but without the luxury of another nine sessions, it didn’t seem appropriate to follow that tack. To my eye, cracking loose the deep restriction was key, and I had a hunch that a restriction of the left kidney was a major contributor to the pattern.

I used osteopathic listening techniques to confirm that indeed, the left kidney was primary. Its motion was restricted, being pulled superiorly, and it was adhered to the stomach indirectly through the lesser omental bursa (an uncommon pattern, in my experience), creating a very tight shortness close to the spine. I found other restrictions in his body, but this major problem was at the top of the list.

I started the session with some prep work to take some stress off the kidney/stomach lesion and prepare some space to accommodate its release. I found that there was also a dural adhesion at the level of the upper lumbar, anchoring the vertebrae there that would also inhibit release. After attending to the dura restriction and cranium, I did a little traditional Rolfing work to the posterior diaphragm area, including the areas of the erectors, quadratus lumborum, and more superficial structures, but found that these levels of the fascia weren’t really contributing to maintaining the problem; the kidney/stomach lesion still appeared to be the main event, and it released fairly readily at his point after the preparatory work. I then normalized both the kidney and stomach individually, and integrated the client with a pelvic lift, focusing on releasing whatever compactions or distractions I found between T12 and S1. I followed up with neck work from T3 up to the occiput, being sure that the occiput and the upper cervical were free.

The moment of truth was when my client stood after the session. I have to say that I surprised and impressed myself when I saw that all his side/side aberration had resolved. It was one of those times one kicks oneself in the butt for not having taken photos. Granted, his lordosis was still present, perhaps not as acutely, but the pain was dramatically reduced and mobility dramatically increased from the normalization of the upper lumbar and ancillary areas. We were both happy. As he was leaving, the gentleman slung on his shoulder bag, the carrying of which perfectly reinforced his injury posture. I cautioned him and recommended he do his best to change that habit, which he promised to do. He flew out of town the next day.

As it happened, I was able to do a follow-up session with the man on his way back through Seattle two and a half weeks later. He related to me that, while he was a little stiff that day from travel, he had realized huge improvement from the session and was in much less pain, and he’d been diligent about limiting wearing his shoulder bag. I saw that while he still walked with a bit of a forward lean to his posture, his side/side balance was still significantly improved. I estimated he had retained about 75% of the gains of the previous session, which I considered quite a success.

I found that the visceral work had held well. This time, the left kidney was slightly superior, but was not adhered to the stomach, and the stomach itself was sticking superiorly to the diaphragm. My take was that these restrictions were remnants of the original lesional pattern that I had not completely resolved. After releasing these restrictions, I dealt more in the sleeve, working in the quads and quadratus lumborum to ease the lumbar and horizontalize the pelvis, and in the left iliotibial tract and hamstrings, giving more pelvic balance and a little length for the shortened left side.

On standing, the client had once again evened-out side to side (where was the camera?) and the lumbar showed less strain, but by no means had the lordosis disappeared—the two sessions had only made a dent in that situation. Nevertheless, the sessions were a success, and an email once the man returned to Europe confirmed that he was still maintaining his gains. He was going to seek a Rolfer near home, and contact me again on his next U.S. trip.

My work with this client reinforced for me the importance of seeing, discerning, and
Comments on the World Congress on Low Back and Pelvic Pain

By Bruce Schonfeld, Certified Advanced Rolfer™

The Seventh Interdisciplinary World Congress on Low Back and Pelvic Pain, which was held November 9-12, 2010 in Los Angeles California, was an excellent event and experience for this Rolfer and first-time attendee. The spirit of sharing information and helping others rang through the entire event. It was a wide-open window and multidisciplinary forum into many different aspects of evidence-based research as well as an opportunity to peek into the current culture of integrative-medicine professionals interested in and/or clinically working with fascia. In fact, between the Fascia Research Congress that was initiated in 2007, this World Congress that happens every three years, and other complimentary and alternative medicine (CAM) research projects being funded and/or watch-dogged by NIH grants, fascia research is truly in a major developmental growth phase.

At the World Congress, many top scientists and researchers were available for unguarded dialogue and frank conversation in a luxurious setting. Avenues for exploration, education, and bridge building were open-ended. I had many fortunate opportunities to chat with interested allopaths and scientists about Rolfing® Structural Integration (SI) as well as membranous and visceral manipulation (VM). A great example was meeting and chatting with Moshe Solomonow, M.D., a member of the Rolf Institute of Structural Integration’s® (RISI) research committee, about mechanisms of low back pain onset, Rolfing SI, Allopathic Medicine, New Orleans culture and cuisine, and – of course – our old friend, fascia. Dr. Solomonow, whose presentation on November 9 was in the context of movement stability and lumbopelvic pain and was entitled “Biomechanics, Electromyography, Stability and Tissue Biology of Cumulative Low Back Disorder,” lives near Denver and could be an instrumental component in a top-notch research project involving the RISI if we could organize an appropriate effort. His perspective is multi-factorial and he completely gets it that structure and function are interrelated.

Prospects for Rolfing® Research

Given this favorably developing cross-disciplinary milieu, this author believes the time is ripe to organize a fascial research project either as an organization (RISI) and/or for those who independently are so inclined and have the time and resources. For example, perhaps the RISI could run a research project or start collecting case studies involving the people who participate as Ten-Series models in the basic trainings, and move towards establishing a SI baseline of usual outcomes. Boulder would seem to be a good place to find an interested Ph.D. student for this kind of research project. With a deeper blending now of the science with the art, SI looks like it has a bright future in this fantastic milieu of integrative medicine. The best scenario would be that RISI could both continue to be a leader in the field of fascial manipulation and education while we additionally start making strides in evidence-based research and, as Robert Schleip likes to humbly phrase it, “to make a contribution.”

Tozzi’s Kidney Presentation

During the Congress, I attended a presentation by Paolo Tozzi, D.O. entitled “Evidence-Based Correlation Between Low Back Pain and Reduction of Renal Mobility, Assessed by Dynamic Ultrasound Topographic Anatomy Evaluation (D.U.S.T.A.-E): Local Kidney Manipulation Improves Kidney Mobility and Decreases Pain Perception.” It was of particular interest to me because it was the only presentation that correlated an organ with low back pain, and it also involved fascial manipulation specifically.

Allan Kaplan has been a Rolfing® practitioner since 1988. He has studied visceral manipulation with Didier Prat, D.O., and assisted him teaching several classes. More recently, he completed osteopathic studies at the Canadian College of Osteopathy.
Tozzi, who is based in Rome, gave his presentation within the context of Parallel Session IV, which was entitled Movement Stability and Lumbopelvic Pain: Clinical Anatomy and Biomechanics. The presentation coherently broke down Tozzi's theory, methodology, and technique. He revealed findings of decreased pain perception in a significant percentage of subjects that were tested and treated. Tozzi additionally showed a video of a manual-medicine intervention with him performing osteopathic manipulation on a patient's kidney in conjunction with his study. While there is a wide spectrum of pressure used in the various manual-medicine communities, ranging from gentle to strong, not to mention an equally diverse spectrum of strategic approaches, semantics, and techniques, Tozzi utilized what looked like a no-nonsense, SI-friendly direct technique approach to fascial manipulation.

Tozzi's technique featured very specific biomechanical engagement of the kidney and related renal fascia as the principal aspect of the initial part of his treatment. With neither too much nor too little force, he deftly put one hand directly on the kidney and literally embraced it both in the depth and shape of the organ and its related physical restriction. Then, in the second part of the manipulation process, he incorporated a related restriction in his patient's leg as a long-lever component to utilize and further leverage into the kidney's relationship with the pelvis and lower extremities. He expanded his scope of treatment and impact from regional to integral anatomy by engaging the bigger "systems anatomy" strain pattern. The effect of this seemed to be greater precision and relevance to both local orthopedic issues as well as the adaptive process translating through multiple body segments. There was a rhythm, coordination, and refinement of his technique; to my perception, it left nothing to the imagination in terms of manually translating enough force and accessing enough depth, but it also had an ease and grace to it. The video visually demonstrated the correlation between the kidney and lumbar spine: they are in such close proximity it's hard to deny what the eye plainly sees. Tozzi is part of the new wave of European physicians doing evidence-based research involving organs as well as correlating structural and visceral anatomies. While it is in its infancy in terms peer-reviewed research, with physicians like Tozzi on board, I think visceral manipulation has a bright future too.

**Seeing Our Different Perceptions**

I also had the amazing opportunity to compare and contrast my subjective perceptions of the elegance and excellence of Tozzi's intervention with those of other allopaths and/or scientists who have little or no manual medicine component in their educational background, current clinical practice, hospital environment, integrative-medicine outlook, and/or referral networks. For me, Tozzi's demonstration was quite efficient, extremely well orchestrated, and of expert caliber in terms of direct application of three-dimensional fascial manipulation technique. For some others, by comparison, it was an unusual and novel sight, potentially disoriented, and a little disorienting to comprehend and logically follow. Scientists are trained (and right) to say "prove it" as a critical part of their vocation and methodology, and I think from their perspective the simpler the variables are to quantify the better, in terms of doing evidence-based research anyway. Some allopaths, including several physiatrists I chatted with, shared that they found Tozzi's manipulation style to be potentially very difficult to quantify and measure in technical terms. It did not translate along a linear axis. I found this to be a wonderful reality check in terms of how far whole-body three-dimensional manipulation (that may or may not involve a visceral component) still has to go in terms of making sense to many allopaths, academics, and evidence-based individuals.

I think direct technique manipulation conceptually makes more sense to rationalists who believe in a biomechanical model and the idea that the positive application of force, as a linear mechanism for change, can produce therapeutic results. Once the conversation ventures into concepts like "liquid osteopathy," indirect technique, feeling at a distance, or working through structures and/or systems, the plausibility and validity of these working premises and claims often and quickly becomes highly suspicious to people with a background in science. It’s not a good or bad thing as I interpret it, just a point of orientation and sobriety as to where the conversation is regarding the body and three-dimensional manipulation technique and where the research isn’t.

(As a comparative note, on the subject of movements and motion in three dimensions that can potentially make people seriously skeptical and/or uncomfortable, I used to observe a very similar disorienting phenomenon with some new arrivals to the Continuum Movement studio in the 1990s, who were disturbed when confronted with three-dimensional motion and people moving, from their perspective, in such an unusual, non-linear, and seemingly unpatterned manner. Such individuals often had no personal body-based context or history for themselves, or exposure to other people moving unconventionally, and simply could not make sense of what they saw moving and undulating in slow motion. Continuum's three-dimensional nature, in the author's opinion, makes it a close cousin of three-dimensional manipulation, a kind of functional approach to three-dimensional manual medicine, functional osteopathy if you will.)

Whether three-dimensional movement is assuming the form of Continuum, *Butoh* dance, or sophisticated fascial manipulation, its good to remember that these forms often appear unusual and out of the norm to others not specifically in these fields. This potentially disorienting phenomenon is additionally compounded and heightened by the fact that we also speak in a unique and different lexicon when talking about the body, often trying to describe things that others have no point of reference for.

**Conclusion**

We are riding the wave of this new era of fascia research and encountering a genuine interest from many scientists and allopaths to understand what SI is and does, for they too are curious about and inspired by tricky clients where the status quo isn’t working. We are an integral part of a broader conversation that serves to educate all parties involved and build bridges with other people and professions about the nature of physical manipulation and the worlds of converging integrative medicines. So, let’s chat.
A Commentary on Stecco’s Fascial Manipulation Work

By Russell Stolzoff, Certified Advanced Rolfer™, Rolfing® Instructor

As a Rolfing® Structural Integration (SI) instructor I am keenly aware of the limitations of our training process. By any measure Rolfing and other SI trainings are too brief, unable to expose students to even the relevant knowledge that has been accumulated in the thirty-four years since Ida P. Rolf wrote Rolfing: The Integration of Human Structures. In addition, one often hears about the pressures of competition and market forces constraining the ability of the SI practitioner to deliver the breadth and depth of the true SI experience. And, it is often said, with a note of resignation, that the real education of a Rolfer happens on the job, through experience and personal study, and is augmented by workshops and, eventually, advanced training.

Thus, it is rare and fortuitous when an instructor discovers two books by an author that he knows will be transformative in creating a higher baseline of skills for new and even experienced SI practitioners. Such are these two volumes, Facial Manipulation for Musculoskeletal Pain and its awkwardly titled companion Fascial Manipulation Practical Part (both published by Piccin in 2004 and 2009, respectively). The first is authored by relentlessly studious Italian physiotherapist Luigi Stecco, and the second is coauthored by Stecco and his daughter Carla Stecco, an orthopedist. These two volumes are major contributions to the field of structural integration and should be included in every practitioner’s core library.

Upon first encountering these books, anyone familiar with SI will naturally wonder why a work that is so akin to SI has only a slight reference to Ida Rolf and her scientific contributions in understanding the importance of fascia. It is well-known that Stecco knew of and was influenced by Rolf’s work, but he pays her scant homage. He describes her contribution as “posture modification,” and lists Rolfing SI as an influence among other modalities such as trigger point therapy, shiatsu, acupuncture, etc. In spite of this failure to properly attribute Rolf’s contribution, these books deserve to be incorporated into the curriculum at the Rolf Institute® and every other SI training program as they offer an updated and detailed refinement to our understanding of the role that fascia plays in the body and how to treat its dysfunction.

For experienced practitioners who have an interest in the phenomenology of the body and a desire to know the body as it is, devoid of conceptual abstraction, these are must-read volumes. For those who welcome rigor and complexity, the volumes present an opportunity to dig deeper and increase the precision of their knowledge. While these volumes require time to digest and consider, they reward anyone who commits the necessary time to study and learn from them.

Each volume presents detailed descriptions, useful charts that illustrate complex concepts, and excellent photos of fresh cadaver dissections that expose important elements of fascial architecture and correlates them with structural, energetic (acupuncture), and trigger-point patterns. The first volume is primarily concerned with describing the form and function of myofascia, while the second is a manual for how to evaluate and work with the myofascial patterns that produce pain.

A New Nomenclature

To be clear, the Steccos’ goal in these two volumes is not SI but the reduction of musculoskeletal pain. However, their perspective on mechanisms that produce musculoskeletal pain are so similar to the perspective of SI that it stimulates questions about the similarities and differences between the two approaches. Throughout my reading, I found myself wondering if treating the body with their “facial manipulation” (FM) method would also yield an integrated structure. Similarly, I remain curious as to whether the SI approach reliably delivers the pain relief of FM. The Steccos’ pain-relief approach fits squarely into what Rolfing colleague Jeff Maitland described as corrective, or “second paradigm,” but their correlation of pain with three-dimensional patterns of myofascial dysfunction echoes the holistic “third paradigm” argument that integration is necessary to relieve pain.

My personal belief is that all effective methods have a significant degree of overlap with other methodologies. The Steccos’ work supports this idea with innovative descriptions of fascial anatomy and physiology and intriguing perspectives on pattern and function. Taken together these works come closer than any I have seen to describing the body and method that SI practitioners work with every day.

At the heart of the Steccos’ presentation lies a detailed description of myofascial and musculoskeletal architecture. These are not mechanical, textbook origin-insertion-action descriptions! Rather, they offer a new perspective that precisely describes the twisted-body patterns every SI practitioner is keenly aware of. For example, the tissues of the leg do not descend in straight lines from the knee to the foot. Nor do individual muscles fire along their whole length. Instead, coordinated portions of muscles are activated along with portions of other muscles, at the same time that corresponding portions of antagonist muscles lengthen. To describe this in detail, the Steccos had to create a new way of talking about the body’s musculoskeletal structure and the way it functions. Because anatomical names and descriptions have a tendency to conflict, Stecco presents a new anatomical nomenclature that describes both segmental and whole-body myofascial patterns. Simply put, function is described in terms of the directions that segments move. Further, he proposes using Latin terms to describe the direction of limb movement. Don’t worry, you won’t need to learn Latin to use the Stecco system, but you will need to learn a few easy abbreviations like “ante” (forward) and “retro” (backward). The Latin, he contends, makes for easier cross-cultural understanding. No longer will we be confused by knee flexion and hip flexion describing motions in opposite directions. All sagittal-plane motions are either “ante-motion” or “retro-motion.”
Myofascial Units, Centers of Perception and Coordination

Following the introduction’s excellent description of fascia (it should be required reading for every new student, and is an enlightening review for the old pro), the first chapter of Fascial Manipulation for Musculoskeletal Pain describes the interrelationship of muscle, nerve, fascia, and bone, called a “myofascial unit” (MF). This is the kernel of Stecco’s approach: “A myofascial unit is composed of a group of motor units that move a body segment in a specific direction, together with the fascia that connects these forces or vectors. The myofascial unit is...the structural basis of the locomotor system.”

A MF creates movement of a musculoskeletal segment in a particular plane. Within each MF are “centers of coordination” (CC) that organize motor vectors, and “centers of perception” (CP), which perceive a joint’s movement. In fact, Stecco asserts that six unidirectional myofascial units coordinate every joint movement. CCs and CPs are found in the fascia of each MF unit and “act as peripheral references for the nervous system: the first [CC] interacts with the muscle spindles and the second [CP] provides information to the various joint receptors about the directional significance of each movement.” These distinctions form the basis for separating symptoms from their causes. Centers of perception (CP) are where sensation is felt, while centers of coordination (CC) “direct muscular forces.”

According to Stecco, the whole body is comprised of eighty-four myofascial units, each with a name that describes its anatomical, or segmental, location and the motion it makes. For example, the MF unit he calls retro-cubitus (re-cu), straightens or extends the elbow, is described as being composed of monoarticular (lateral and medial heads of the triceps and anconeous) and biarticular fibers (long head of the triceps). The CC for the re-cu is at the level of the deltoid insertion, between the long head and the lateral head of triceps. This CC corresponds to acupuncture point TE1 and to the 1st trigger point of triceps.

The Big Picture

The second volume, Fascial Manipulation Practical Part, focuses on multi-segment patterns of dysfunction and how to treat them. This volume reiterates some of what is in the first book and then presents how and where to treat larger body patterns. Our colleague Robert Schleip wrote the forward for this edition, which does a splendid job of encapsulating the Steccos’ contributions to the field. In fact, it was this introduction that first got me interested in the books themselves. Just the pictures of fresh cadaver dissections – which show fascia somewhat close to how it exists in the human body – make these volumes worth adding to your library. Still, pictures, as good as these, should not be mistaken for the tissue we touch every day. As Schleip warns, “these pictures, as beautiful as they are, show a drier body than the one you are living in and the one you are touching [in] your clients. Please keep the fluid dynamics of the living body in mind and in your touch when you turn from this book to the properties of fascia in a real living person. Fascia in living bodies is much more slippery and moist than you may tend to imagine.”

The Method

After describing each of the body’s eighty-four myofascial units, in Chapter 7 the Steccos present an elaborate method for assessing the body. MFs corresponding to each plane of motion are motion tested to see which ones elicit pain symptoms. They are then considered together as part of agonist/antagonist pattern of dysfunction. Once the therapist has determined which MF sequences are involved in the pain pattern, he then searches for tissue “densification” near the CCs. Once found, these densification zones are treated using manual-therapy techniques that resemble deep cross-fiber friction. One technique is used to treat CCs that produce pain in a single segment, and a slightly different technique is employed when trying to tease apart “centres of fusion” or places where planes of fascia are interwoven.

At a one-day workshop on the FM method, I was very impressed by the assessment process, and equally unimpressed by the treatment process – a rather mindless application of rubbing vigorously with the knuckles. The technique is justified by theoretical assertions that fascia requires tissue to be contacted at a certain angle with a certain amount of force in order for it to change. I was astounded that some of the latest research suggests the old gel to sol approach might be right after all. The techniques being used did not seem to require the therapist to connect with the client or feel the effect propagate through the client’s fascial network, and I was rather astounded that the demonstrator showed no interest in anything more than the MF that was being manipulated, and whether it was reducing pain. Admittedly, it was a short demonstration, but my body reading of the subject from afar was inclusive of far more information than the tests were revealing.

There is much more to find in the pages of these books: I can’t say enough about them. If you are a serious student of the body and a serious practitioner of manual therapy, you must read and digest these books. You will not agree with everything they contain, but I promise you will learn things you never knew. These material in these books, if adopted, can revolutionize the way the larger world understands human structure and function – they are that innovative! Naturally, I have, in this brief review, skipped over much for it is hard to encapsulate a life’s work in a few pages. My hope is that what I have communicated to you will scare and inspire you to not rest, as the Steccos have not rested, in your pursuit of understanding the body as it is.

Here I will leave you again with the words of Robert Schleip:

“If you are a beginner with the field of physiotherapy...be prepared that it is not a book to skim over lightly while watching TV. It is a gold mine of condensed information. If you mistakenly skip over a sentence, it may easily occur that you will miss this information later, when trying to understand the logic of the following pages, as there is not much redundancy in this book. Yet I give you my word that even most experts in this field will look at and read this book with immense excitement and a state of joyful discovery. While other books have been written on fascia from several different angles, this one clearly sets a new standard.

Endnotes

2. Ibid.

Special offer: The publisher of these titles has generously offered a discount to Rolfers. Please contact Paolo Roselli, Director of Piccin North America, at paolo@sarigo.com to place an order.
**Research Update – Rolfing® SI for Children with CP**

The Rolf Institute® of Structural Integration is pleased to update members on research into the effect of Rolfing® Structural Integration (SI) for children with cerebral palsy (CP), conducted in Palo Alto, CA. The research focuses on Rolfing SI and is being conducted by Certified Advanced Rolfer™ Karen S. Price, B.A., Heidi M. Feldman, M.D., Ph.D., professor of pediatrics at Stanford University Medical School, and Alexis B. Hansen, B.S., Stanford University medical student. The initial study worked with eight children ages two to seven with moderate CP – GMFCS (gross motor function classification system) 2-4 on a scale of 1-5. (Level 5 children have severe limitations and little if any self-mobility, stability in gravity, or voluntary movement.) In addition to taking measurements, the study included photos, videos, psychosocial assessments, and parent interviews. Price was the only Rolfer in the initial pilot program and participated pro bono. The results to date are very positive, and the team is seeking to publish in a medical journal later this year, with an article to follow in *Structural Integration: The Journal of the Rolf Institute*.

Most recently, the research team attended the Pediatric Academic Society’s annual meeting in Vancouver, BC in May 2010 and presented a poster on its work. Price expresses her gratitude to the Ida P. Rolf Research Foundation, which provided a travel grant for the event, and reports that a significant number of pediatricians in attendance were already familiar with Rolfing SI. The poster gave background on the fascial nature of the work and discussed methods, outcome measures, and results, including parent comments such as the following: “I was stunned. It is the most dramatic, quick improvement we have had with anything we have tried,” and “He went through developmental stages he never experienced before and continues to do so – like he’s catching up with his age.”

The research team is currently applying for additional grants and donations to do a larger and longer study with twenty-four children and the involvement of a broader spectrum of health personnel. Any assistance in this project is greatly appreciated. Price can be contacted at rolfingduo@earthlink.net.

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Congratulations to the New Graduates

Europe – October 2010
Faculty: Pierpaola Volpones (Instructor), Ricarda Sommer (Assistant)
Students: Martina Abeltd, Eva Blank, Lena Brändlein, Christoph Engel, Claudia Graninger, Julia Hayden, Alexandra Hochrein, Aman Andres Kohlbach, Isabel Alvarez Luque, Chiara Osbat, Klaus Otten, Victor Salinas, Nina Clara Schild, Albert Nebra Trigueros, Christian Vizjak, Holger Wennrich, Stefanie Wittiber-Schmidt

Brazil – December 2010
Faculty: Paula Mattoli (Instructor), Pedro Prado (Instructor), Joerg Ahrend-Loens (Assistant), Gillian Kok (Assistant), Phoenix Quetzal (Assistant)
Students: Abdullah Almulla, Anne Beasley, Deanna Clasby, Ulrich Demmel, Gillian Duffin, Diane Friedman, Joshua Frohberg, Arthur Gillespie, Kuniho Okada, Adam Persinger, Adam Polanski, Jeremy Roland, Sheri Sewell, Julia Zatta

Europe – March 2011
Faculty: Pierpaola Volpones (Instructor), Carla von Vlaanderen (Assistant)
Students: John Armstrong, Frank Bauche, Cora Beier, Andrea Graziafield, Dr. Ralf Jungbluth, Takami Kamata, Juraj Korec, Elisabeth Merckens, Boris Petrovic, Vivien Skelton, Imke Sonnemann, Janco Volk, Rosa Vreeling

U.S. – May 2011
Faculty: Kevin McCoy (Instructor), Ramone Yaciuk (Assistant)
Students: Carolyn Biano, Clay Evans, Thomas Gilliford, MingLi Jiang, Elaine Lee, AnnaKate Moore, Steve Moore, Takashi Moribe, Fred Nehring, Jesse Norton, Mira Wood

2011 Class Schedule

BOULDER, COLORADO

Phase I: Foundations of Rolfing® Structural Integration
June 13 – July 25, 2011
Coordinator: Adam Mentzell & Michael Polon

September 5 – October 17, 2011
Coordinator: Michael Polon

Phase I: Accelerated Foundations of Rolfing Structural Integration
August 14 – August 27, 2011
Instructor: Michael Polon
October 30 – November 12, 2011
Instructor: Suzanne Picard

Phase II: Embodiment of Rolfing Structural Integration & Rolf Movement® Integration
August 15 – October 6, 2011
Instructor: Ray McCall & Jon Martine
Principles Instructor: Carol Agnessens

Phase III: Clinical Application of Rolfing Theory
June 6 – July 29, 2011
Instructor: Larry Koliha
Anatomy Instructor: John Schewe
October 17 – December 16, 2011
Instructor: Valerie Berg
Anatomy Instructor: John Martine

LOS ANGELES, CALIFORNIA

Advanced Training
Phase I: June 13-30, 2011

Phase II: October 24 – November 10, 2011
Instructor: Jan Sultan

OLDERNESS, NEW HAMPSHIRE

Rolf Movement® Certification: Perceptive Core Stability
September 9-15, 2011 (Sept. 12 is off)
Instructor: Kevin Frank

SALT LAKE CITY, UTAH

Rolf Movement® Certification: Breathing and Walking: Movement Education to Support the SI Series
November 30 – December 5, 2011 (Dec 2 is off)
Instructor: Mary Bond

BRAZIL

Unit III
September 5 – November 10, 2011
Instructors: Tessy Brungardt & Pedro Prado

GERMANY

Basic Rolfing Training: Intensive
Phase 1: August 1 – 20, 2011
Phase 2: October 3 – November 23, 2011
Phase 3: January 30 – March 21, 2012

Unit III
September 26 – November 18, 2011

Rolf Movement® Training
Phase I: April 2-10
Phase II: June 9-19
Instructors: Pierpaola Volpones & Giovanni Felicioni

Advanced Rolfing Training
Phase I: April 13-25, 2012 in Italy
Phase II: July 16 – August 1, 2012 in Germany
Instructor: Peter Schwind

SOUTH AFRICA

Unit III
September 5 – October 27, 2011
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