# Structural Integration

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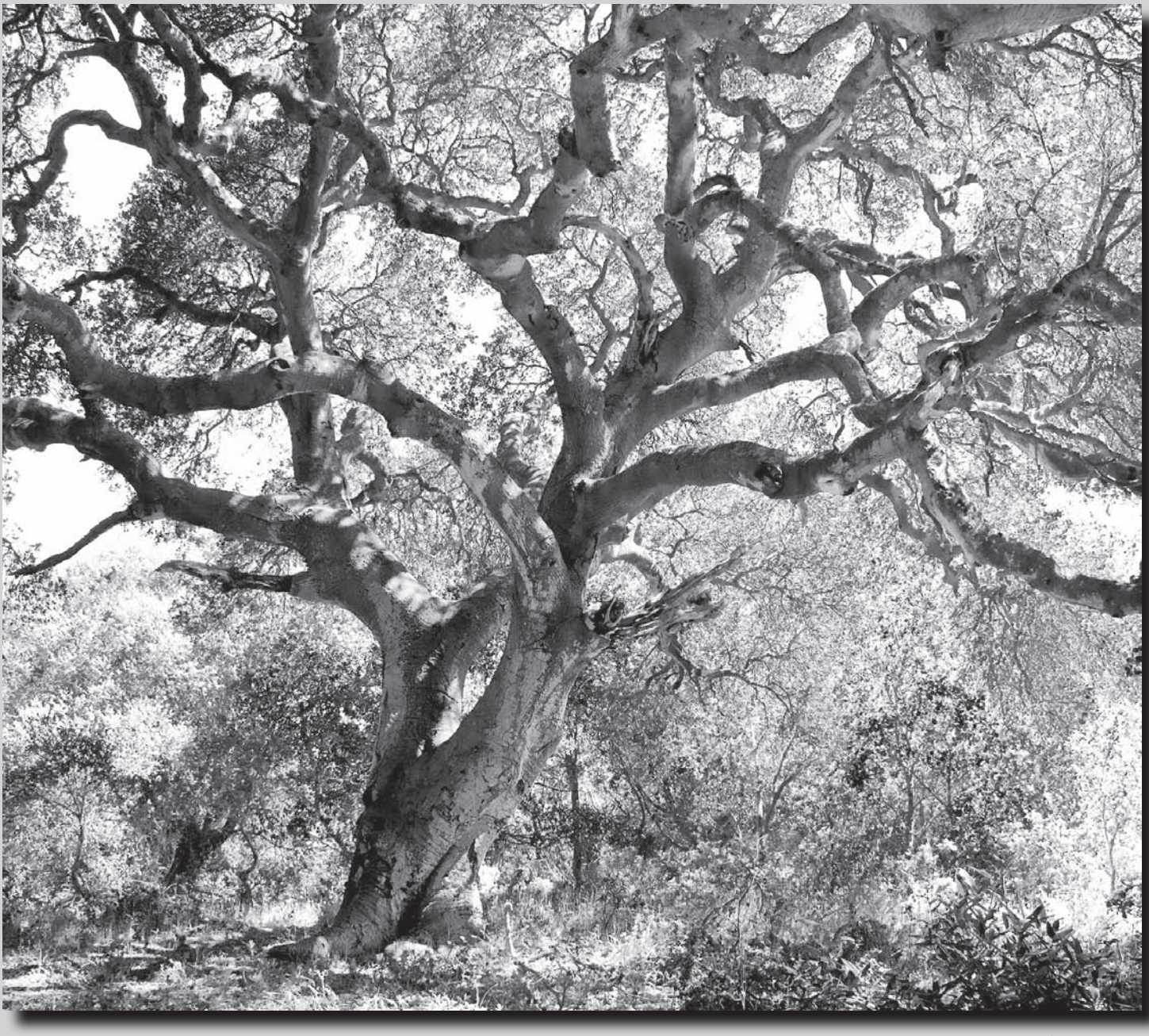

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# Ask the Faculty

## *The Advanced Faculty on the Nature of Rolfing® SI*

*Note from Pedro Prado: As Ida Rolf observed, as much as we might study the theories of Rolfing Structural Integration (SI), we master it only with practice – by doing it. Lately, our field has grown and blossomed in many ways and in many directions, from refinements of touch to addressing the client's environment and internal experience. We have incorporated technical discoveries and reframed our theoretical underpinnings. What drives this growth and at the same time becomes clearer through it is that we have many and various styles of approach to a human being. In this issue, we depart from our usual question-and-answer format, and instead several members of the Advanced Faculty share their personal conceptions of the nature of our work and describe how those conceptions inform their practices.*

I begin each session by asking three questions that are fundamental to all therapy: "What do I do first?", "What do I do next?", and "When am I finished?" To the best of my ability, I try to perceive where the most significant fixations are located within the being of the whole person across all the taxonomies of assessment (i.e., structural/geometric, functional, energetic, and psychobiological intentionality). Fixation – or what is the same thing, loss of appropriate continuity – has many forms (e.g., myofascial, articular, conceptual, emotional, neurological, energetic, etc.) and can create a loss of integration, continuity, and coherence locally and globally in every taxonomy. I try to systematically remove these fixations using the principles of intervention. I don't usually ask "how do I fix this?" Mostly I ask myself, "what aspect(s) of this person, were I to enhance it (them), would most enhance the whole person?"

When we are free of a significant number of fixations, our body orthotropically appropriates gravity in a way that serves our freedom, well-being, and ability to become who we are. Unlike inanimate objects or soft machines, which are merely in and being acted upon by gravity, we are continuously responding to gravity. The extent to which we are able to orthotropically appropriate gravity is the extent to which we are integrated in gravity and the extent to which we are right with ourselves and our world/environment. Since Rolfing SI is not about symptom chasing or imposing order on the body according to formulaic protocols, I am obligated to continuously deepen and expand my ways of perceiving what the body needs and the order in which it needs it. To exaggerate the point, perception is everything.

Rolfing SI is not only powerful, but also a big tent under which many forms of intervention can easily be appropriated in its service. I use the cold laser and percussor. I employ many levels of touch from direct to indirect. I perform visceral manipulation, cranial manipulation, touchless and hands-on energy work, and I sometimes do touchless energy work over the telephone. More and more I am getting the most results with the least amount of manipulation. As a result of exploring touchless energy work, I am getting better at accessing psychobiological content and working with it. I am better able to perceive how a person's orientation or way of being can fixate his/her development and/or contribute to his/her pain.

With respect to the question, "What is Rolfing SI?," I ask it this way: "What is the being of Rolfing SI?" Rather than making the mistake of looking for a Platonic essence that defines Rolfing SI, I want to know what the formative power is that infuses and informs all effective Rolfing work. We all recognize that some Rolfers™ manifest the power of Rolfing SI in their being and hands to a much greater degree than others. Something – some spark or spirit, to speak very loosely – possesses or is possessed by good Rolfers. What is the difference that makes all the difference here? Obviously, putting your hands on the body and pushing is not necessarily effective or even Rolfing SI. At the same time, if you are doing Rolfing SI, much of the time you must be using your hands to manipulate tissue. What is going on when a Rolfer's hands are infused with the being of Rolfing SI?

When we discuss the nature of Rolfing SI, we often focus on the hands-on work and inadvertently lose sight of this most important aspect of Rolfing SI. The spark that animates good Rolfing work retreats into the conceptual background and too easily becomes what I sometimes call "the hidden face of Rolfing SI." Nevertheless, we all know this face. To explore the being of Rolfing SI requires that we explore the nature of perception as deeply and clearly as we can across the entire territory demarcated by all of our taxonomies, including the energetic and psychobiological taxonomies. The hidden face of Rolfing SI is not just another pretty face, but the very power and being of our work. If it is not present in a Rolfer's work, he/she is just mechanically pushing tissue. When it is present you can get the results of Rolfing SI even if you are not touching the body.

**Jeffrey Maitland, Ph.D.**

Because I perceive our work to be transformational, my practice is process-oriented, dedicated to each client's personal growth. I begin by trying to peg the client's presenting concerns and goals along the continuum of the physical, functional, and psychobiological dimensions. From there, I look for how that which manifests most obviously in one dimension reveals itself in the others. For example, how does a structural restriction limit movement, and how does the client relate to the limitation? Or, how has a functional restriction anchored itself in the client's body? How is a particular worldview manifest in a person's structure and patterns of movement? In general, I like to understand the pattern in all layers.

This analysis is reflected in my strategizing, which is non-formulistic and Principles-based, and also in my choice of taxonomies and techniques. Since the client's circumstance is necessarily multidimensional, I look for the most efficacious point of entry into the system and choose my tools accordingly. These tools might be myofascial touch (direct or indirect); creating awareness and options regarding the client's patterns of coordination or habits of perception and orientation; or helping the client to explore the influence of worldview and discover the meaning reflected in structure and function.

It all depends on how it seems I can best address the client's process.

Just as my conceptual framework seeks bridges among the dimensions of being, my work incorporates and combines many different approaches. Though with a particular client I might have a main approach – such as mainly functional or mainly myofascial – I always try to bridge the results of any intervention to all dimensions of the person and attend to any discontinuities among the layers of being. For example, I try to integrate structural myofascial releases into movement, and to help the client own the changes by tracking whatever layers of meaning might reveal themselves.

**Pedro Prado, Ph.D.**

In my view of Rolfing SI and in the daily practice of my craft, I adhere closely to the view that Rolfing SI is primarily and essentially work done with my hands, manipulating the connective-tissue matrix, which I understand to be a continuous system reaching from the most superficial fascia to the deep ligamentous bed. My most important area of study and, perhaps, contribution to the work of Rolfing SI has been to clarify the extent of how the connective-tissue system is continuous at the deepest level as ligaments (including joint capsules, etc.), which significantly define and determine the motion of the articular surfaces of the bones of the body. I consider this level of the work to be a fulfillment of Dr. Rolf's mandate that advanced Rolfing SI "takes the work to a deeper level," since basic Rolfing SI concerns itself with connective-tissue structures superficial to this bony, articular system.

Working with a deep knowledge of this level of bodily structure allows me to perceive how structural distortions are held in place by dispersed lines of strain that travel through fascial planes, inter-muscular septa, visceral fascial sheets, ligaments, and joints. Identifying these client-centered strain patterns and formulating strategic approaches to release them (which in my practice are primarily manual) is at the heart of my practice of Rolfing SI.

In all honesty, my central criterion for integration is continuity or coherence in the structure, rather than gravitational alignment. I find that if I promote continuity and coherence, gravitational alignment follows. Also, attending to coherence helps me to notice my client's subjective experience of the work and his/her embodied state, which if fragmented or suppressed can interfere with my task of promoting coherence and integration. In such cases, my effectiveness is completely determined by my ability to modify my presence and touch (which in my practice are inextricably intertwined) in such a way that the client is supported to "let go" or release inhibitions he/she is either unaware of or deliberately holding onto.

I consider the cranium and the membranous system of the meninges one of the deep layers of structure that I attend to in my work. Lack of continuity and openness in this system has a system-wide inhibitory effect and will interfere with work in the other levels of the connective-tissue system. This deep membranous system is also central to the manifestation of inherent motion in the structure, which is one of the most important criteria I use to assess coherence and integration.

**Michael J. Salveson**

*The only true wisdom is in knowing that you know nothing.*

Socrates

"Put the body where it belongs and ask for movement" was Dr. Rolf's signature statement. It *had* shaped my work and teaching for most of my professional life, until I read John-Pierre Barral's basic premise (in *Visceral Manipulation*) that mobility precedes position and motility precedes mobility. I oriented to that with the sharp awareness that Rolf's statement needed amendment. Jeff Maitland helped me with the understanding that logical and temporal priorities dance with each other. A logical first priority does not necessarily come first, but guides our strategy and tactics to the extent that we may do many other things "first" in order to bring the first priority to manifestation.

Another primary influence on my work was the concept of indirect touch that I first encountered in John Upledger's work. That has had a huge impact on how I approach immobility. Simply stated, the spectrum of direct to indirect touch is about directionality, and our perception of the emergent response to that touch. It is also about my belief regarding the nature of structure. I now know that there is inherent vitality and intelligence in the tissue. Some tissues are smarter than others. Some tissues need a lot of pressure to awaken. Others need a point of reference around which to organize. Given the opportunity, and space, to move toward normal function and spatial order, the body will do it every time.

Throughout our field, from yoga to sports training, there is an obsession with symmetry. The human eye is programmed to perceive discontinuity in many ways. Often this drive for symmetry in physical training or manipulation diminishes both motility and mobility as an unintended effect. My experience, through working with these ideas is that if mobility is well-established, symmetry emerges. As this happens, careful education can help the client renegotiate proprioceptive signals to support the emergent symmetry, to the extent it is available. As this happens, the gravity relationship that Rolf was so adamant about is fulfilled. The form organizes into better balance in space.

In my work I first identify the major restrictions, or barriers, to motion. These can be at several levels, and are interactive priorities. I drive to understand the nature of connective tissue, from skin to bone, and how that plays into what I see and touch. Of late I have an abiding interest in the neural tissues, how they influence form and function, and how to touch them to evoke normal function. The suspensory tissues of the gut are vital to spatial order, as is the ligamentous bed throughout the body. Having the anatomy map firmly in mind helps to work coherently in these areas.

Rolfing SI is first and foremost manually applied. Systematic differentiation of the fascia, to evoke local motility and mobility, are the foundation of the work. That characteristic body of technique – pressing, stretching, teasing, spreading, and smoothing, with varying degrees of depth and duration – is the first tool of the work. The more esoteric aspects of our approach go toward the energetic sense of "self as body, self as not body" that each of us carries at the deepest levels of our being. Immobility is one outward sign of dissociative patterning. That can take the form of a kind of "lived dream," or of a tough, fixated world view. It can show up as hypo- or hypertoned tissues, sometimes system-wide, and sometimes mixed hyper- and hypotonicity within the same body.

I work to resolve immobility, balance flexibility and stability, and connect the client with his/her lived experience. I wait, I feel, I touch, I teach.

Rolf once said that you don't have to know anatomy to be a good Rolfer. That may be true to the extent that we forget anatomy once we learn it, as it becomes second nature to us. Still, it is a lot easier to teach the work to someone who knows anatomy, and if you are not inspired, you had better be systematic.

**Jan Sultan**

While I'm working, I'm contemplating the self-organizing impulse of the individual, seeking to unbind the limitations to this. When this self-organizing impulse is free, integration arises, which looks to me like congruity and ease throughout the system. A certain symmetry emerges that includes ease of motion and it is aesthetically pleasing.

I seek limitations in the fascia, from the most superficial to the deep ligamentous bed. Primarily I do this with manipulation. Thinking of the fascial system as continuous, I do systematic differentiation and include in my work the visceral and cranial systems and joint biomechanics. Also I work with the energetic system, perceiving it as vibratory, and I work to even out areas of vibration that don't match the surrounding areas. I do this with touch. Of course I'm working with function, physiology, and worldview, too. Although I do some Ten-Series type work, most of my work is "non-standard series" work or ongoing maintenance. Pain resolution is the main goal of most of my clients, so it is usually my main focus. Also, while I'm working I am adjusting my own body mechanics, with the goal of making my work more efficient, comfortable, and easier on my own structure.

In teaching, I seek to communicate the overall context in which we do our work – Rolfing theory. I spend a lot of time on functional anatomy so that students have an understanding of what is normal, how it looks and feels. Then I teach analysis and techniques, but really I want students to have an understanding such that they can develop their own techniques to suit the unique situations that arise in their practices. Perception is a big part of class, since the techniques are only as good as the awareness of the practitioner. Much of this is focused on developing range of touch, but also seeing. Another area of focus is self-awareness, including body mechanics, the world view of the students, and coming to an understanding of how these influence the work they do. This happens in practica and exchanges, as well as in work with class clients. One of my greatest goals is that each student receives work that he/she really needs and leaves class feeling better and with a deeper understanding of the potential of Rolfing SI. I teach from my own experience in all these areas, showing things that I know can produce results.

**Tessy Brungardt**

My view of Rolfing SI is actually quite simple and straightforward: I view SI as a holistic modality. Holism is based on the principle that the body is a self-regulating organism with the inherent potential for health and well-being.

The foundation of Rolfing SI is the alignment of the whole person in relation to gravity and ground. The medium or common ground of the modality of Rolfing SI is the connective-tissue matrix of the myofascia, and I am grateful for Ida Rolf's biochemical research and vision on this subject. Rolf's pioneering research on the principle of fascia as unifying system has significantly altered how we collectively view the body.

Existentially, I regard Rolfing SI as a tactile avenue into the basic inquiry of what it means to be human. And while I feel fortunate to live and work in a time when lively innovations in health and science have exponentially increased the information on the topic of myofascia, I recognize that science alone cannot conduct this inquiry, just as words and concepts cannot communicate the depth and breadth of direct experience.

Over the course of the quarter century that I have been practicing, the exponential increase in technology has tremendously impacted our work (e.g., cold-laser use), our organization (e.g., faculty online and webinars), and our clientele as well. Amidst the electronic gadgets and technology that occupy much of our collective time and mind, clients come to us not only for palliative care, but yearning for the relational connection of human touch and interaction. It takes whole-hearted courage to change, and courage arises out of vulnerability. The art of Rolfing SI allows for the authenticity of the whole person (client or practitioner) to emerge.

In my practice, I start with the premise that motility precedes mobility. I use refined touch to sense restriction via palpation of inherent motion. I endeavor to work inclusively, without interpretation or judgment, holding the following in equal value:

1. The client as a whole.
2. The client's physical structure.
3. The client's process:
   - Past history (e.g., injury, illness).
   - Current aspirations (e.g., sleep, dreams).
   - Goals and motivation for change.
4. My process.

My training in Rolfing SI has and continues to be concurrent with craniosacral training, augmented with visceral and trauma work. My fascination with learning makes me a big proponent of lifelong continuing education (CE), and my three most recent CE classes have all been on the subject of working with the brain.

**Sally Klemm**

# Rolf Movement® Faculty Perspectives

## *Revitalizing Rolf Movement Certification: A 2011 Initiative by the U.S. Rolf Movement Instructors Group*

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

### A New Beginning for Rolf Movement Integration

In 2011, the U.S. Rolf Movement faculty initiated a program to meaningfully expand the Rolf Movement Integration certification program. As announced in spring 2011, the U.S. program now requires thirty class days (three of which may be a mentorship or independent study) and is taught as a series of workshop-format courses. Each course focuses on a specific topic within the domain of Rolf Movement Integration.

Rolf Movement Integration has been the container at the Rolf Institute® for Structural Integration (RISI) for dimensions of the Rolfing® Structural Integration (SI) process that, for practical reasons, fall outside the considerable scope of the basic Rolfing training sequence (Phases 1, 2, and 3). These "other dimensions" of Rolfing SI include training in perception, coordination, and expression, as well as psychobiological aspects of the work. As these other dimensions of structural integration have been more explicitly defined, movement courses have been designed to better teach skills and knowledge for practice.

The Rolf Movement Integration faculty, as a whole, continues to discuss how best to nurture these additional dimensions of SI in the context of the RISI. At the meeting in August of 2011, movement instructors from the U.S., Europe, Australia, and Brazil shared regional perspectives. The group resolved both to follow the Curriculum Development and Review Committee curriculum guidelines, and to also respect each region's format for Rolf Movement Integration certification. As this is being written, it is too soon to know what further changes may occur in the different regions of the RISI community. This article focuses on what has been introduced within the U.S.

### What Inspired the Change?

The U.S. initiative reflects practical considerations that led to a change in format: the knowledge base and skills fundamentals to the movement program outgrew the limitations of an eighteen-day training. Competence as a Rolf Movement Integration practitioner depends on familiarity with a broad set of perceptual and coordinative skills – embodiment that takes time to develop, but is essential to effective intervention. A simple example is the skill to perceive the "pre-movement" of a client – to do so, one effectively "reads" the client's perceptive activity and offers moment-to-moment feedback. Moment-to-moment coaching, to be useful, depends on perceptive clarity in one's own body. This takes more time than has been available. How, then, does one train practitioners to do this? The U.S. faculty has struggled with this question.

Long blocks of time away from home and practice have already been identified as an obstacle for many students wishing to pursue movement certification, so lengthening the required class time compounds the dilemma. A format based on a series of workshops resolves this issue and is more practical than lengthening the intensive format. The workshop format also reflects the learning experience of many Rolf Movement Integration instructors themselves. Many current movement instructors were either long-term students of other movement disciplines (such as dance or martial arts) learned primarily outside of RISI, or were students in multi-year study groups taught by Hubert Godard, again outside of RISI-offered courses. Successive years of seeing and feeling integrated movement helped bring along understanding and embodiment of the work. Many instructors who trained in this way have played a role in promoting and clarifying the Rolf Movement Integration knowledge base. The workshop format allows for a number of years of study and integration and is expected to improve the training of new practitioners.

### Growth in Rolf Movement Integration

What other factors contribute to the new format? The domain of Rolf Movement Integration continues to organize formally as a body of work. Historically, it's been a challenge to put movement concepts and techniques into words. In the past decade, movement instructors have produced more written handouts and articles that further define the field. Many instructors have co-taught with each other, in large part due to an interest in refining and clarifying the complex study of perception and coordination. Instructors continue to ask questions about how and why Rolf Movement Integration works. These questions happen at a time when the beginnings of answers have started to appear.

In the past three decades, research has begun to answer long-held questions about what it means to change posture and movement. Research in the field of neuroscience has given our profession a number of gifts in the form of plausible validation for how and what we do. Functional (MRI) imaging now allows scientists to directly observe the plasticity of the brain. Real-time imaging confirms that when someone learns to perceive or move differently, the brain is actually building a stronger and more differentiated map of the body and the space in which it moves.

### Maps and the Language of the "Movement Brain"

Maps are a great way to speak about how the brain organizes perception and coordination. It's very similar to what Google does to map the Earth. Google maps help us see how the landscape and roadways fit together. They allow us to see our familiar landscape from above, and to figure out how to go from point A to point B, and do so with many variations. When we learn to perceive differently or move differently, our internal "Google function"

has built a better map of the territory. Our map gains "options." The map metaphor is a handy way to explain SI. When a person integrates – when a person's posture or quality of movement shifts – it's not a superficial change but one that lasts. When this happens, we know that the maps have changed, and are likely to continue to do so as new usage patterns are strengthened.

Rolf Movement Integration certification is a journey to learn how the coordinative maps in the brain change. It is a multi-faceted approach for speaking to the brain's "map drawing" process. Maps are a central part of the system intelligence that keeps us upright and allows our body to respond to all the challenges of life, without consciously thinking about it. We can conveniently refer to this intelligence as our "movement brain." Movement approaches require us to speak the language of the movement brain – those parts of us that learn to move and remember movement patterns. We can all learn to speak and hear this language. It is an older language than words. The language of the movement brain is often nonverbal, involving, for example, body shape, sensation, and expressive gesture. We learn through experimentation and through the embodied guidance; it's not a purely cognitive process, nor is it merely physical action. An optimum learning environment typically engages creativity and one's whole being.

Each person learns a language in his or her own way – some more visual, tactile, or auditory. Most of us tend to learn language in context – actually doing something – and language learning requires repetition within the context. Like language, all aspects of working with movement are also lessons in what optimizes our learning process. We tend to learn best when we discover our particular learning style and then learn to guide our teachers to help us make sense of the new territory. We anchor learning by finding our own voice, by finding authentic ways to teach it in our own words and gestures. Movement education at the RISI includes asking questions about styles of learning.

## A New Format

The new U.S. Rolf Movement Integration certification format allows students to choose the particular courses they wish to take, choose the order in which to take them, and choose to take each course's discoveries back to their SI practices. The new format allows students to learn from multiple instructors and multiple descriptive styles and demonstrations of the work. Each course is both a snapshot of the whole as well as a particular application of how movement can change. Each student has a faculty advisor with whom he or she can receive support and guidance.

## Courses in the U.S.

The offering of courses for RMI certification in the U.S., as of this writing, covers topics that include:

- Perceptive Core Stability
- Breathing and Walking: Movement Education to Support the SI series
- Interoception: The Primordial Roots of Sensation, Tonus, and Gesture
- Our Spine in Motion
- Embodying Rolf's SI Recipe
- Origins of Gesture and Movement: An Embryological Perspective
- Orientation, Perception, and Resonance – Essential Skills that Support Psychobiological Dimensions within the Structural Integrative Process

This list is an initial set of offerings and covers some of the topics that RMI touches on. It is likely that both the U.S. and our international faculty will continue to contribute to the list, enabling it to grow in size and scope as well as perspective. RMI is still a young field with enormous potential for development in its education.

## International Courses Offerings

In addition to courses offered in the U.S., the certification program accepts transfer credit, so U.S. students can travel to take courses internationally. RMI instructors from different regions simply arrange for students to receive U.S. movement certification credit for courses taught in that instructor's region. Transfer credit from other regions helps students broaden their experience further. (For a complete list of policies refer to the Rolf Movement Integration pages at www.rolf.org/cont_ed/movementtraining.)

## Rolf Movement Integration and the Future of SI

SI must develop a compelling message if it is to survive as a profession in the decades to come. Fascial mobilization is no longer the exclusive province of structural integrators, let alone Rolfing practitioners. How will the SI community articulate what is different about SI from myofascial release techniques that are now ubiquitous?

The U.S. Rolf Movement Integration certification program is one region's initiative to strengthen the Rolfing SI message by strengthening the understanding and embodiment of the certified Rolf Movement practitioner. What makes the Rolfing SI message strong is clarity around the capacity to see and feel coordinative change, to see and feel movement before it even begins. The capacity to see and intervene in coordination is a specific domain of skill within the Rolfing SI umbrella. Coordinative change is change in motor control. The Rolfing SI paradigm offers a package of interventions to make lasting improvements in motor control. Rolfing SI offers a broad set of measures to determine that change has occurred. The tradition of Dr. Rolf rises to a level of congruence and scientific verification when practitioners are able to convey this message through articulate explanation and solid embodiment. Such a message of congruence and relevance offers an opportunity for the RISI to lead the SI community in further inquiry about the nature of Dr. Rolf's work.

## In Memoriam

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

**Don Hazen, D.C.,**
**Certified Advanced Rolfer™**

**Gladys Man,**
**Certified Advanced Rolfer**

**Robert Ouradnik,**
**Former Rolfer**

**Robert Tacchino,**
**Certified Rolfer**

# Fascial Fitness

## *Fascia-Oriented Training for Bodywork and Movement Therapies*

**By Divo G. Müller, Health Practitioner and Movement Therapist, and Robert Schleip, Ph.D., Certified Advanced Rolfer™ and Feldendkrais® Practitioner**

*Editor's Note: This article is adapted from* Fascia: The Tensional Network of the Human Body *by Robert Schleip et al.,[1] which is scheduled to be published in 2012. For more information on Fascial Fitness see www.fascialfitness.de.*

When a football player is not able to take the field because of a recurrent calf spasm, or a tennis star gives up early in a match due to a knee problem, or a sprinter limps across the finish line with a torn Achilles' tendon, the problem is usually neither in the musculature nor the skeleton. Instead, it is the connective-tissue structures – ligaments, tendons, joint capsules, etc. – that have been loaded beyond their capacity[2,3] A training regimen focusing on the build-up of the fascial network could be of great importance for athletes, dancers and other movement advocates. If one's fascial body is well-trained, so to say optimally elastic and resilient, it can be relied upon to perform effectively as well as offering a high degree of injury prevention.[4]

Until now, sports trainers have mostly focused on the classical triad of muscular strength, cardiovascular conditioning, and neuromuscular coordination. Some alternative physical training activities – such as Pilates, yoga, Continuum Movement, t'ai chi, qi gong, and martial arts – are already taking the connective-tissue network into account, acknowledging the effects of the global body network in a mostly intuitive way. However, the insights of current scientific fascia research need to be discussed so as to translate these insights into a precise practical training program in order to build up an injury-resistant and elastic fascial body network. Therefore, we encourage physical therapists, sports trainers, and movement enthusiasts to incorporate the fascial training principles presented in this article and to apply them to their specific context.

### Fascial Remodeling

A unique characteristic of connective tissue is its flowing adaptability: when regularly put under increasing physiological strain, it changes its architectural properties to meet the increasing demand. The varied capacities of fibrous collagenous connective tissues adapt continuously to regularly occurring strain, particularly in relation to changes in length, strength, and ability to shear. Fibroblasts – fiber-producing connective-tissue cells – react to a dominant loading pattern, whether it is an everyday strain or a specific impact of training. These mobile tissue workers continuously remodel the arrangement of the collagenous fiber network. In a healthy body, with each passing year half of the collagen fibrils are renewed. For example, through our everyday bipedal locomotion the fascia on the lateral side of the thigh develops a palpable firmness. If instead we were to spend that same amount of time with our legs straddling a horse, then the opposite would happen, i.e., after a few months the fascia on the inner side of the legs would become more developed and stronger.[5]

Fascial Fitness enhances this renewal via specific training activities which, after six to twenty-four months, will build up a 'silk-like bodysuit' that is not only strong, but also allows for a smooth gliding joint mobility over wide angular ranges. Interestingly, the fascial tissues of young people show stronger undulations within their collagen fibers reminiscent of elastic springs; whereas in older people, the collagen fibers appear rather flattened.[6] Research has confirmed the previously optimistic assumption that proper exercise loading, if applied regularly, can induce a more youthful collagen architecture, showing a more wavy fiber arrangement and also expressing a significant increase in elastic storage capacity[7, 8] (see Figure 1). Yet it seems to matter which kind of exercise movements are applied: a controlled exercise study using slow velocity and low load contractions demonstrated an increase in muscular strength and volume; however, it failed to yield any change in the elastic storage capacity of the collagenous structures.[9]

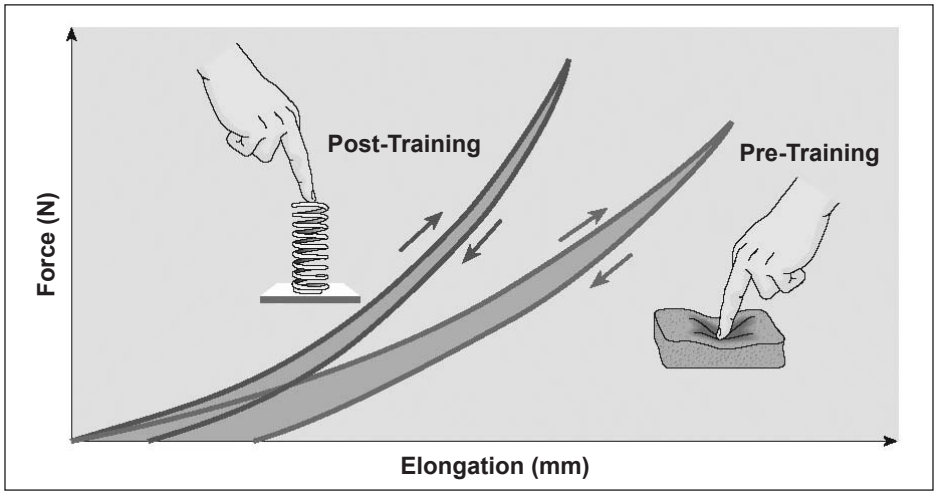



Figure 1: Increased elastic storage capacity. Regular oscillatory exercise, such as daily rapid running, induces a higher storage capacity in the tendinous tissues of rats, compared with their non-running peers. This is expressed in a more spring-like recoil movement as shown on the left. The area between the respective loading (up arrow) versus unloading (down arrow) curves represents the amount of *hysteresis*: the smaller hysteresis of the trained animals (post-training) reveals their more 'elastic' tissue storage capacity; whereas the larger hysteresis of their peers (pre-training) signifies their more 'viscoelastic' tissue properties, also called inertia. (Illustration modified after Reeves.[10])

## The Catapult Mechanism: Elastic Recoil of Fascial Tissues

Kangaroos can hop much farther and faster than the pure force of the contraction of their leg muscles should allow. Recently, scientists discovered a spring-like action behind that unique ability – the so-called catapult mechanism.[11] Here the tendons and the fascia of the legs are tensioned like elastic bands and the release of this stored energy is what makes the amazing hops possible. High-resolution ultrasound examination has made it possible to discover similar orchestration of loading between muscle and fascia in human movements. Surprisingly enough, it has been found that the fasciae of humans have a kinetic storage capacity similar to that of kangaroos and gazelles.[12] This catapult effect is made use of not only when we jump or run, but also with simple walking, as the springiness provides a significant part of the energy for the movement.

This new discovery leads to a revision of long-accepted principles in the field of movement science. In the past it was assumed that in a muscular joint movement, the skeletal muscles involved shorten actively and this energy passes through the passive tendons, causing the movement of the joint. This classical form of energy transfer is still true for steady movements such as cycling: here the muscle fibers actively change in length, while the tendons and aponeuroses barely grow longer (see Figure 2). The fascial elements remain quite passive in contrast to oscillatory movements with an elastic spring quality: here the muscle fibers contract in an almost isometric fashion (they stiffen temporarily without any significant change of their length) while the fascial elements act in an elastic way, similar to the up and down movement of a yo-yo. In this way, the lengthening and shortening of the fascial elements "produce" the actual movement.[13, 14]

The work by Staubesand et al.[15] suggests that the elastic movement quality in young people is associated with a typical bidirectional lattice arrangement of their fasciae, similar to a woman's stocking. In contrast, as we age and usually lose the springiness in our gait, the fascial architecture takes on a more haphazard and multidirectional arrangement. Animal experiments have also shown that lack of movement quickly fosters the development of additional cross-links in fascial tissues. The fibers lose their elasticity and do not glide smoothly; instead they stick together and form tissue adhesions, and even worse, they become matted together[16] (see Figure 3).

Figure 2: Length changes of fascial elements and muscle fibers (A) in an oscillatory movement with elastic recoil properties, and (B) in conventional muscle training. The elastic tendinous (or fascial) elements are shown as springs and the myofibers as straight lines above. Note that during a conventional movement (B) the fascial elements do not change their length significantly while the muscle fibers clearly change their length. During movements like hopping or jumping (A), however, the muscle fibers contract almost isometrically while the fascial elements lengthen and shorten like an elastic spring. (Illustration adapted from Kawakami et al., see note 14)

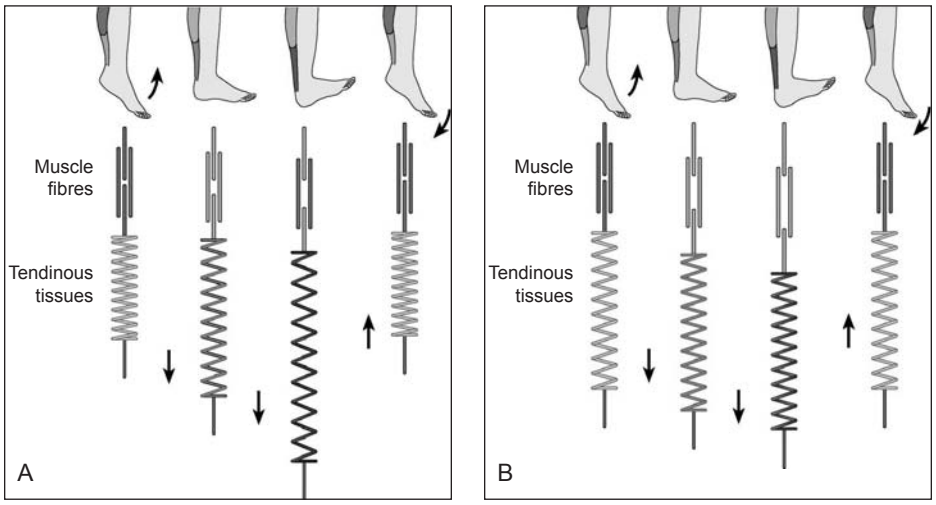
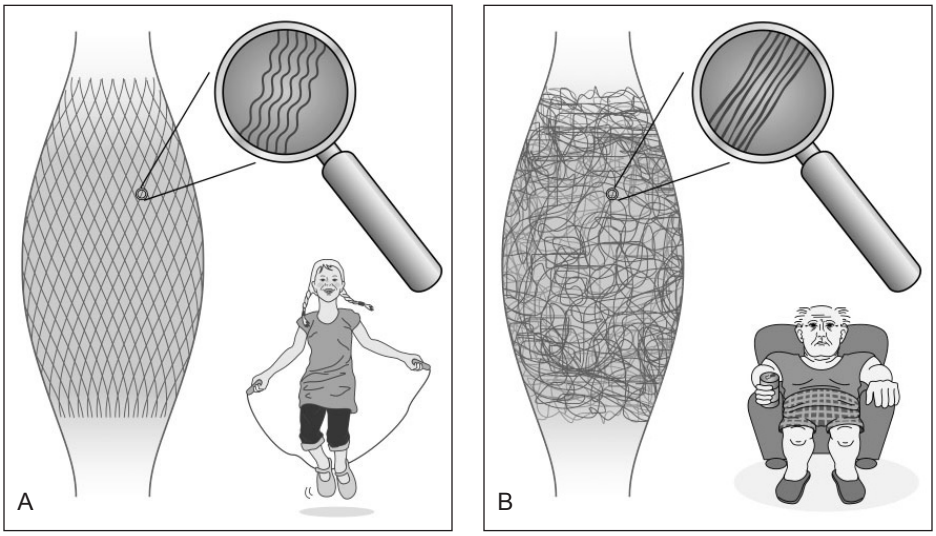



Figure 3: Collagen architecture responds to loading. (A) Fasciae of young people more often express a clear two-directional (lattice) orientation of their collagen-fiber network. In addition, the individual collagen fibers show a stronger crimp-formation. As evidenced by animal studies, application of proper exercise can induce an altered architecture with increased crimp-formation. (B) Lack of exercise, on the other hand, has been shown to induce a multidirectional fiber network and a decreased crimp-formation.




The emphasis of the proposed Fascial Fitness training is to stimulate fascial fibroblasts to lay down a more youthful and kangaroo-like fiber architecture. This is achieved through movements that load the fascial tissues using multiple extension ranges while utilizing their elastic springiness. Figure 4 illustrates different fascial elements affected

by various loading regimes. Classical weight training loads the muscle in its normal range of motion, thereby strengthening the fascial tissues, which are arranged in series with the active muscle fibers. In addition the transverse fibers across the muscular envelope are stimulated as well. However, little effect can be expected on extra-muscular fasciae as well as on those intramuscular fascial fibers that are arranged in parallel to the active muscle fibers.[17]

Classical hatha yoga stretches, on the other hand, will show little effect on those fascial tissues that are arranged in series with the muscle fibers, since the relaxed myofibers are much softer than their serially arranged tendinous extensions and will therefore "swallow" most of the elongation.[18] However, such stretching provides good stimulation for fascial tissues which are hardly addressed with classical muscle training, such as the extra-muscular fasciae and the intramuscular fasciae oriented in parallel to the myofibers. A dynamic muscular loading pattern in which the muscle is both activated and extended seems to be most effective. This can be achieved by muscular activation (e.g., against resistance) in a lengthened position while requiring only small or medium amounts of muscular force. One can also utilize soft, elastic bounces in the end ranges of available motion to achieve such a comprehensive stimulation of fascial tissues.

## Training Principles

The following training principles make such fascial training more efficient.

### *1. Preparatory Counter-movement*

Before performing the actual movement, we induce a slight pre-tensioning in the opposite direction, intentionally using the catapult effect. This pre-tensioning is comparable to using a bow to shoot an arrow; just as the bow needs sufficient tension in order for the arrow to reach its goal, the fascia becomes actively pre-tensioned in the opposite direction. In a sample exercise called the Flying Sword, the pre-tensioning is achieved as the body's axis is slightly tilted backward for a brief moment; at the same time there is an upward lengthening (see Figure 5). This increases the elastic tension in the fascial bodysuit and as a result allows the upper body and the arms to subsequently spring forward and down like a catapult as the weight is shifted in this direction. The

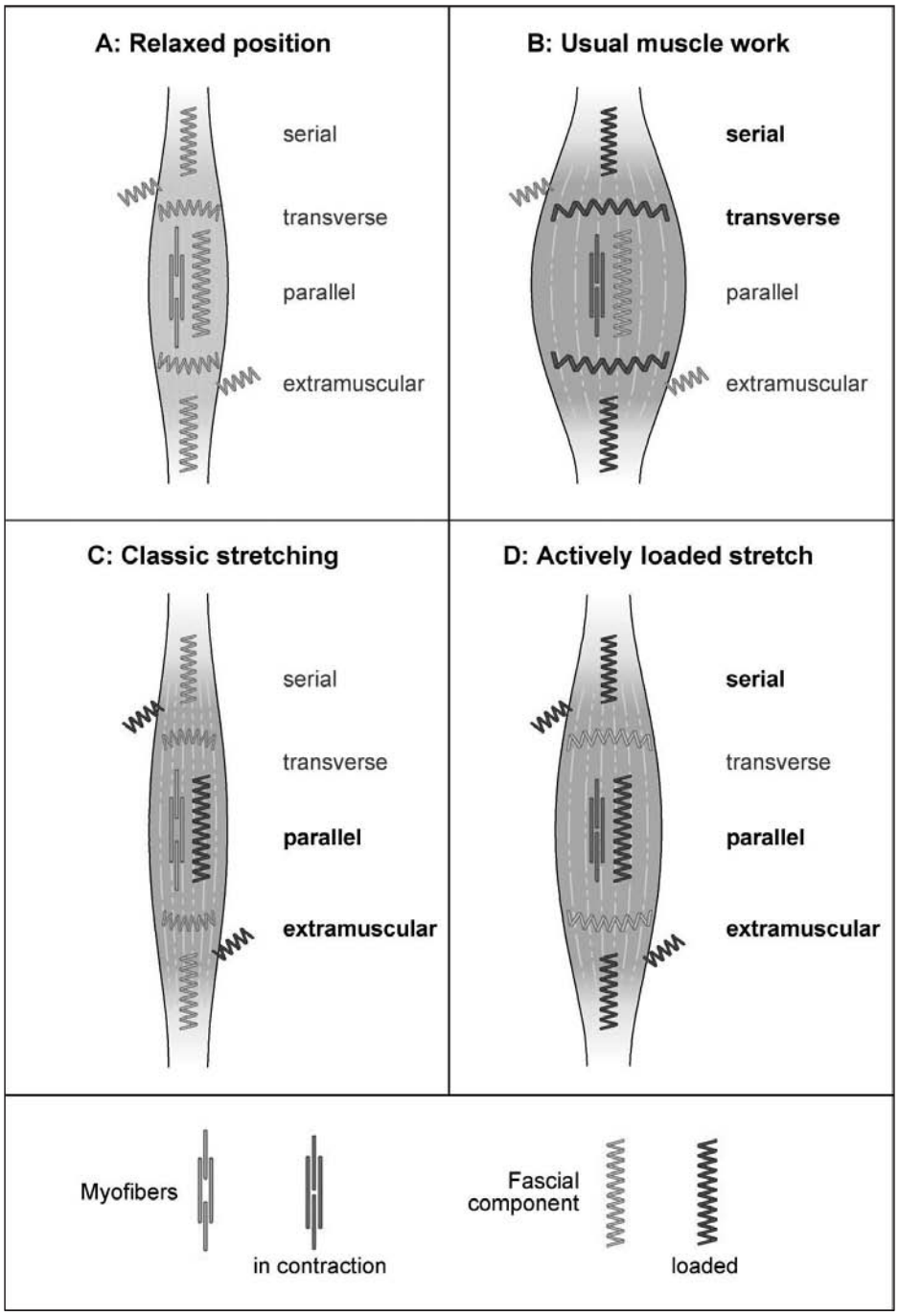



Figure 4. Loading of different fascial components. (A) Relaxed position: the myofibers are relaxed and the muscle is at normal length. None of the fascial elements are being stretched. (B) Usual muscle work: myofibers contracted and muscle at normal length range. Fascial tissues, which are either arranged in series with the myofibers or transverse to them, are loaded. (C) Classical stretching: myofibers relaxed and muscle elongated. Fascial tissues oriented parallel to the myofibers are loaded as well as extra-muscular connections. However, fascial tissues oriented in series with the myofibers are not sufficiently loaded, since most of the elongation in that serially arranged force chain is taken up by the relaxed myofibers. (D) Actively loaded stretch: muscle active and loaded at long end range. Most of the fascial components are being stretched and stimulated in this loading pattern. Note that various mixtures and combinations between the four different fascial components exist. This simplified abstraction serves as a basic orientation only.

opposite is true for straightening up – the mover activates the catapult capacity of the fascia through an active pre-tensioning of the fascia of the back. When standing up from a forward bending position, the muscles on the front of the body are briefly activated first. For a moment the body pulls even further forward and down and at the same time the fascia on the posterior fascia is loaded with greater tension.

The energy stored in the fascia is dynamically released via a passive recoil effect as the upper body 'swings' back to the original position. To be sure that the individual is not relying on muscle to do the work, but rather on the dynamic recoil action of the fascia, requires a focus on timing, much the same as when playing with a yo-yo. Timing is necessary to determine the ideal swing – the individual will recognize he has achieved this swing when the action is fluid and pleasurable.

### *2. The Ninja Principle*

This principle is inspired by the legendary Japanese warriors who reputedly moved as silent as cats and left no trace. To practice this principle, when performing bouncing movements (such as hopping, running, or dancing), one must execute each movement as smoothly and silently as possible. One should gradually decelerate before any change in direction and gradually accelerate afterwards; each movement should flow from the last, and any extraneous or jerky movements should be avoided (see Figure 6).

Using stairs, one can practice gentle stepping. Try producing as little noise as possible for the most useful feedback – the more the fascial spring effect is utilized, the quieter and gentler the process will be.

### *3. Dynamic Stretching*

To practice dynamic stretching, we suggest a more flowing stretch rather than a stretch that holds a motionless, static position. In Fascial Fitness there are two kinds of dynamic stretching: fast and slow. The fast variation may be familiar to many athletes as it was part of past physical training techniques. For the past several decades this bouncing stretch was considered to be generally harmful to the tissue, but recent research has confirmed the method's merits. Although this way of stretching immediately before competition can be counterproductive, it seems that long-term use of such fast,

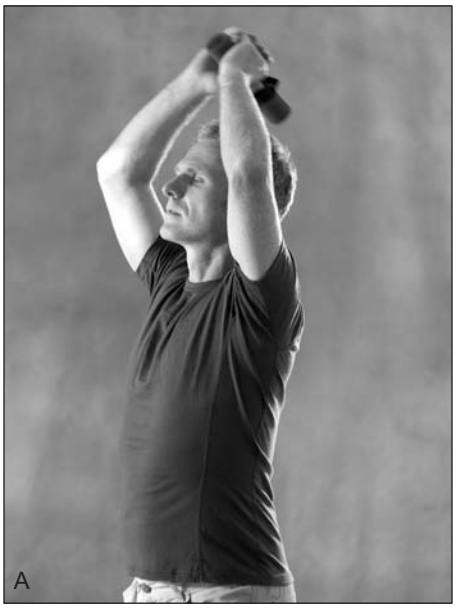




Figure 5: Training example – The Flying Sword. (A) Tension the bow: the preparatory counter-movement (pre-stretch) initiates the elastic-dynamic spring in an anterior and inferior direction. Free weights can also be used. (B) To return to an upright position, the 'catapulting back fascia' is loaded as the upper body is briefly bounced dynamically downwards followed by an elastic swing back up. The attention of the person doing the exercise should be on the optimal timing and calibration of the movement in order to create the smoothest possible movement.



Figure 6: Training example – Elastic Wall Bounces. Imitating the soft, elastic bounces of a gazelle's movement is explored in standing and bouncing off a wall. Proper pre-tension in the whole body will avoid any collapsing into a 'banana posture.' It is imperative to make the least amount of sound and avoid any abrupt movement. A progression into further load increases can occur only with the mastery of these qualities; e.g., bouncing off a table or window sill instead of a wall can eventually be explored by stronger individuals. The person shown in Figure 6 should not yet be permitted to progress to higher loads, as his neck and shoulder region already show slight compression as seen in (A).

dynamic stretching can positively influence the architecture of the connective tissue, as connective tissues becomes more elastic when this type of stretching is correctly performed.[19]

Before using fast, dynamic stretching, one should first warm up the muscles and connective tissues and avoid jerking or abrupt movements. Each turn should have a sinusoidal shape to the deceleration and acceleration so that motions are both smooth and 'elegant.' Fast, dynamic stretching has even more effect on the fascia when combined with a preparatory countermovement as was previously described by Fukashiro et al.[20] For example, when stretching the hip flexors, we suggest introducing a brief backward movement before dynamically lengthening and stretching forward.

In contrast to the bouncing movement of fast dynamic stretching, slow dynamic stretches engage multidirectional movements with slight changes in angle. This engagement is not done by passively waiting, as in a classical, lengthening hatha yoga pose, or in a conventional isolated muscle stretch. Instead, these movements might include sideways or diagonal movement variations, as well as spiraling rotations (see Figure 7). With slow, dynamic stretches, large areas of the fascial network are involved simultaneously. Instead of stretching isolated muscle groups, slow, dynamic stretches target body movements that engage the longest possible myofascial chains.[21]



Figure 7: Training example – Big Cat Stretch. (A) This is a slow stretching movement of the long posterior chain, from the fingertips to the sit bones, from the coccyx to the top of the head and to the heels. The movement goes in opposing directions at the same time – think of a cat stretching its long body. By changing the angle slightly, different aspects of the fascial web are addressed with slow and steady movements. (B) In the next step, we rotate and lengthen the pelvis or chest towards one side (here shown with the pelvis starting to rotate to the right). The intensity of the feeling of stretch on that entire side of the body is then gently reversed. Afterwards note the feeling of increased length.



Figure 8: Training example – Octopus. With the image of an octopus tentacle in mind, a multitude of extensional movements through the whole leg are explored in slow motion. Through creative changes in muscular activation patterns, tensional fascial proprioception is activated. This goes along with a deep myofascial stimulation that aims to reach not only the fascial envelopes but also into the septa between muscles. While avoiding any jerky movement quality, the action of these tentacle-like micromovements leads to a feeling of flowing strength in the leg.

### *4. Proprioceptive Refinement*

We maintain that proprioception – the ability to sense one's own body in posture and movement – should not be neglected in the practice of Fascial Fitness. Babies who are not stimulated properly, caressed, carried, rocked, etc., will be retarded in their motor and mental development. It is surprising to note that the former classical proprioceptive receptors, located in joint capsules and associated ligaments, have been shown to be of lesser importance for everyday proprioception since they are usually stimulated only at extreme joint ranges and less during physiological motions.[22] On the contrary, proprioceptive nerve endings located in the more superficial layers are a better target for proprioceptive attention, as in this area even small angular joint movements lead to relatively distinct shearing motions. Recent findings indicate that the superficial fascial layers of the body are, in fact, more densely populated with mechanoreceptive nerve endings than tissue situated more internally.[23]

We therefore suggest focusing our perceptual refinement efforts on producing shearing, gliding, and tensioning motions in superficial fascial membranes. During our proprioception refinement exercises, it is important to limit the filtering function of the reticular formation as it can markedly restrict the transfer of sensations from movements that are repetitive and predictable. To prevent such a sensory dampening, the idea of variation, creative combination, and surprise becomes crucial: a shift in rhythm from vibration to bounce; a change in timing from slow to fast motions; or a variation in the range of motion from long stretches to subtle micromovements (see Figure 8). Another approach is for the stimulations to play with unfamiliar positions in the gravitational field: moving on all fours, hanging upside down from a chair, or stretching front to back against a wall.

### *5. Hydration and Renewal*

The video recordings of live fascia, *Strolling Under the Skin*, by Dr Jean-Claude Guimberteau have helped our understanding of the plasticity and changing elasticity of the fascia based on its affinity to water. An essential basic principle of these exercises is the understanding that the fascial tissue is predominantly made up of both free-moving and bound

water molecules. During the strain of stretching, the water is pushed out of the more stressed zones, as if squeezing a sponge.[24] During the release that follows, this area again fills with fresh fluid which comes from surrounding tissue, as well as from the lymphatic and vascular networks. The sponge-like connective tissue can lack adequate hydration at neglected or strained areas. The goal of these exercises is to have the drained areas in the body improve their hydration and encourage the flow of fluids.

Therefore, proper timing of individual loading and release phases is important. It is now recommended in modern running training to frequently interrupt the run with short walking intervals.[25] From the fascial point of view this makes sense – under strain fluid is pressed out of the fascial tissues causing a less optimal functioning as their elastic and springy resilience slowly decreases. During the short walking breaks the tissues rehydrate, taking up nourishing fluid. For an average beginning runner, for example, the authors recommend walking pauses of one to three minutes every ten minutes. More advanced runners with more developed body awareness can adjust the optimal timing and duration of these breaks based on the presence (or lack) of that youthful and dynamic rebound – if the running movement begins to feel and look more dampened and less springy, it is likely time for a short pause. Similarly, if after a brief walking break there is a noticeable return of that gazelle-like rebound, then the rest period was adequate.

This cyclic training, with periods of more intense effort interspersed with purposeful breaks, is recommended in all facets of fascial training. The person training then learns to pay attention to the dynamic properties of their fascial 'bodysuit' while exercising, and to adjust the exercises based on this new body awareness. This also carries over to an increased 'fascial embodiment' in everyday life. Preliminary anecdotal reports also indicate that fascia-oriented training may help prevent overuse injuries in connective tissue.

### *6. Sustainability: The Power of a Thousand Tiny Steps*

An additional aspect of fascial training is the concept of long-term renewal of the fascial network. In contrast to muscular strength training in which big gains occur early on and then a plateau is quickly reached with only very small gains thereafter, fascia changes more slowly, but the results are more long-lasting. Individuals can work without a great deal of strain so that consistent and regular training pays off. When training the fascia, improvements in the first few weeks may be small and less obvious on the outside; however, improvements have a lasting cumulative effect which, after years, can be expected to result in marked improvements in the strength and elasticity of the global fascial net.[26]

We therefore suggest that fascia-oriented training be consistent, and that only a few minutes of appropriate exercises, performed once or twice per week, is sufficient for collagen remodeling (see Figure 9). The related renewal process will take between six months to two years and will yield a lithe, flexible, and resilient collagen matrix. For a sincere yoga or martial arts student, the focus on long-term practice is nothing new. For newcomers who are getting into physical training, such knowledge of modern fascial research can go a long way in convincing them to train their connective tissues. Of course, Fascial Fitness training should not replace muscular strength work, cardiovascular training, and coordination exercises; instead it should be thought of as an important addition to a comprehensive training program.

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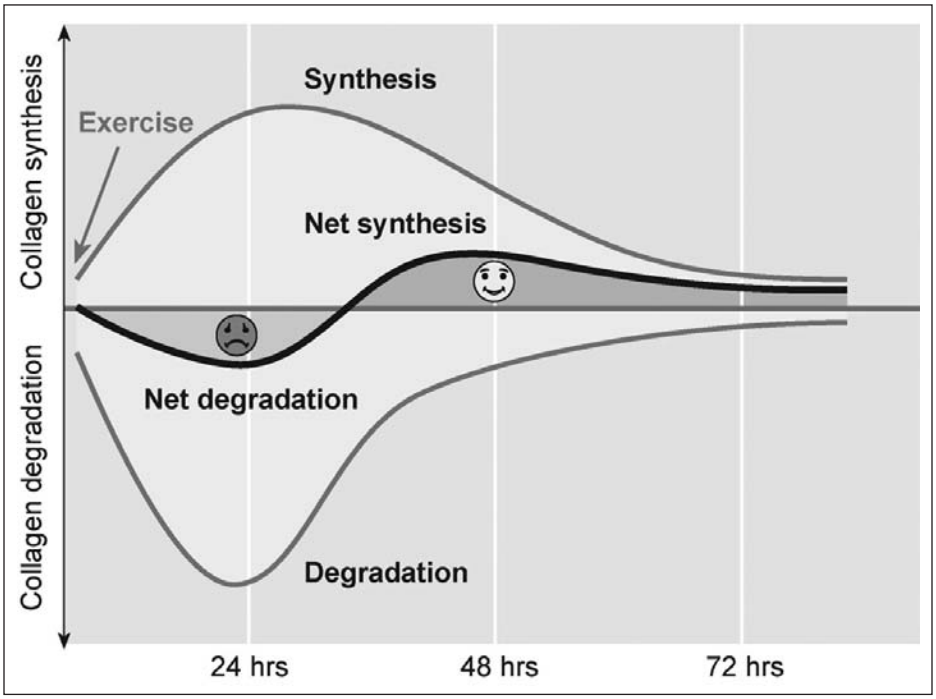


Figure 9: Collagen turnover after exercise. The upper curve shows collagen synthesis in tendons increasing after exercise. However, the stimulated fibroblasts also increase their rate of collagen degradation. Interestingly, during the first one to two days following exercise, collagen degradation outweighs collagen synthesis, whereas afterwards this situation is reversed. Therefore, to increase tendon strength, the proposed Fascial Fitness training suggests appropriate tissue stimulation one to two times per week only. While the increased tendon strength is not achieved by an increase in tendon diameter, recent examinations by Kjaer et al. (2009) indicates that it is probably the result of altered cross-link formations between collagen fibers. (Illustration modified after Magnusson et al.[27])

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# Rolfing® SI and CrossFit

**By Jim Pascucci, Certified Advanced Rolfer™**

The human body is a wonderful organism that is able to adapt to structural challenges. In fact, structural challenge is required for the body to be at its maximum potential. If we don't load and stress bone it will lose strength and mass. The same holds true for tendons, ligaments, and the nervous system. Challenges to the body's structure are characterized by a broad spectrum of force/velocity, from low force/velocity (e.g., slouching at the computer) to high force/velocity (e.g., a car accident). A body's ability to adapt to structural challenges is a measure of its ability to survive.

Hans Selye developed what he called the general adaptation syndrome (GAS) in 1936. (He was the first to use the term 'stress.') In the general adaptation syndrome, Selye explained that the body has three stages of coping to stressors: 1) the *alarm reaction* that prepares it for fight or flight – no organism can sustain this excited state for long so it passes into the second stage; 2) *resistance*, where a resistance/adaptation to the stress is created; and 3) if the stressor is long-lasting, *exhaustion or breakdown*, is entered.

I use an analogy of a checking account to talk with my clients about adaptive capacity. Each of us is born with a genetic ability to adapt (the checking account), and as we move through life we write checks against this account. When we fall – e.g., while learning to walk or ride a bike, or playing sports – we make withdrawals.

We can put funds into the account through exercising and doing things like yoga or Pilates. When we run out of funds in the adaptive-capacity account, the check bounces. This can result in an injury or a cascade of aches and pains. It's easy for us to see the big 'checks' we write, but we also write checks against the adaptive capacity account that are much smaller, which cumulatively draw the account down, also resulting in aches and pains.

Rolfing Structural Integration (SI) returns adaptive capacity to a body through the removal of fascial restrictions and an increase in suppleness and range of motion. It deposits more 'funds' in the adaptive-capacity account. But at the same time, our clients are writing small checks against it. Have you ever wondered how a one-hour-plus Rolfing session can possibly overcome the hours of poor postural patterns our clients spend outside of our practice? (Of course we can offer them functional movement education to use during the week, but I question the client's compliance with this.)

## Why Work is Important

While Dr. Rolf recognized that gravity was a constant in the life of humans, there was another constant that we recognize nowadays by its absence: work. During Rolf's lifetime, people worked more than they do today. The work I'm talking about isn't the process of creating something: it's the physical act of applying a force across a distance (work = force x distance). The force here is the weight of the human body. In contrast to the past, more people today have occupations that require sitting, frequently in front of a computer, requiring little physical effort. The adaptation to this new work paradigm is a body pattern that is energetically efficient for sitting for hours looking at a screen. Since millions of people around the world have adapted to sitting in front of computers with the same postural pattern I can only surmise that it must be an energetically efficient one, in response to the dominant stimulus/stressor to their body (GAS). (Another interesting adaptation is the need for eyeglasses in young children.)

I spent years leading engineering teams in the ergonomic design of work spaces, yet we still adapt to sitting in front of the computer with the same postural patterns, even with the expensive chairs and lumbar and foot supports and swivel computer screens. Creating more comfortable workspaces to sit in certainly does not stop the adaptation. What's missing? It's not simply work that's missing. People go to the gym, yoga classes, and Pilates studios and do work. What's missing is work with a biological imperative to change that provides a strong enough stressor to counter the hours of sitting. Interestingly, I have found that CrossFit training provides these stressors with some very simple techniques.

## What is CrossFit?

CrossFit is a fitness system that has its base the following idea: *constantly varying functional movements done at high intensity creates the greatest adaptation in its athletes*. The exercise selection for the CrossFit workouts comes from three disciplines: gymnastics, cardio (termed monostructural or metcon in CrossFit), and weight lifting (both Olympic and power lifting). CrossFit uses ten criteria to measure fitness: cardiovascular/respiratory endurance, stamina, strength, speed, flexibility, power, coordination, agility, balance, and accuracy. The results: the lean body of a gymnast with the strength and speed of an Olympic weightlifter.

The CrossFit prescription of constant variation is in direct response to a body's need to be able to adapt to the unknown and unknowable stimulus that life presents. Any one CrossFit workout is rarely repeated in the same year unless it's for comparison, and since the workouts are constantly changing they do not allow for the negative aspects of the second stage of GAS to occur.

The functional movements used are those that move from the core to the extremities, require the use of multiple joints and precise neuromuscular control, and use the entire fascial system. Isolation exercises like bicep curls or lat pulldowns are not found in CrossFit since they do not meet the requirement of functional movements. The high intensity is scaled to each individual's capability and provides a strong enough stimulus to exact a bodily adaptation while avoiding the third stage of breakdown. The group nature of a CrossFit class, as well as the recording of the result of the workout, combines to provide another stimulus, *comparison*. Whether comparison with ourselves from a previous workout or with our classmates, this creates the desire to work harder the next time.

## Can CrossFit Help Our Clients?

The first evidence I had that a CrossFit-like exercise routine may be beneficial to my Rolfing clients came in May 2009. It was then that I noticed that my teenage son's posture was changing for the better. He was stronger, more supple, and able to easily stay on his 'Line.' He had been doing CrossFit for almost a year by then and started a CrossFit club at his high school.

I started doing CrossFit under my son's coaching, and when he went away to college I joined a CrossFit gym. In December of 2009 my wife commented that she could see a big difference in me. Since I was doing CrossFit, my 'posture' was better! (Not something a Rolfer wants to be told is the effect of something other than Rolfing SI.) Three months later, after my wife started CrossFit, I noticed that her pronounced 'computer posture' was resolving and she was able to hold her Line.

Yet, this wasn't the case for the other people I met in the CrossFit world. In fact, CrossFit did not seem to change posture in people who came to it with embedded body patterns, whether that pattern was from sitting at a computer or bodybuilding. People got stronger and suppler, but their old patterns were still quite evident. What I realized was that the three data points I had for CrossFit's benefit to posture – all in my family – were bodies who had undergone Rolfing sessions. This inspired me to do a study in which I took seven CrossFit athletes who had not received SI treatments previously through the initial three sessions of a Rolfing Ten Series. (Ironically while I will switch up sessions in my Ten Series, these were in strict 'Recipe' order to more closely mimic the Rolfing process. The results, which I wrote up for a forthcoming article for the *CrossFit Journal*, were interesting but inconclusive.

In March 2011 I opened my own CrossFit School, and a number of my Rolfing SI clients signed on to train with us, as they were definitely impressed with the changes they saw in me. I noticed that the clients who had been through the Ten Series with me were exhibiting a postural change that was not displayed by those who were more of the "fix-it"-type client. The CrossFit clients who had not received Rolfing SI treatments did not show a real postural benefit, ease, Line, although they do show greater range of motion, strength, etc.

This led me to develop a model to account for what I was seeing (see Figure 1). The two left quadrants of the model represent the typical pre-Rolfing client, who has tissue restrictions that we Rolfers are well-trained to help them resolve. In the case of clients who are in the lower left quadrant, they are both restricted and do not have the tissue strength (tonus) needed to hold themselves up. They can't maintain their Line, and when faced with the continual demands of life – like sitting in front of a computer – they adapt to the 'computer posture.' With the help of Rolfing SI they move into the lower right quadrant, 'unrestricted/unsupported.' CrossFit type exercise can help these clients get stronger so they can move up into the 'unrestricted/supported' quadrant.

Clients who are in the upper left quadrant are restricted but strong enough to be able to hold themselves when the restrictions are removed; they move into the 'unrestricted/supported' quadrant. These clients may not see much change from the Rolfing experience with regards to posture, but they will experience a benefit in their work capacity and the freedom of movement that Rolfing SI provides. These clients are normally already involved in some type of athletic endeavor: weightlifting, or sport that requires the generation of power. However, the exercise may not be functional in nature.

The test for whether the exercise workout will cause an adaptive change is summed up by these three questions

1. Are the movements functional, requiring the use of multiple joints and fascial planes?
2. Are they varied in the movements required, requiring the nervous system to learn?
3. Are they intense relative to the person's current fitness level, requiring tissue adaptation and nervous system adaptation?

If the answer to any of these questions is no, then the workout will not cause positive long-term adaptation.

We often have people come in to try CrossFit who consider themselves to be in very good condition: runners, cyclists, even triathletes. They are amazed when we suggest a scaling of the intensity of the workout for them and then grateful that we did. Their difficulty with the workout comes in two physiological areas – absolute strength and, amazingly, cardio-respiratory endurance – as well as in an increase in intensity that long, slow distance does not prepare them for. But it is exactly this intensity that sets up the need for the body to adapt.

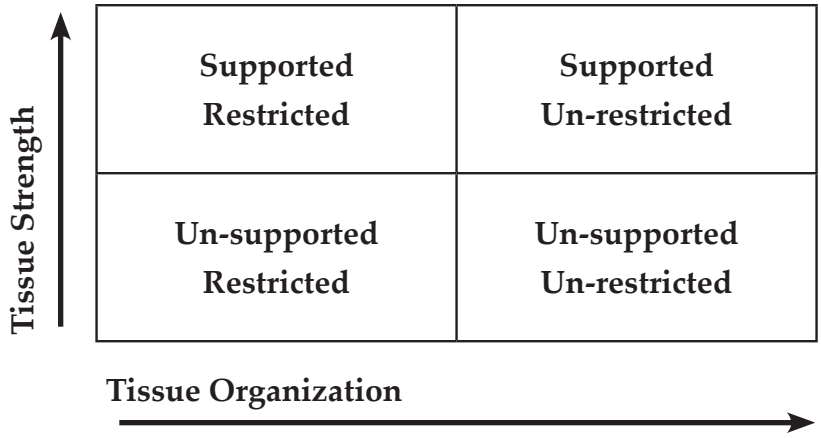


Figure 1: A model for client evaluation.

If you're finding that your clients are not able to win in their battle with time in a sitting position, they may benefit from functional fitness like CrossFit.

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# S-T-R-E-T-C-H-I-N-G

**By Michael Reams, Certified Advanced Rolfer™**

*"Common wisdom is generally neither common nor wise."*

John Kenneth Galbraith[1]

*"Justifying improved practice on scientific evidence is a dynamic process. With new evidence, the foundation will change…. Be prepared to challenge current thoughts and rethink currently accepted practices."*

Stuart McGill[2]

"Stretch before workout/competing . . . Stretch after workout . . . Stretch between sets . . . Stretching is the best workout and you don't need to do anything else . . . Stretch as soon as you get up in the morning . . . Sit-ups over a ball are best for your abs and back . . . "Flatten that lumbar spine" . . . and the list goes on. Many of these suggestions are part of a gym/training mythology, and frequently have either a thin or completely non-existent scientific basis.

Over the past several years, there has been an increasing level of controversy regarding stretching and its role in health, athletics, rehabilitation, and back health. A survey of the mountainous volume of information being purveyed in books, training manuals, gym/fitness facilities, in magazines, and on the web is amazing and frequently conflicting. As a coach, trainer, or Rolfer, in whatever capacity you deal with people and their physical process, the bottom line always is to do no harm. The following is a presentation of what I have learned in the process of exploring stretching and flexibility in my practice and trying to maintain a scientific basis, the most up-to-date information available.

To provide a common language and understanding of the following information, a few definitions are in order:

**Flexibility:** "A primary function of muscles is to create tension and produce force for movement of the body's skeleton system. The intrinsic property of muscles and joints to go through a full or optimal range of motion is referred to as flexibility."[3]

**Static Flexibility** "is the range of possible movement about a joint and its surrounding muscles during a passive movement. Static flexibility requires no voluntary muscular activity."[4]

**Mobility/Dynamic Flexibility:** The ability to move joints through a range of motion during active movement with strength as a key component requiring voluntary muscle activity.

**Core:** According to Core Therapeutics in Bellingham, WA, "the core is way more than abs, it is any three-dimensional intersection across the spine at any level, in all directions." Some coaches and trainers note that many of the common definitions of "core" continue the misconception that the body segments are separate and can/should be trained separately. This segment of the training community generally agrees that the "core" is continuous from the soles of the feet to the top of the head and ends of the fingers.

The controversial issues with flexibility/stretching include injury avoidance, muscle soreness prevention, muscular strength training, performance improvement, and reduction or prevention of low back pain. With the volume of studies conducted in these areas over the past several years, I have made an effort to review academic/scientific literature to provide an overview of both general and view-specific peer-reviewed articles. In some cases I have drawn directly from published information.

## Injury Prevention

The Australian Military did some of the first studies regarding stretching and injury prevention.[5] While there are some noted flaws in the study, the results surprised the training world. Stretching prior to training did not reduce or prevent injuries. This prompted additional inquiries that also tried to correct for the errors in the initial studies. Rather than studying the limited profile provided by military recruits, the studies expanded to both recreational and elite athletes and includes a much broader age range. In another randomized, controlled trial, Dutch scientists found that warming up and stretching did not reduce the risk of injury in 421 recreational runners. During the sixteen-week study, there were 5.5 injuries per 1,000 hours of running in those who stretched before exercise, and 4.9 injuries per 1,000 hours of running in those who did not stretch before exercise.[6]

The summary of all of these studies concludes: pre-exercise stretching does not prevent injury in competitive or recreational athletes. There are some areas that warrant further investigation. Some propose that pre-exercise stretching causes an alteration in joint connective tissue to extend appropriately in response to applied pressure. It has been suggested that stretching might prevent injuries in sport involving jumping and bouncing, such as soccer and basketball. This would seem to be the case if 'stretchy' muscle were better able to absorb energy. However, it has in fact been shown that less force is required to rupture 'stretchy' muscle than 'stiff' muscle.[7] Pavel Tsatsouline has also proposed that when there is a difference between the active range of motion (mobility) and the passive range of motion, that can be where injuries occur, that is, as the person moves from the active range of motion to the passive range of motion during a maximal effort. Think of the 100-meter runner who, in the extra effort of competition, extends the driving leg from the strength range into the passive range which is not strong enough for the power load, then tears a hamstring.

## Performance

"The relationship between static and dynamic ROM is unresolved; therefore, the direct transfer between measures of static flexibility and sport performance cannot be determined."[8] From the National Strength and Conditioning Association's text *The Essentials of Strength Training and Conditioning* comes the following summary of stretching during warm-up: "There is little, if any evidence that stretching pre or post participation prevents injury or subsequent muscle soreness . . . static stretching can compromise muscle performance."[9] Although some studies demonstrated that static stretching had no effect on subsequent performance, static stretching has been shown to lead to a decrease in force production, power performance, running speed, reaction and movement time, and strength endurance. Additionally, both proprioceptive neuromuscular facilitation (PNF) stretching and ballistic stretching have been shown to be detrimental to subsequent performance. Dynamic stretching, however, does not seem to elicit the performance-reduction effects of static and PNF stretching and has been shown to improve subsequent running performance.[10] A recent study, of elite rhythmic gymnasts found that while vertical-jump flight time was not affected by static stretching, the ground-contact time of the hopping test was significantly increased.[11] Also, static stretching significantly reduced the flight time of the technical leap. Since flight time was the main predictor of scores of the three technical leaps, static stretching significantly reduced the scores awarded by the judges. "This study suggests that SS (static stretching) before leaping performance may negatively affect rhythmic gymnastics judges' evaluation."[12]

The studies regarding stretching before a performance requiring strength demonstrate a strength reduction of 4.5% to as much as 28%. "Remember that high performance is not a stretching contest. Mobility is a requirement, but loose joints without precisely controlled strength are unstable. This decreases performance and increases the risk of subsequent injury."[13] A study of soccer players comparing static stretching with an active warm-up and active warm-up with dynamic stretching demonstrated that sprint and agility times were significantly slower with static stretching. The conclusion of the report is: "We recommend for optimal performance, specific dynamic stretches be employed as part of a warm-up, rather than the traditional static stretches."[14,15] A reduction in strength or performance is clearly not what most people are looking for be they athlete, laborer, or weekend gardener.

## Why is Pre-exercise Stretching Detrimental to Performance?

Two mechanisms may explain why pre-exercise stretching is detrimental to performance. Firstly, stretching damages the contractile proteins in skeletal muscle. Secondly, stretching reduces one's ability to recruit skeletal muscle.

"Skeletal muscle contains thick filaments and thin filaments that are connected by cross-bridges. When a nerve signal reaches

the muscles, the thin filaments slide over the thick filaments. However, movement cannot occur if the cross-bridges between the filaments are broken. Indeed, animal studies have shown that force production is reduced when muscle filaments are stretched beyond overlap. Animal studies have also shown that cross-bridges are broken when muscle is stretched only 20% beyond its resting length. In humans, there is evidence of muscle damage hours after a bout of stretching, which has led scientists to conclude that stretching causes delayed-onset muscle soreness.

The nerve signals that initiate muscle contraction are electrical in nature. Thus, electrodes can be used to monitor muscle activity. In humans, such studies have shown that muscle activity and force production are reduced after stretching. These findings suggest that stretching produces some kind of neural inhibition that is detrimental to performance. This hypothesis is supported by a study showing that balance and reaction time are also impaired after static stretching."[16]

Additionally, other hypotheses can be found to explain the reduction in muscle strength when preceded by stretching exercises. Avela et al. found a decrease in the sensitivity of muscle spindles, leading to a reduction in the activity of the large-diameter afferents, along with alpha motor neuron inhibition produced by Type III and IV joint receptors, which decreased by 23.2% the MVC (maximum voluntary contraction) in triceps surae muscle. Changes in the visco-elastic properties of the muscle-tendinous unit reduce passive tension and stiffness. Because one of the roles of the tendon is to transfer the force produced by the skeletal musculature to bones and joints, a less stiff muscle-tendinous unit will transfer the changes in the musculature less effectively. Such visco-elastic alterations may place the contractile elements in a less favorable position regarding the force output in the length-tension relationship and force-velocity curves, which results in a delay of the transmission of force from the muscle to the skeletal system. The study concludes with: "Strength and conditioning professionals may want to consider avoiding PNF stretching before activities requiring local muscular endurance performance."[17]

Dr. Ben Benjamin presents another explanation regarding why long periods of static stretching (sixty seconds), contrary to popular opinion, are problematic and do not yield the expected results.[18] He states that "prolonged stretching initiates the myotatic reflex (commonly referred to as the stretch reflex) – a defensive mechanism that is designed to prevent muscles from stretching too far. In response, the muscle reflexively contracts, which is the opposite of what you want to happen. Static stretching also decreases blood flow within the tissue and leads to a buildup of waste products, such as lactic acid, that contribute to muscle fatigue and soreness. As a result, the tendons and ligaments may get stretched more than the muscles, which can lead to tendon irritation or injury and even ligament laxity, thus predispose [sic] the structures to future injury." While there are many theories regarding the rising increase in ACL injuries in young female soccer players, the static stretching of the hamstrings, a major stabilizer of the ACL, prior to practice or a game may be a major contributor. Also indicated in ACL injuries is a lack of connection, stability and strength between the upper body and lower body, which, when added to an already weakened hamstring increases the risk of ACL injuries.[19]

An important lesson from the previous two sections for Rolfers to consider is how to maintain the health of their shoulder girdles. Solely stretching the shoulder girdle will most likely on a long-term basis increase shoulder problems and decrease one's occupational longevity. Building strength through ranges of motion and developing a strong, balanced shoulder girdle will provide better shoulder health and longevity. Exercises such as kettlebell overhead presses, arm bars, and high bridge Turkish get ups will provide strength and range of motion.

## Stretching/Strengthening the Low Back

The following information comes directly from the publications of Stuart McGill, Ph.D., University of Waterloo, Ontario, who is one of the world's leading researchers of spinal mechanics and spinal health. McGill gives seminars worldwide and has had significant impact on industrial/labor standards for back health as well as rehabilitation and corrective exercise programs. To get the complete understanding of his perspective and research regarding back disorders I encourage you to read his material and, if possible, attend one of his seminars. I have found his information and perspectives helpful in my practice as both a Rolfer and a strength coach.

"..the intervertebral discs are highly hydrated upon rising from bed; the annulus is subjected to much higher stresses during bending under these conditions. The end plates fail at lower compressive loads as well. Thus, performing the spine-bending maneuvers at this time of day is unwise. Because the discs generally lose 90% of the fluid they will lose over the course of a day within the first hour after rising from bed, we suggest simply avoiding this period for exercise (that is bending exercise) either for rehabilitation or performance training.[20]

In addition, Dr. McGill goes on to explain:

> Name a study that has shown that working to increase back flexibility has increased performance. I have not been able to find one despite people calling this so. Studies of weightlifters have shown those with more flexibility tend to be the better performers but this is specific to the shoulders and hips – not the back. Power, as in most sports, comes form the hips and legs, not the back. Cross-sectional studies of some team sports have shown that the higher performing athletes are, in many cases, the "tighter" ones! For example, despite the widely held notion that many athletes should be lengthening hamstrings, it is curious that the better performers (such as basketballers) appear to be the ones with 'tight' hamstrings. They are "wound like springs" and take full advantage of this. Further, hamstrings contribute shearing stability to the knee such that lengthening them has been reported to be associated with elevated disruption of the anterior cruciate ligament. No wonder the bulk of the literature has shown no link between hamstring tightness and back pain, either current pain or predicting future pain.[21]

Dr. McGill goes on to explain that back flexibility training is prescriptive on an individual basis but is not the general prescriptive requirement to rehabilitate a bad back nor to maintain good back health. "But, strength endurance training is necessary for both rehabilitation and healthy back maintenance."[22]

In conclusion, the commonly assumed wisdom and perception of stretching as a panacea for pain and injury reduction, back health issue, and performance improvement, does not meet scientific reality. Dynamic warm-ups and strength building using ranges of motion, as well as whole body exercises that connect and work through the whole body to develop mobility and functional ranges of motion, will substantially contribute to function, performance and injury reduction.

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# Rolfing® SI with a Twist

## *Yoga Positioning for Advanced Sessions*

**By Karin Edwards Wagner, Certified Rolfer™**

## Introduction

In the classic Rolfing® Structural Integration (SI) Ten Series, practitioners work with clients in set positions – supine, sidelying, prone, and seated – as prescribed by the 'Recipe.' In the original advanced series, there were again set positions (e.g., 'Inverted A,' 'C Curl,' and 'Z Position') designed to support the goals of the particular session. It's also possible to work with clients in other positions – in this case, positions inspired by yoga *asanas* – to accomplish advanced goals. These goals include support, adaptability, span and spaciousness (i.e. palintonicity), balance, and perception.

Often, the full asana is too complex or too challenging to allow me to do my work. By deconstructing the pose, I can address one aspect of it at a time. Reducing the challenge level of the pose also creates softness in the body so that my client can better receive work in the area in question. An electric lift table that goes through a large range of heights is a very helpful tool. Versatile table height allows me to support my client in a partial version of the asana. If you don't have an electric lift table, it's possible to improvise using props and pillows.

This approach works well for guiding sessions eight through ten and also for 'post-Ten' work. As session eight approaches, I ask clients who practice yoga to reflect on their yoga practice to identify several poses

Figure 1: Supta Vajrasana (Reclining Hero pose) down to hands.

Figure 2: Supta Vajrasana (Reclining Hero pose) down to elbows (with a sidebend).

Figure 3: Supta Vajrasana (Reclining Hero pose) all the way down to table.

Figure 4: Supta Vajrasana (Reclining Hero pose) supported, to avoid full knee flexion.

that seem to highlight challenges in their bodies. Perhaps a client enjoys forward-bending but backbends are difficult; or in one-sided poses, such as a twist or a lunge, the asana may be easier on the left or the right; or maybe the client secretly dreads a certain pose when it comes up in a yoga class. Disliking a pose is a good clue that a client could benefit from some targeted work.

Having some knowledge of yoga poses – and of correct positioning for each pose – is helpful but not required. If your client mentions a pose that isn't familiar to you, simply ask him to demonstrate it. Likely, your eye will be able to discern what his body needs for that pose, even if you don't know exactly what adjustments a yoga teacher would suggest.

## Supta Vajrasana

Let's start with three positions that will be useful for many clients, not just yoga practitioners. The first is an excellent quad stretch called Supta Vajrasana, or Reclining Hero (also known by the fun nickname Sleeping Thunderbolt). Starting from sitting in Hero pose with heels under the hips, this pose involves leaning back until the hands are on the table (see Figure 1), then down to the elbows (see Figure 2), and finally, all the way to the table if possible (see Figure 3). This pose stretches both ends of the rectus femoris, and has the additional benefit of using gravity to allow the client to surrender deeply into the stretch. It stretches the superficial abdominal muscles as well as the psoas. We can do fascial work on these areas in this stretched position. For those who cannot sit in Hero pose, place a pad under the ankles or under the thighs to approximate the position (Figure 1). If the knees do not tolerate full flexion, first engage the top of the feet on the ground and then have the client go back only as far as is comfortable. If the hips cannot reach the heels, the client can try sitting in front of your table or a couch, so she can lean back onto the cushions and rest (see Figure 4). For those who can do some semblance of the pose, a gentle sidebend can be added to stretch into different lines of the quadriceps muscles (see Figure 2). Any of these options can be done as a stretch or as a position for fascial work on the front line of the body, as shown in the images.

Figure 5: Ardha Uttanasana.

## Ardha Uttanasana

The second of our first three basic poses opens the back line of the body. This pose frees the hamstrings from the pelvis using Ardha Uttanasana, the half forward-hinge (see Figure 5). If you have an electric lift table, adjust the table to the right height to support the client's upper body as she hinges from the femoral-acetabular joint. Pad with pillows as necessary to prevent the spine from bending. Address hamstrings (especially at their attachment to the sit bones) and gluteus maximus muscles, as well as any strain through the knees and calves. Think of it as an advanced version of session six. Working 'layer by layer' can be very useful, as the cluneal nerves that innervate the skin are quite superficial but can be an important source of movement restrictions or discomfort in the region of the sacroiliac joints.

## Sidelying Spinal Twist

The third basic pose is working in a spinal twist to optimize free movement at each segment (see Figure 6). Before doing any spinal rotation, it's important to start by grounding the femurs and lengthening the entire spine. To start from sidelying, ensure that the hips stay stacked as the spine and shoulders twist toward a supine position. Note where the body doesn't twist well and locate threads of fascia that are preventing

Figure 6: Spinal twist in sidelying position.

free movement in those areas. Imagine helping to create lift and length through the torso as you work, rather than only increasing rotation. We can also work in a seated twist (not pictured) with the client's hands on the table to help him lengthen the spine as he twists.

## Gomukhasana

Now we will look at some more demanding poses, including a shoulder opener, a hip opener, and a balance pose. One pose that requires flexible shoulders is Gomukhasana, or Cow's Face pose (see Figure 7). The hands are clasped behind the back with one arm up over the shoulder and one arm wrapped across the back. Typically, this pose is much easier for the client on one side or the other. The upper arm is in extreme external rotation while the lower arm is in extreme internal rotation. Each scapula needs to relate appropriately to the back. I find that medial rotation is usually the limiting factor for this pose. It's useful to assess whether the humerus is able to medially rotate in the glenoid fossa, as well as whether it can nest into the posterior aspect of the joint as Gomukhasana requires. If you want to try this pose in the supine position (not pictured), hold the client's elbow in line with the shoulder, with her hand up toward the ceiling, passively moving through lateral rotation and medial rotation (to the point where the shoulder starts getting pulled along). In this case, the asana gives a clue in looking at humerus motion, but the actual work is easier to do supine, using the sitting asana to retest. Finally, some touch-up work can be done in the pose to help ease any bits of fascia that need to lengthen to allow the full position. Not only should the shoulders be more comfortable, but also the breath should be full and easy in this asana when done correctly.

Figure 7: Gomukhasana (Cow's Face pose).

## Eka Pada Raja Kapotasana

One of the best poses for improving flexibility in the hips is Pigeon pose, or Eka Pada Raja Kapotasana (see Figure 8). For positioning during a session, it's helpful to isolate the front leg's action. The client stands facing the table, one leg resting on the table with knee bent. Fascial work to free the hip rotators and gluteal muscles will make the biomechanics of this position easier. Resting my elbow into the crease of the hip helps the client feel how to settle deeper into this pose. The back half of Pigeon pose is primarily a stretch for rectus femoris and perhaps psoas, so it could be useful to first address these as described previously. If your client would like to work toward lifting the foot up to grasp with the hands, it can be useful to isolate the back leg (see Figure 9). The client stands with the table immediately behind her, one knee on the table as I raise the table to the appropriate height. Grasping the foot may be easier in this half position than in the full Pigeon pose. This version bears some similarity to Natarajasana, Dancer pose.

Figure 8: Eka Pada Raja Kapotasana (Pigeon pose) – front half.

Figure 9: Eka Pada Raja Kapotasana (Pigeon pose) – back half, grasping the foot.

Rolfers may recognize that the front half of Pigeon pose looks quite a bit like the front half of the Z Position. I don't work with clients in a full Z Position, but instead with the front and back legs separately. To work with the back half of the Z Position, the client stands just in front of the table with the back leg on the table and the knee bent (see Figure 10). I raise the table to the point of challenge, usually the highest point where the client can stay neutral through the lumbar spine. As the fascial work begins to allow the hip to open, sometimes the table height can be increased.

Figure 10: Back half of the Z Position.

## Virabhadrasana

Balance poses provide a special challenge for doing work while the client is in the pose. We need to be able to contact the client without disturbing his balance, and also we may want to have him in the pose for longer than he can hold it. Using an electric lift table to provide partial support solves both of these issues. For instance, in Virabhadrasana (Warrior III pose), one leg is supporting the body while the other limbs are imitating Superwoman (see Figure 11). If one leg is less stable, I start with that, and use the table to support the body while the leg is still actively engaged on the ground. Tissue work in this pose will be similar to that for the supported forward-bend, again thinking of an advanced session six. If you slide your fingers under the foot, opening the 'eye of the foot' just in front of the heel, this will help the client feel how to rest into the foot's support (see Figure 12). You can ask the client to feel her footprint on the floor, and imagine that the footprint is getting larger.

Figure 11: Virabhadrasana (Warrior III pose, supported by table), working to enhance support in the leg.

Figure 12: Virabhadrasana (Warrior III pose, supported by table), spreading the foot.

## Conclusion

The yoga asana serves as a starting point for innovative positioning. Use these ideas as a place to begin and you will find yourself crafting customized positional strategies to meet your client's specific needs. Whenever a client has a position or a motion that is difficult, we can use kinesiologically based thinking to create a positional strategy that puts some strain in the body to bring out the lines that need to be lengthened. This is useful for endless creative applications: dancers working on Latin hip motion, acrobats learning to do a back walkover, or martial artists who want to be able to kick higher. Creative positioning for sessions can provide the additional challenge needed for an advanced body to shift to the next level of grace and integration.

*Photography: David Wagner.*

*Model: Gianna Piccardo of Balanced Wellness, http://privateyogatherapy.com*

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# The Arches of the Feet, Part 2

## *The Feet and Their Relationship to the Rest of the Body*

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

*Author's Note: Part 1 of this article was published in the June 2011 issue of* Structural Integration: The Journal of the Rolf Institute®. *In it, the arches of the feet and the lower legs were discussed in detail. It is recommended reading as a basis for what follows.*

The feet are part of a living system and, as such, play a role in both cause and effect in the orchestra of the whole body. As, on one hand, they determine much of what happens in the body above them, they are also determined in many ways by the more skywardly-placed parts of the system. When considering the feet, it is not enough to simply think of them in structural terms and look at the static balance that they demonstrate in standing. The feet were made for walking and the structure of the foot is a direct result of the way that weight, propulsion, and movement transfer through it. Thus, to consider the feet without also thinking about movement is to only have half the tools necessary to help the client make a lasting change. And weight transfer through the feet has everything to do with the way that the feet relate to the rest of the body.

There are two qualities of weight transfer, each one being essential in its own way for a healthy, fluid gait. Weight transfer through the sagittal plane, from heel strike to toe-off, propels the body forward in space. The triplanar movement of inversion/eversion happens at the subtalar joint, mostly in the coronal plane. The combination of the sagittal movement from heel to toe and the coronal movement at the subtalar joint is responsible for the transfer of weight from lateral arch at heel strike to medial arch at toe-off. This diagonal movement across the foot shifts the balance from the weight-bearing leg to the leg that is to become the weight-bearing leg and is vital for contralateral movement and balance of abduction and adduction throughout the body.

One of the most important formative factors for the foot is the way that weight transfers through it, and these parameters also affect the rest of the body. In a study with African women[1] (often quoted by Hubert Godard in his tonic function classes), researchers discovered that when these women carried thirty kilos or more on their heads as they walked, they expended far less energy in walking long distances than when they were not carrying this weight. Why was this? The weight of the burden on the woman's head called forth the cervical righting reflex, an activating of the longus colli, which calls the core stability system into action. When the core stabilizing muscles are working, weight transfer through the feet changes and this led to an overall economy of function that was concrete and measurable.

## The Key Relationships of the Feet

In this section, we will examine the feet in relationship to three of the major segments and functions of the body: the general gravity center, the upper gravity center, and the eyes and vestibular system.

### *The Feet and the General Gravity Center*

The general gravity center, also known as simply G, is the center of mass of the whole body and is located in the abdomen slightly below the level of the umbilicus. The relationship of the general gravity center to the feet determines how weight will transfer across the foot in the sagittal plane, from front to back. In the best of all possible worlds, the center of mass passes directly over the center of the foot in the one-legged-stance moment of the gait. However, if the general gravity center is either too anterior or too posterior to Chopart's (midtarsal) joint at heel strike, then the alignment of the center of mass and the center of the foot will not happen, causing a series of alterations throughout the body.

When the general gravity center is too far posterior to Chopart's joint at heel strike,

the client will walk heavy on his heels, and there will be little action of the toes in the push-off phase of the gait. There are many repercussions to this pattern. It can result in heel spurs from too much impact on the calcaneus. The action of the psoas in walking is also closely related to the toe hinge. The reader can notice this effect himself by walking without using his toes and noticing what happens to the psoas – then contrasting and allowing the toe hinge to activate and observing the effect of this on the psoas. When the general gravity center is posterior, the psoas often acts as a tonic muscle, becoming fixed at its distal insertion and mobile at its proximal insertion, to keep the trunk from falling back behind the support of the lower body.

Another effect of having G posterior to the midtarsal joint is that the tibialis anterior begins to work overtime in an effort to lever the upper body forward over the foot. The tibialis anterior, by nature of its insertion on the inferior aspect of the first cuneiform and metarsal, is a supinator of the foot. When it works overtime it holds the foot in supination, which prevents the foot from going into the full triplanar movement of inversion, thus impeding the very vital inversion/eversion dynamic of the foot. When the tibialis anterior is chronically contracted, as happens in this pattern, it will couple with the extensor digitorum longus and the extensor hallucis longus. This leads to the toes being held up. As was explained in Part 1 of the article, when the toes can't find the ground, the metatarsal arch (the 'suction cup') flattens and the vital aspect of support for the push-off phase of the walk and the stability of the subtalar joint gets lost.

The opposite pattern, when G is anterior to Chopart's joint at heel strike, is recognizable by the fact that the client's back heel lifts off before the heel strike of the front foot has time to occur. The person who has G anterior gives the impression of always being on the ball of the foot. In this pattern, there is a chronic contraction of the soleus to keep the body from falling forward across the foot. Once again, this pattern has repercussions throughout the foot and the rest of the body. The soleus is one of the shock absorbers of the leg when jumping and landing and running. When it is in a state of chronic contraction, shock absorption is lost and increased impact results. The soleus also holds the heel in varus pattern (inversion) and prevents the foot from fully softening to palpate and adjust to the ground. The overall dynamic that emerges is one of a certain rigidity in the lower leg and foot. Also, because the heel is less active and less in contact with the ground, the dynamic spiral that occurs through the longitudinal axis of the foot just before toe-off gets lost.

### *The Feet and the Upper Gravity Center*

The upper gravity center – which is a local gravity center for the trunk, head, and arms – is known as G′ (G prime). It sits at about the level of the mid-thoracic junction, in front of the T4-T5 area. G′ is a center, too, of relationship. It moves forward and back in response to our mirroring of and relating to others. When the upper gravity center is in neutral position, it rests over the center of a line that joins the two hip joints. Like the lower gravity center, however, it tends to have a preference for shifting either anterior or posterior of this neutral line as the body prepares to move, and this shift away from neutral will have direct consequences on the feet. The shifting of G′ directly effects the diagonal weight transfer across the foot and the dynamic of inversion and eversion.

How does this happen? When G′ shifts back behind its neutral point, the femurs tend to rotate externally. When G′ shifts forward of neutral, the femurs tend to rotate internally. If you would like to feel this for yourself, it is quite simple to produce the effect. Stand up, leave G′ way behind, and take a little walk – you will feel your femurs rotate externally within the first few steps. Shifting G′ forward will produce the opposite effect – once again, within a few steps you will feel your femurs begin to rotate internally.

When the femurs rotate internally during the swing-through phase of gait, there is a shift towards inversion and internal rotation in the foot. This gives the foot a hoof-like quality because of the rigidity that accompanies exaggerated inversion. On the other hand, when G′ falls behind and the femurs rotate externally, this brings the foot, as well, into external rotation in the swing phase of the gait, which means that when the foot lands, it tends to land in eversion.

The foot, being a highly elastic and adaptable structure, is formed by the way it is used. If it lands in eversion, and the weight transfers through the foot with eversion as the neutral basis for movement, this will tend to produce a foot with eversion preference and eventually with eversion fixations. In the case of the foot with a strong eversion preference, this continual collapse can also lead to a situation where the foot reacts by creating an opposite and compensatory pattern of inversion and rigidity. This is what happens with a client who has the varus foot (high, fixed arches) and, when the client releases his arches, suddenly collapses into the opposite pattern of valgus. This particular version of high, fixed arches is more complex to treat than the true varus foot, because to reach a higher level of balance both patterns must be treated, along with the client's tendency to move with the upper weight center posterior.

### *The Feet and the Eyes and the Vestibular System*

The placement of both lower and upper gravity center has much to do with the functioning of the vestibular system, or more specifically, the otholithic system, the part of the vestibular system that deals with our perception of where we are in in relation to the downward pull of gravity. The otholitic system works with the feet and the eyes to give us our sense of where we are in space and gravity.

The otholithic system can be inhibited by many factors, such as aging, trauma, high-impact accidents, and falls to name a few. When vestibular information gets inhibited, the body reacts in the same way as it does when falling and preparing for impact: the hip and ankle joints flex and brace. It is not uncommon for problems in the hip joint to have, at their root, a less-than-optimally functioning otholithic system. When the sense of the plumb line of gravity suffers, so do hips and feet. As the body feels the unconscious sense of insecurity that comes from a diminished relationship with gravity, both posture and gait change. The head comes forward of the gravity line and steps shorten. This is easily observed in elderly people whose vestibular system has already been damaged by aging. When steps shorten, the full mobility of the foot is no longer used and the many joints of the foot become immobile and eventually fixated.

One factor that affects the otholithic system is the way that we use our eyes. Over-focused vision has been shown to inhibit vestibular information in the vestibular cortex of the brain.[2] In our modern culture, which is fast, goal- and performance-driven and given to many hours in front of small screens (which narrow the visual field), overfocused vision is quickly becoming the normal use of the visual sense.

Peripheral vision and focal vision are processed by different areas of the brain. Peripheral vision perceives context, movement, and the whole, and is processed in the brain stem and subcortical areas. Focal vision perceives detail, narrow focus, and color and is processed in the cortex. Peripheral vision has been called 'postural vision' and been shown to make balance (postural sway) more efficient.[3] The use of the eyes has a direct effect on the foot. The more focal the vision, the more the weight of the body shifts towards the front and medial aspect of the foot. Peripheral vision without focus, on the other hand, brings the weight heelwards and towards the lateral arches. When focal and peripheral vision balance each other, weight tends to distribute throughout the body and the foot more evenly. This effect of vision on the distribution of weight on the feet can be felt quite easily. Find a place to stand where you have the possibility of a wide field of vision. Stand barefoot, to be able to feel your feet on the floor more easily. Pick a point out ahead and focus on it with a very hard focus and notice what happens to the weight on your feet. Then contrast this with what happens when you allow your vision to soften and take in the whole, wide visual field, without focusing on anything in particular.

When focal vision overpowers peripheral vision, vestibular function is inhibited and the effects of this show up throughout the entire body, appearing as patterns of bracing and rigidity in the legs, loss of the gravity line through the head and neck, and changes in gait and stride length. Thus, consideration of the foot must be taken in the context of the larger gravity-orienting tripod (feet, eyes, vestibular system) to which it belongs.

## Conclusion

The foot is a complex and fascinating structure. In the study of the foot, the border between biomechanics and movement quickly becomes meaningless. The foot is formed by the way that it is used, and the way that it is used is a reflection of all the factors that contribute to human movement, from the mechanical and structural level to the psychobiological level. Likewise, the preferences and fixations that appear in the foot have effects throughout the whole body. In this sense, the foot brings us inevitably back to one of Dr. Rolf's statements:

> I'm dealing with problems in the body, where there is never just one cause. I'd like you to have more reality on the circular processes that do not *act* on the body, but that are the body. The body process is not linear, it is circular; always, it is circular. One thing goes awry and its effects go on and on and on and on. A body is a web, connecting everything with everything else.[4]

## Endnotes

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# Rehab Notes, Post-Hallux-Rigidus Surgery

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

## Introduction

I am writing this now in the hope that my own experience with post-cheilectomy-surgery rehabilitation will be helpful for Rolfers working with a client in this situation, or even for themselves. I wrote in an earlier article ("Why I Got Foot Surgery"; June 2011 issue of *Structural Integration: The Journal of the Rolf Institute®*) about some of the elements involved in the decision to have surgery, and the immediate aftermath of the surgery to my left foot. It has, at this writing, been nine months since the procedure.

I had good experiences working with skilled Rolfing® Structural Integration (SI) practitioners familiar with the nerve confusion that appears to be pain but that can go away with gentle and persistent attention in weight-bearing. This meant, after the initial swelling went down, trying to find the left metatarsal-phalangeal (MTP) joint in a sort-of 'freeze-frame' of the toe-off phase of gait. While at first hard to deal with, the pain mostly went away after I realized that there was nothing organically wrong with that position, and that this was the best way to feed nourishing blood to the joint capsules and ligaments there. Motion, as they say, is lotion. I then progressed to

Figure 1: Rock walking to enhance whole-foot adaptability and proprioception, moving all directions: sideways, in a circle, backwards and forwards.

rocking forwards and back through the left-foot-back, toe-off position, paying attention also to the involvement on the right foot and hip. I preferred, at the beginning, to use a piece of foam (a swimming 'noodle' cut length-wise) under the left foot, for padding and proprioceptive reinforcement. I had long enjoyed walking on smooth, one-inch river rocks to stimulate articulate adaptive motion in the foot, too, and spent much time standing on squash balls just in front of the heel to stimulate Chopart's-joint awareness in gait.

## Interosseous Membrane Involvement

Even with this work, things seemed to be improving really slowly. My foot/ankle would feel better, and then tighten up again. I had been walking around and visualizing toe-extension movements, but still feeling like it was just hard to walk. Having decreased toe-hinge range for years had given a fairly stuck feeling in the left interosseous membrane (IO), and a rigid feeling of being unable to yield on the plantar surface in the loading-to-standing phase of gait as well. I was ecstatic to receive deep work from a fellow student at Russell Stolzoff's workshop in Bellingham, Washington: two days later I was jubilantly striding through the Denver airport. The effect of a more released IO felt like a trampoline from my lower leg into the base of my foot, facilitating a 'happy' heel-strike moment in gait – happy because it allowed me a much improved sense of rebound, and also freed up the ankle aspects of plantar flexion. Three and a half months before that I needed to be wheeled through the airport, and had trudged through it several times after that. This time I bounced, and could keep up with the crowd (and even passed a few old people).

## Getting Sagittal

Unfortunately, work was a bit slow this summer in Boulder, but this allowed me some time for a rehabilitative 'stay-cation' in which I invested time and some money in recovering sagittal motion. I bought a hybrid bike that rides like a dream, and it's hard to express the joy that I felt in being able to speed down the lane, my focus expanded in all directions by the huge puffy clouds. I found that exercising the hamstrings, quads, and glutes really gave me more confidence in walking again. I started lifting weights in a little more consistent and targeted way. As a dancer (I almost wrote 'former-dancer,' but that doesn't ring true), I know how to lift and remain flexible, and how to create exercises that demand a greater (as well as functionally useful) range of motion. I realized (again with the help of a colleague's comments) that I was getting much too 'gel' (not tight exactly, just sort of dense), so started swimming again to become more 'sol' (i.e., liquid) in my movements.

Figure 2: Slide foot forward to increase ankle extension/plantar flexion in sagittal plane.

Figures 3 A, B, C and D: Working in a forward lean against a wall, using double and single legs, then integrating spiral and flexion (only one twist direction shown; the other direction is good too).

Now it feels good – just plain good – to feel my foot on the ground again. I believe that much of this is that the chain of movement from the foot to the pelvic floor has been opened, which frees up my breathing and allows joy to rise from my feet, in embodiment, to the top of my head.

## Ongoing Work

I still need to work daily into the foot and ankle, now opting for movements that gently enhance plantar flexion. An example is lying supine and just sliding the foot from a bent-knee position towards leg extension as far as I can keep the toes on the floor. I allow the slight supination/inversion movement, hinging at the axis of Henke, as I know that this gives me maximum range of motion in this direction, and it is perfectly safe to do in an open-chain position. Earlier in my dance career, I would have been concerned about this shape of the foot, which we called 'sickling' (after the farm implement, not a sick person).

I have also been experimenting with more direct stretching of the joint, by really loading the MTP joint in slow squats, and moving from there into the big toe pushing into flexion. I was inspired to work in this way by my podiatrist, who warned that the main enemy in the joint post-surgery was scar tissue, not inflammation. Another very helpful medical expert was my friend Sue Abreu, M.D., a top-notch specialist in nuclear medicine, who simply said: "bone remodels." She gave me hope that the bones in the joint may re-mold into greater range of motion. I have also discovered the effectiveness of manipulating my own first metatarsal bone. Facilitating release there allows me to better lever the MTP joint into sagittal motion by enhancing plantar flexion proximal to the big-toe first phalange. The joint then feels as if the toe is extending back more, relatively, and it feels much easier to walk.

## Walking in Rhythm

Dancing at a party two nights ago felt wonderful. My foot was stiff in the morning, afterwards, and then warmed up with a few minutes of attention. I have these mantras:

*Stop obsessing on it! Then work into it. Then forget it again. Then work into it. Motion is lotion, and standing/walking on released feet is divine! (Even with no applause.)*

Figures 4 A, B and C: Self-tracking ideas with balls and straps

## Notes on Photos

Some of my favorite work (because it is helpful) for my lower leg/ankle/foot since the surgery has been in open chain, non-weight-bearing movements of flexion/extension and rotation of the foot/ankle/lower leg/whole leg, especially if someone is addressing tibialis anterior, posterior, or deeper, into the interosseous membrane. Pictured here are a few closed-chain movements designed to improve sagittal motion with load and lower-leg tracking through the ankle/foot/toes in gait. I am ready for these now. They were difficult because of pain and restriction from swelling for the first few months after surgery.

# A Modern Look at Pain

**By Brad Jones, Certified Advanced Rolfer™**

*Author's note: I would like to thank Don Hazen for his contributions to our community in the area of pain science. He has certainly been a pioneer in introducing some of the current information about pain science to Rolfers. The information in this article comes from my studies of and with David Butler, Michael Shacklock, Lorimer Moseley, Barrett Dorko, Patrick Wall, Ronald Melzak, Diane Jacobs, and others.*

Pain science has learned a great deal in the past fifty years, but most of this information remains in the separate sphere of academia rather than on the frontlines of pain treatment. Or to put it another way: how do we take theoretical information from the medical literature and implement it in the clinic? In my eleven years as a Rolfer, I have found this information taking an increasingly central role in my decision-making, especially when a client has pain that might be termed 'chronic' or 'persistent.' In fact, a growing body of literature demonstrates that when therapists learn about pain, and teach their patients about pain, more effective treatments will follow.

What is pain? A simple definition is far from easy. It is easier to start defining what pain is not. The biggest mental pitfall to avoid is that pain and nociception, the experience of pain, are the same thing. Nothing could be further from the truth. We do not have 'pain receptors,' 'pain nerves,' 'pain pathways,' or 'pain centers.' There are, however, some neurons in our tissues that respond to stimuli considered 'dangerous.' For example, dropping a forty-kilogram kettlebell on your foot will send a prioritized signal to your spinal cord, which then is interpreted by your brain. Activity of this type in these nerves is called 'nociception,' which literally means *danger reception*. According to David Butler, "we all have nociception happening all the time – only sometimes does it end in what we define as pain."[1] Looking across various health professions, and in the literature, you could easily infer that nociception, in some cases, is equivalent to pain, as these two terms are often used as if they were interchangeable. However, this couldn't be farther from the truth!

## Pain is an Output from the Brain, Not an Input from the Body

The fundamental paradigm shift that has recently occurred in pain science is the understanding that pain is created by the brain, not a 'pre-formed' sensation that arrives from the body and is passively perceived by the brain. When a body part is damaged, nerve endings send a signal to the brain containing information about the nature of the damage – but no pain is felt until the brain interprets this information and decides that pain would be a good way to encourage you to take action that will help protect the body and heal the damage. The brain considers a huge amount of factors in making this decision, and no two brains will decide precisely the same thing. Many different parts of the brain help process the pain response, including areas that govern emotions, past memories, and future intentions. An injured hand means something very different to a professional musician than it does to a professional soccer player, and you can expect that they will have very different pain experiences from the same injury. The bottom line is: pain is in the brain, not the body.

It used to be assumed that 'pain' was conducted up to the brain with 'pain nerves,' and that once it got up to the brain, some 'pain center' would be stimulated and, voilá, you would feel something identified as 'pain.' This assumption was based on the general conclusion that all senses worked this way – light coming in the eyes stimulated vision centers and resulted in 'sight,' sound coming in the ears stimulated auditory centers and resulted in 'hearing,' and so on. Touch coming in stimulates kinesthetic centers and results in 'sensation,' and 'pain' was assumed to be a certain type or quality of touch. It was also assumed by everyone, scientists included, that eventually these centers would be found. Well, lots of stuff has been found, but pain centers have not. While reductive science continues to make advances, a fairer conclusion might be that that pain centers, if they exist, are mercurial at best.

The pain response is the combination of remarkable circuitry, with billions of

neurons and glia with widely varying receptor sites. These receptors can change to different stimuli and alter what they are sensitive to, thanks to 'synaptic plasticity.' There are convergence zones and new arborizations, ascending and descending fibers creating interplay between the peripheral nervous system and the brain. Perhaps the most well-understood are somatotopic representational areas (brain maps of body parts) that change with experience. For the sake of even more confusion, we could add in ideas of gene expression: that genes (underlying the most basic stuff) make different things depending on the environment. Or, we could explain the level of description and detail offered by functional brain imaging (fMRI). Like the Humpty Dumpty story, there are all sorts of clues and truths in these levels of analysis, but no single integrated 'pain center.'

The brain often 'thinks' the body is in danger even when it isn't. A dramatic example of this is phantom limb pain, when the victim feels pain in a missing body part. Although the painful limb has been gone for years and can no longer send signals to the brain, the part of the brain that senses the limb remains, and it can be mistakenly triggered by cross talk from nearby neural activity. When this occurs, victims might experience incredibly vivid and painful sensations of the missing limb. Amazingly, phantom arm pain can sometimes be cured by placing the remaining hand in a mirror box in a way that tricks the brain into thinking the missing arm is alive and well. This is an extraordinary demonstration of the fact that the true target for pain relief is often the brain, not the body.

There are many other more commonplace instances where the brain does not know what is going on in the body and causes pain in an area that is clearly not under threat. Any kind of referred pain, where pain is felt a distance from the actual problem, is an example of this. Some people have a condition called allodynia, where even normal stimuli such as lightly touching the skin can cause excruciating pain. This is an extreme example of something that might occur quite commonly on a much smaller scale – the brain misinterprets innocuous sensory information as evidence of tissue damage, and causes unnecessary responses.

In contrast, even when nociception does exist (i.e., there is an existing physical limb or neck or back involved that 'hurts'), the brain can ignore it just fine if it has something else more important that it prefers to deal with in a given moment. Sometimes more nociception actually helps to decrease pain perception for a while, so in some ways they may be reciprocally related. This is synonymous to rubbing your head after hitting it on something. The local activation of sensory neurons dilutes the experience of the 'pain' by giving the brain something else to focus on.

Generally, receiving initial input through nociception is required for the developing brain of an infant to learn how to construct a pain experience. For example, children born without the ability to 'nocicept' (a condition known as congenital analgesia) will never learn to feel ordinary 'pain' because their brains will never learn to construct for them a pain 'experience.' They do not live long as a rule, and must be watched closely by their caregivers to avoid grievous injury.

To go back to the 'senses,' it is clear that 'pain' is like no other sense, no other feeling we have. In fact, it's not even a 'sense' strictly speaking, but more accurately a perceptual construct. So, where does 'pain' come from? Pain is something the brain constructs out of information it receives (assuming the appropriate type and array of receptors exist, as they do in most people). Once the brain has made the construct, it sends it to the self-aware part of itself, the part you ordinarily think of as 'you.' It builds constructs all the time, out of everything around it. This is known as 'neuroplasticity.' Pain is just another thing the brain can make as it tries to make sense out of its own existence. Most of what the brain makes is useful: pain is useful too. And the brain usually makes it for just long enough to slow you down to help the body heal. Norman Doidge, author of *The Brain That Changes Itself*, calls pain 'the downside of neuroplasticity.'

When pain persists long past its due date, you may start to feel you and your brain need some help with 'de-constructing' it. This is when pain is much less about what is happening in the tissues. The brains of most people with persisting pain have no problem de-constructing pain production with treatment – usually this is a quite straightforward process once treatment is initiated. With a bit of pain education as a focus, and some judicious, well-thought-out manual therapy to provide novel input to the brain (see neuromatrix model below), the brain is usually more than happy to return to normal output. It downregulates itself (similar to the head-rubbing example above), and the peripheral nervous system follows suit.

Thanks to the self-righting capacity of the scientific method, the meticulous research of Melzack and Wall, scores of people in pain who have contributed to advancing science, and the many lab animals sacrificed to the cause, Descartes' pain theory has been laid to rest. Though not the final word I am sure, pain is now thought to be a neurologically and neurochemically enacted sensorimotor 'perception' that the brain constructs as a response to various kinds of input and as an output to the following:

a) the sensor array of the body,

b) our conscious awareness, and

c) its own internal representational maps of the body.

I have found the neuromatrix model of pain helpful (see Figure 1). More than a reductive biological view, it is a contextual view with the client in the center. In this model, it's harder to quantify or integrate (similar to the Humpty Dumpty example), but inclusive and orienting. For example, it includes the hormone systems as modulators.

To break it down a little more (quoting Diane Jacobs):[2]

> 1. There is a zone of circular action happening in the center, which represents the nervous system, which is always working, constantly inputting, through-putting (processing), and outputting.
>
> 2. There is a line through time. The nervous system is continually active through time; even during sleep it stays busy – e.g., keeps the heart beating and the lungs breathing, and performs its own systems checks and maintenance.
>
> 3. On the left side we can see three main classes of input, which represent everything from mental to physical to physiological. The brain receives all information, but doesn't necessarily act on every bit of it – it all depends on what's happening in a given moment.
>
> 4. On the right side, we see three main classes of output. Note that

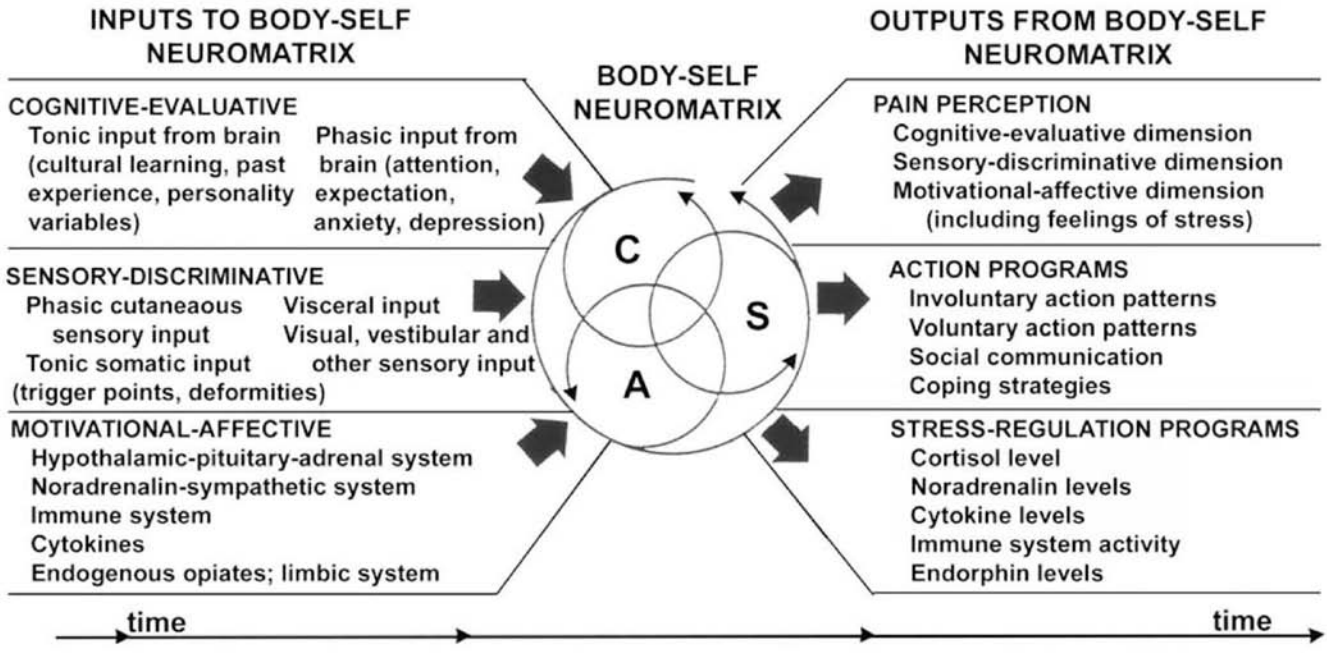


Figure 1: Factors that contribute to the patterns of activity generated by the body-self neuromatrix, which comprises sensory, affective, and cognitive neuromodules. The output patterns from the neuromatrix produce the multiple dimensions of pain experience as well as concurrent homeostatic and behavioral responses.[3]

pain is on the *output* side of the neuromatrix.

5. Generally, both sides of the neuromatrix mix it up and affect each other.

6. The input and output at the *bottom* of the diagram are the most physiological, *non*-conscious ones.

7. Input and output in the middle zone are kind of a blend, mostly under nonconscious control but can be affected consciously.

- e.g.: Sensory-discriminative input – we are generally not aware of our clothing, but if we turn our attention to our body, we can immediately 'feel' our clothing.
- e.g.: Action Programs – the breathing mechanism is usually nonconscious but one can deliberately override it and breathe consciously for a time.

8. The input and output at the top of the diagram are ones we are often most aware or conscious of (in the case of pain output, most would probably be less aware).

## Placebo? Desirable or Not?

Sometimes just the act of making an appointment can make a difference in pain levels. Perhaps the sense of getting down to it and taking a concrete step to start dealing with the pain raises the mood a little. It may also affect cognitive-evaluative input somewhat, and create a bit of a placebo response within the system. In recent work, Wall described the need to tread very carefully in unraveling the placebo response. He said (roughly paraphrased), placebo is not something we *do to* brains, it's a response we must *elicit from* them. The brain can fix itself over time (not even that long a time); it needs to be turned into an ally so it can learn to stop being its own enemy. In fact, the brain is the *only* thing that can turn itself around. A placebo response will be something the brain will (hopefully) make *naturally* as a result of some new input that it examines and learns something new from. Wall also said that the placebo response that the brain makes for *itself* is always dose-specific and duration-perfect for maximal and often permanent relief. In that synaptic connections in brains are mostly about the chemistry within them, a placebo *response*, i.e., change for the better in terms of chemistry made by the brain itself, is a *good* thing. *Good* treatment helps elicit this response.

Most of the pain science that manual therapy finds itself interested in is based on this neuromatrix model of pain. It is clear, simple, and allows the client to see himself/herself in the center of the experience. The client is not peripheral to some biological theory of pain, but *the* one who will help his/her own brain turn itself around. The neuromatrix model can give you some conceptual leverage for spotting erroneous beliefs that the client may be holding about the body and about the pain that *feels* as if it's coming from it. Erroneous beliefs can actually interfere with your brain's ability to relieve or stop its own pain production. The model provides a starting point for understanding, a place to begin to get a grip on pain, instead of feeling helpless and letting it keep a grip on the system.

To really treat pain, we, as practitioners, need to focus just as much on the brain as the spine, muscles, and/or joints. When the treatment approach takes this integrative view (e.g., helping to educate, evaluate, and work with each client's cognition in light of his/her pain response), damaged tissues will heal to the best extent possible in a few weeks or months, and then pain should end. Why should it continue if the body has already done its best to heal it? When pain continues for long periods of time without any real source of continuing harm

or damage, there might be a problem with the pain-processing system, not the body.

Probably the biggest push-pull within the research on therapeutic amount or type (I recognize this is a small number of studies) is defining how much of the therapeutic effect is direct or nonspecific. People who have learned/taught a lot of operator models and tissue-based examination schemes tend to say the primary issue is mechanical nociception, and therefore specific effects like examination and treatment skill for the site of injury (e.g. periphery) are most important. People who have learned/taught a lot of interactor models and neuroscience tend to say the primary issue is central and therefore nonspecific effects like placebo, education, or cognitive-behavioral features are most important.

There's no way to reconcile these views other than to take what seems to be the most reasonable position – that the therapy should be tailored to the presentation and both views may be more or less operative in any client at any given time. In my opinion, we should be comfortable enough with neuroscience to abandon the strict tissue-based explanations and reasoning, while being comfortable with mechanical nociceptive-origin pain explanations and treatments.

Like most things, the answer is probably in the middle somewhere. Rolfers realize the interconnectivity of the body and often take a decidedly global approach. I love this about our work. For me, applying some of the recent discoveries about pain science in my practice has been both orienting and helpful. It has allowed me to feel a bit more empowered about the reasons behind my therapeutic decision-making. I hope, too, that educating myself and my clients about pain is a way to achieve the most facilitated (if there can be such a thing!) treatment result.

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# Structural Dysfunction: Strain and Release

**By Daniel Depperman, Certified Rolfer™**


## Abstract

A premise underlying structural bodywork may need updating because of the growth of many new release modalities within the Rolf Institute® of Structural Integration (SI) and elsewhere. It has long been held that structural bodyworkers primarily release fascial restrictions. But it is likely that muscles can play a key role in the generation and maintenance of physical restrictions. Thus the author has developed a hypothesis explaining how some of the new techniques might be affecting structure. Muscular response is maintained by nervous input, which has traditionally not been referenced as having a part in structural release. Because of this input, it is possible to effect release of restrictions using different levels of appropriate touch focused on muscles and their sensory stretch receptors. This may be as effective, or perhaps even more so, than touch focused mostly on connective tissue.


## Introduction

Dr. Rolf referred to 'myofascial restrictions' though her work was focused on the fasciae primarily. This approach is characterized by the use of strong and deep force aimed

at releasing fascia, which is much less responsive and active than skeletal muscle. Unspoken was any reference to the role of muscles, although some techniques seemed based on the idea of releasing muscles by stimulating the Golgi tendon organs. Tendon organs, when stimulated, can cause an entire muscle to release. Olympic weight lifters train to override this feedback response in order to lift more weight, at risk to their joints. Putting a stretch on a muscle, as bodyworkers do, while simultaneously asking the person to contract the muscle, can presumably activate the tendon organs, stimulating muscular release. The link between the tendon organs and the contractile cells is, of course, the nerves.

If the muscles actually are found to be a major contributor of structure-disrupting restriction, then the focus of structural release may have to shift appropriately. Traditionally, Rolfing® SI has not referenced any role of the skeletal muscles and their innervation as contributing to structural problems or their solution. We also may need to re-reference our training. Inasmuch as they contribute to useful concepts for research and development, new ideas need to be investigated for their soundness, and if found to be fitting, then incorporated into our work. Old concepts may need to be re-evaluated.

For instance, the insistence that the body is a tensegrity structure,[1] a premise that serves to buttress the fascia-only school of structural bodywork – because tensegrity works with no need for nervous input – needs to be re-examined for appropriateness and relevance to structural bodywork. To consider an organism as a tensegrity structure is to add living behavior to the original Fullerian concept – that tensegrity exists whenever a structure's shape is maintained by a balance of discontinuous compressional struts and continuous tensional members such as wires. Of course if the struts separate the wires, then the tensional members are also somewhat discontinuous, and the compressional units are not entirely acting with compression but with tension, which is placed on their ends and is transmitted throughout. (When you consider suspension bridges, possible tensegrity structures, the compression members support the tensional members, which in turn lift the roadway. The roadway and cables compress the towers.)

When considering living organisms, we must take into account factors such as responsiveness/irritability (with or without reference to a nervous system, since many less complex and unicellular organisms lack a nervous system but are still responsive), as well as numerous biochemical events at all levels of an organism. Within and between cells there are many molecular events whose interactions are biochemical in nature, which some assert are affected by cellular tensional/compressional elements.[2] Yet it is unclear which member of a physiological unit comprised of organelles and separate molecules is tensional and which is compressional. There are also electromagnetic and possibly quantum forces at play.[3] Are we still speaking of tensegrity, a tension-compression balanced structure, or something quite different, a 'unit' without a set 'structure,' in continuous change, and possibly involving apparently non-tensegral quantum effects? (A consideration of quantum mechanics is beyond the scope of this article.)

In cells, the cytoskeleton appears to be in continuous change, and its effects on cellular biochemical events may go far beyond tensegrity as defined, even in light of the footnoted reference. The cytoskeleton appears to have both tensioning and compressing function, perhaps even simultaneously. It also plays a role in cellular chemistry and pathways by offering different loci for events to occur.

A living unit might, at the macro scale, be considered a partial tensegrity structure with the proviso that various tensions are generally neurally and biochemically maintained and continually altered. These biochemical processes are not analogous to the force of gravity on a macro-scale non-living tensegrity structure. At the scale of the cell, it is uncertain how to assess and compare simple tensional and compressional events with the other forces at play, such as electromagnetism, which means that it may be inappropriate to call the unit a tensegrity structure. In addition, the nervous and glandular systems are key factors in many macro-scale tensional events in an organism, and they too alter continually.

It may be more appropriate, or useful, for structural bodywork, to try to identify the tensegral portions of the body on the macro scale. In Fuller's original 1961 article "Tensegrity," this phrase occurs: "Recourse to this discontinuous-compression, continuous-tensioning structure was not obvious to man."[4] This is the clearest statement this author can find in the article, referring most simply to tensegrity. I have attempted to apply this statement to the body. Thus, places that maintain their shape when the mind is not directing them, or is not specifically focused upon them, might possibly be considered tensegral – i.e., exhibiting at least some 'continuous tensioning.' I add the caveat that these places that maintain their basic shapes do so with the shape being partially defined by the irregularly shaped and curved 'compressional' portions.

Consider the example of the bones of the foot, which are arranged mostly continuously with intervening soft tissue that is discontinuously altering its tensioning. Of course, bones are not merely compressional, but exhibit suppleness, flexibility, and tensioning, and are arranged continuously. Tensioning, whether continuous or discontinuous, confers mechanical and energetic advantages to an organism. The arches of the feet act with other structures to store and re-emit mechanical energy during locomotion – especially forefoot and midfoot running[5] – with minimal muscular energy expenditure. The arms and legs seem too mobile to be considered tensegral. The feet and hands, pelvis, ribcage, and spine do exhibit a play of tension and compression, but in a pattern too complex to be easily called tensegral. Furthermore, the overall body continuously changes shape and tensioning, from continual neural input as we move both consciously and unconsciously, awake and asleep. And thus the tensioning is again not continuous overall.

It thus takes some work to affix the characteristic of 'tensegrity' to a living body. It seems to add little to our understanding, except perhaps metaphorically. Because Fuller didn't give a precise definition of tensegrity, to refer to the body as a tensegrity structure is out of order. Everything written by others since his 1961 artricle is interpretive. Though Fuller seems to have made little or no reference to living organisms and their movement in his classic article, later definers of tensegrity have made their own additions and interpretations.[6]

It may be the case that structural bodyworkers focused mostly on fascial-release techniques believe that by releasing fascia, the proposed tensional component of

a tensegrity structure of the body, they alter the body's tensional dynamics and thus the balance of the system. A more complex result ensues if the muscles and nervous system are included in the picture. Physical, structural release is then no longer a purely mechanical process of releasing fascial restrictions. Release in the soft tissues initiates changes mediated by the nervous system. This may occur even in those regions possibly most readily identified as tensegrity structures, such as the feet.

## Other Methods of Structural Release

Within the world of structural bodywork there may be no techniques that consider the muscles as likely key players in any of the body's structural restrictedness. Not only do the muscles move the body, they may also drive structural dysfunction. The degree of interaction of muscle and fascia must be complex, but fascia is likely mostly reactive.

Other release systems have been advanced to address various regional and overall body issues. Craniosacral therapy, derived from cranial osteopathy,[7] addresses the craniosacral system, which is controlled by cyclic production of cerebrospinal fluid by the various choroid tissues. Another methodology, biodynamic craniosacral therapy, includes the emotions as causative of bodily restrictedness.[8] A closely related method, biodynamic bodywork, references "the motive Force of life" as a prime mover in bodily events.[9] Then there is the visceral system, and the visceral release methods developed by Jean-Pierre Barral, D.O., in which each organ apparently contributes its own inherent motion to structural well-being. When there is restriction associated with an organ, it causes compensational movement throughout the body.[10] And there is an apparently new SI method using Inherent Motion,[11] perceived as rhythms within the body's bones, fascias, and ligaments.

There is also Ortho-Bionomy®, which the author encountered after the publication of the book *Ortho-Bionomy*[12] in 1997. Dr. Lawrence H. Jones, D.O., developer of Strain Counterstrain (release by positioning)[13] influenced the founder of Ortho-Bionomy, Arthur L. Pauls, D.O. In Ortho-Bionomy level four, which deals with physical restriction and its manual release, there is awareness that the muscles are key players in bodily structural events. Ortho-Bionomy level four mostly uses one of many possible techniques for strain release, and focuses on the muscles. There is some use of positional release and other related osteopathic techniques.

Another major method of release is known as neuromuscular therapy. It focuses on the nervous system and the musculoskeletal system and uses trigger point massage and stretching and gait retraining to effect change in the body structure.[14] Finally, although not exhaustively, there is myofascial release. According to one source, it uses gentle sustained pressure and stretch to coax myofascial restrictions to release.[15] Another source claims there is apparently involvement of the stretch receptors and Golgi tendon organs as causative of dysfunction and useful for release.[16] The John Barnes website claims that the release is effected entirely within the fascia itself. There is reference to piezoelectric effects as well as viscoelastic qualities of connective tissue.[17]

This is not an exhaustive survey, but a sampling of thinking on soft-tissue release. Many ideas are advanced concerning the release mechanism. They do not all agree. None seem to be tested. They are not always specific. All techniques probably have some effectiveness.

## A Deeper Look at Strain and Counterstrain

Jones developed the Strain and Counterstrain technique for releasing bony restrictions[18] by "passively putting the joint into its position of greatest comfort." He writes, "Relieving spinal or other joint pain by passively putting *the joint* [this author's emphasis] into its position of greatest comfort . . . relieving pain by reduction and arrest of the continuing inappropriate proprioceptor activity. This is accomplished by markedly shortening the muscle that contains the malfunctioning muscle spindle by applying mild strain to its antagonists." Jones goes on to term the phenomenon of joint pain as primarily "of the nature of joint dysfunction."[19] But if the muscles are the cause of this dysfunction why not call it muscular dysfunction primarily?

If the causative mechanism of such joint dysfunction lies in a "malfunctioning muscle spindle" then it might be instructive to refocus one's attention to the spindles and the muscles in which they reside. Because spindles are the sensory organs of skeletal muscles, it is appropriate to consider their effect upon the muscles primarily, rather than the joints, which are well-endowed with their own receptors. Additionally, Jones fails to identify the nature of the malfunction of the spindle, to which he refers.

## Proposing a Mechanism of Bodily Damage

A problem with many bodywork techniques lies in their failure to propose scientifically based and testable hypotheses as to the physiological causes of the problems we address in our interventions. (The author limits himself to the biomechanical causes of disorder. Emotional issues are not the subject of this inquiry.) Once the cause of the physical restriction is determined, we are freed to creatively seek and find interventions that work by normalizing the mechanisms involved, and thereby to improve structure.

In 1982 the author became a Certified Rolfer. That year, the author also took a four-day class in craniosacral therapy taught by John Upledger, D.O., whose book contains a brief outline of the technique of Strain and Counterstrain in Appendix E, "Spontaneous Release by Positioning."[20] The author also studied Strain and Counterstrain and purchased Jones's book, *Strain and Counterstrain*[21] for a more comprehensive discussion of the concept. The author would like to propose a mechanism for Jones's strain, which I maintain is responsible for structural restriction and its accompanying physical compromise, including bony misalignment. This concept occurred to the author sometime between 1987 and 1989, and I have played with it ever since, and developed a number of ways to work with it to effect tissue release and to improve structure and function.

Jones refers hypothetically to the "malfunctioning muscle spindle." He is speaking collectively – it is not typically a single spindle. However, the spindles may not be malfunctioning, but rather simply functioning normally under the conditions in which they find themselves, but producing an abnormal result. Normal spindle activity leads to the spinal reflexive action of motor-unit contraction. There are two major classes of receptor cells within a spindle: one responds to prolonged stretch and the other to temporary stretch. Both may be involved in the strain event, responding to the stretch events they encounter. When a spindle is stretched, it is activated to send action potentials to the spine. The potentials activate spinal motor neurons to send action potentials to

the motor unit(s), which apparently form a functioning entity with at least that one spindle within the muscle.

Ordinarily, once the motor unit's activity counters the stretch, the spindle ceases to send out action potentials and the motor unit then decreases or ceases its contraction. What if the spindle continues to fire action potentials under a continuing load? Presumably the associated motor unit(s) will continue to contract, leading to a heightened state of local tension for as long as the spindle is active. If an entire fascicle of a muscle is activated this way, it can remain palpably and often painfully contracted. Entire muscles can also be affected. Continuous firing of muscle spindles can be a response to a continuous stretch placed upon them, mediated by the spindle cells that respond to continuous stretch.[22]

Tension within the soft tissues themselves might provide a tissue stretch sufficient to generate strain, either by contraction of other muscles, or shortened connective tissue. Tension within one muscle can affect the state of tension of another by mechanical transmission of that tension through the soft tissues. An epimysium distorted by a nearby scar might lead to abnormal force transmission to other muscles, bypassing the tendons. Connective-tissue scarring and shortening can also act at many different angles in the tissue depending on its location and fiber direction, therefore putting a skewed stretch upon more than a single muscle.

In effect, a stretch may be placed upon some spindles within a muscle by whatever means – soft-tissue distortion caused by prolonged sitting or holding any position for too long, too tight clothing, repetitive motion, new or old injury, chronic inflammation or swelling, prolonged pain, or even familiar ways of holding and using the body. The contraction these spindles cause in their related muscle fibers could then, based upon distortion of the shape and direction of those portions of that muscle, transmit stretch to another muscle, leading to inappropriate contraction of those portions of the second muscle. The second muscle's contracting units could in turn stretch the first muscle in that same portion that is affecting the second muscle, leading to the continued firing of the contracting motor units in each muscle. The system would in effect be locked into a self-sustaining lesion. This condition might ramify and spread throughout the body, in both characteristic and unique patterns – characteristic because of the common shape of our bodies, unique because of our unique individual history.

A highly simplified picture can be drawn/imagined of two sets of spindle and associated muscle fibers. The firing of the motor fibers could send a stretch to the spindle associated with the other motor unit. Contractions of those motor fibers could in turn stretch the first spindle leading to a locked-in, self-sustaining tensional unit. With the present state of lab technology this concept could be examined. This description helps elucidate Jones's statement, "This [relieving spinal or other joint pain] is accomplished by markedly shortening the muscle that contains the malfunctioning muscle spindle by applying mild strain to its antagonists."[23]

In the author's experience, the antagonist may be but one of the muscles involved in generating strain. In fact, the involvement of more than one effector may lead to the situation we have likely all encountered: a client will complain of a number of places in the body that hurt sequentially, first here, then there, and back again periodically, continually recurring over time. This recurrence may relate to what Tom Myers was referring to by his railway metaphor for which his book *Anatomy Trains* is named.[24]

Going further, this recurring pattern of symptoms may indicate that the totality of damage or restrictions in the body forms a highly stable unit. The longer the damage resides in the body, the more complex it becomes by causing distorted, and hence self-damaging, movement. The stability is reinforced by the addition of new injury and the linking of separate damaged regions with individual potential for causing more strain.

Patterns of strain affect cranial motion and possibly that of the viscera. (The author has not yet learned visceral work, so this interaction of visceral and somatic events remains, for me, conjectural.) The key to releasing this type of restriction lies in a variety of related directional and positional release techniques that are suggested by the concept itself, and that go beyond that which was employed by Jones and by Orthobionomy level four. One advantage of this approach is that it has made some of the Rolfing methodology more sensible to the author, and it has helped to answer questions the author had not been able to resolve through pursuing the study and practice of Rolfing SI. However, it is not necessarily useful to try to follow the Rolfing 'Recipe,' or any other known sequence to improve the structure. The specific strain system in an individual itself determines how a practitioner best interacts with it.

The strain 'system' itself appears to be involved in, if not causative of, joint dysfunction, and so using the techniques of strain release, it is possible to allow bones to realign. This realignment needs to be accompanied by further soft-tissue release or it may not be sufficient. The strain concept is not to be confused with actual tissue damage, including tears, sprains, and breaks. It may be that if a painful region is not relieved by strain-releasing methods, the cause of the pain requires further, medical, investigation. But any injury will also cause strain secondarily.

Fixing the strain system takes time and patience. Available techniques to do so vary in their effectiveness. The practitioner proceeds by continually evaluating changes in structure brought about by each release. Strain release may generally be structured in sixty- to ninety-minute segments. It may also be more fruitful to do sessions closer together than once a week, especially if the sessions are short.

Most if not all of the techniques referenced here fail to advance a scientifically testable mechanism for release of soft-tissue restrictions. The spindle hypothesis is testable. It has the merit of being clear and simple. (It could also be wrong.) From it the author has developed a release methodology that alters structure for the better, and decreases strain-related pain. With it one is able to predict events that will occur resultant to specific releases sought. Not every aspect of the release process is yet clearly understood, but most likely they are all physiologically based.

The author has written this article hoping to spur further scientific investigation and to give the practice of SI another way of thinking about structural release and another powerful release tool. This method focuses upon palpable, visible, present physiological events. There is no reference to extraneous energy fields or phenomena. It improves understanding of some events and enables prediction of others. In this age of scientific progress, the proposed concept is open to scientific investigation, yet it is

not reductionistic. It 'fits' into and extends the medical/bodywork paradigm. This fitting in might even give our profession more respect in the scientific community, which could produce unforeseen positive results. We can grow and perfect our work through trial and discovery, and we owe it to our clients to give them top-quality work – they deserve the best.

## Endnotes

1. According to Wikipedia, "Tensegrity or tensional integrity is a type of structure with an integrity based on a balance between tension and compression components. In a tensegrity structure the compressive members are connected to each other by tensile members." The concept has applications in biology. "Biological structures such as muscles and bones, or rigid and elastic cell membranes, are made strong by the unison of tensioned and compressed parts. The muscular-skeletal system is a synergy of muscle and bone. The muscles and connective tissues provide continuous pull and the bones discontinuous push." This author does not agree that the muscles provide continuous pull, nor the bones discontinuous push. Muscular tension varies continuously when awake, and is lessened considerably when asleep and mostly when unconscious. The bones except for the hyoid form a continuous network via the joints.

2. From www.childrenshospital.org/research/ingber/: "The Ingber laboratory is interested in the general mechanism of cell and developmental regulation: how cells respond to signals and coordinate their behaviors to produce tissues with specialized form and function. The specific focus is on control of angiogenesis and vascular development. Our approach has been driven by our hypothesis that the process of tissue construction may be regulated mechanically. We introduced the concept that living cells stabilize their internal cytoskeleton, and control their shape and mechanics, using an architectural system first described by Buckminster Fuller, known as "tensegrity." To approach questions relating to how mechanical distortion of the cell and cytoskeleton influence intracellular biochemistry and pattern formation, we have combined the use of techniques from various fields, including molecular cell biology, mechanical engineering, physics, chemistry, and computer science. This work has led to the identification of mechanical forces and the cytoskeleton as critical cell and developmental regulators, and the discovery that transmembrane integrin receptors which anchor cells to extracellular matrix also mediate mechanotransduction. The process by mechanical signals are converted into an intracellular biochemical response. Our lab also has shown that extracellular matrix and cell shape distortion play central roles in control of angiogenesis that is required for tumor growth and expansion, and has developed numerous novel microtechnologies, nanotechnologies, magnetic control systems and computational models in the course of pursuing these studies. Their potential applications are currently being explored in areas ranging from ultra-sensitive clinical diagnostics to nanoscale medical devices, engineered tissues, and biologically-inspired materials for tissue repair and reconstruction."

3. See http://sqig.math.ist.utl.pt/lqcil/quebs09/home/, also http://quebs2010.files.wordpress.com/2010/02/0abstract-title1.pdf.

4. See www.rwgrayprojects.com/rbfnotes/fpapers/tensegrity/tenseg01.html. However, a bit later in his article we find this: "Local stiffeners of skin suitable to preferred activities, at any structural focus, can be had by increasing the inward-outward angular strut depths and the local surface frequency patterning as well as by multi-layerings of surface truss frequency – thus thickening the truss depth without weight penalties. Here we have nature's own trick of local stiffening as accomplished by the higher frequency 'closest packing' pattern of isotropically moduled, local cartilages and even higher frequency local bone structuring, as ratioed to the frequency of tissue cells of animal flesh." Got that? It is difficult to make sense of many of Fuller's statements, which may account for the confusion.

5. See www.scienceofrunning.com/2010/02/new-studies-on-footstrike-do-faster.html.

6. See www.tensegriteit.nl/e-definities.html.

7. See www.upledger.com/content.asp?id=26.

8. See www.biodynamiccranialsacral.com.

9. See www.biodynamicbodywork.com/faq/index.

10. See www.barralinstitute.com/about/vm.php

11. See http://explorationsinwholeness.com/. "Inherent Motion – Using the body's own subtle motion to enhance the goals of Structural Integration."

12. Kain, Kathy L., *Ortho-Bionomy: A Practical Manual*. Berkeley, CA: North Atlantic Books, 1997.

13. Jones, Lawrence Hugh, *Strain and Counterstrain*. American Academy of Osteopathy, 1981, pg. 11.

14. See http://pronmt.com/What Is Neuromuscular Therapy.

15. See www.energyworksmfr.com/?110010.

16. See http://lsabin.wordpress.com/2007/02/04/self-myofascial-release/.

17. See www.myofascialrelease.com/fascia_massage/public/whatis_myofascial_release.asp.

18. Jones, op. cit.

19. Ibid.

20. Upledger, John and Jon Vredevoogd, *Craniosacral Therapy*. Seattle: Eastland Press, 1983. Appendix E, pp. 300-309.

21. Jones, op. cit.

22. In the text of this article, I only refer to the tensional effect of activated muscle spindles. However since continuously activated sensory receptors in general cease to provide input after a time, it is possible that this phenomenon may explain why some groups of muscles when put on continuous stretch, as with the psoas muscle on the side away from the rotation of the vertebrae, elongate rather than shorten, as if not being activated by the stretch placed upon it. The contrast of muscle elongation and muscle shortening may have important implications for structural work.

23. Jones, op. cit.

24. Myers, Tom, *Anatomy Trains*. Edinburgh: Churchill Livingston Elsevier Science, 2002.

# The Case Study Method

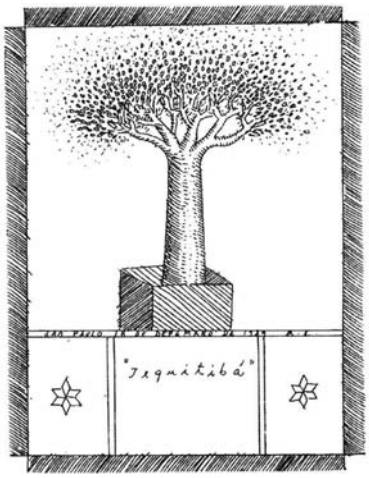
## *Scientific Exploration of Rolfing® SI in the Holistic Paradigm*

**By Pedro Prado, Ph.D., Advanced Rolfing® Instructor, Rolf Movement® Instructor**

*Author's Note: Special thanks to Heidi Massa, Certified Advanced Rolfer™, for her collaboration on the conception and preparation of this piece.*

Science is a collective activity[1] in which, with creativity and discipline, researchers investigate and build upon the existing material, establish parameters of inquiry, and document and share their work. In 2006, I presented a study using NAPER (Brazilian Rolfing Association's Center for Clinical Practice, Research and Studies on Rolfing SI)[2] questionnaires to verify and demonstrate the psychobiological aspect inherent in Rolfing Structural Integration (SI). The data, gathered from the viewpoints of both clients and practitioners, made the psychobiological aspect concrete. It was a tentative opening of the field of inquiry, and the start of an arduous task of creating documentation tools for our empirical studies. The continued development and refinement of the questionnaires became a collective task spanning several years, in which the NAPER practitioners created the documentation protocols we now use in clinical practice. We also began using the WHOQOL-BREF (World Health Organization Quality of Life index-Short Form) questionnaires, a psychometrically valid tool for assessment of the subjective experience of quality of life across multiple dimensions of being.[3] The key point is that here in Brazil the growth of our science so far has been a collective activity, in which at least thirty-five practitioners plus a great many students have participated.

Now, five years later, our initial investment has paid off. This kind of exercise in clinical retrospection is beginning to be incorporated into the curriculum for Rolfing SI training through the case study method: a pedagogical tool that asks students to reflect upon the activity and to present – at particular stages of the training and of their processes with class clients – descriptions of the clinical experience and its outcome. At the end of the final phase of training (Unit III), students must make presentations of their cases. This requires and trains students



to look back on what they have done, to think about it, and to talk about it. At a higher level, the exercise permits investigation of specific questions and problems – the resolutions of which will empower us to clarify the value of Rolfing SI in the many ways it can, as an instrument of health and personal development, ameliorate the human condition. We have a collective need to answer these questions, as well as to gain some control over the variables inherent in clinical practice.

In its latest initiative in furtherance of these goals, ABR (Brazilian Rolfing SI Association) in partnership with Centro Universitatio Italo Brasileiro (Uniitalo) created a postgraduate program for Rolfing SI, and those who complete it are awarded the equivalent of a master's degree. The program is open to students in the last stage of their professional certification training (Unit 3), as well as to practicing professionals. Participants take university courses in scientific methodology and pedagogy, and finally apply this learning to execution of formal case studies on the process of a class client or client in a practitioner's clinical practice. We recently graduated our first class, which began in 2010 and consisted of thirteen participants – seven already-certified practitioners and six students in the final phase of their professional certification training.

My own role in the program is two-fold. First, I am the program coordinator. Second, Unitalo requires each scientific methodology student to have a sponsor to help the student design and execute the case study, and I served as the sponsor for all thirteen of our participants. In that role, I attended the scientific methodology class, as well as the supervision workshops in which we worked with the scientific methodology instructor to determine how to apply the general theoretical concepts in the Rolfing SI context. I also advised each student in person and by email as necessary. To me, it is especially rich and gratifying to have the opportunity to expand the students' universe in the theoretical realm, as well as to guide their thinking towards a scientific attitude when assisting them with their case studies.

These case studies that our postgraduate program requires are far more extensive than those required in the basic certification training of the Rolf Institute®. The student researches a specific problem by engaging potentially useful theories, raising questions, developing hypotheses, and seeking methods to investigate them; and then presents and discusses the outcomes according to accepted scientific parameters. The case study is both a method of investigation and the investigation itself. In both scope and level of effort required, the postgraduate program case studies are comparable to any other master's thesis.

Besides being a philosophy, a professional practice, and a calling, Rolfing SI is also a science – and science is no simple task. The scientific investigation of Rolfing SI raises particularly thorny questions: because Rolfing SI is premised upon and practiced through an integrative paradigm, it eludes the classical approaches and experimental methods focused on cause and effect. It is not easy to perceive simultaneously the multiple aspects of an entire phenomenon, nor is it easy to find the language to articulate one's multidimensional perception and experience.

Despite this obstacle, in order to advance the conceptualization and elucidation of the work – and thereby, ultimately, to advance the work itself – we must determine how and in what context to best investigate and document its results. What's more, although we have abundant empirical evidence of the

work's efficacy, to date this evidence has no real repository: it has not been collected and recorded systematically, nor, for the most part, has it been aggregated, indexed or published. The small quantity of data currently available is a base too ephemeral on which to evolve and demonstrate the efficacy of our work. It provides neither an adequate context for further investigation nor a common language for further discussion. For our research to advance, we need more of it, somewhere to put it, and a vocabulary to talk about it.

The multi-dimensional and holistic attributes that give the work its conceptual richness present at the same time the chief obstacle to investigation of its results. What we need is a scientific approach consistent with our paradigm. The segmentation of reality and isolation of phenomena, often used for controlling multiple variables, in our context poses the risk of losing the whole, of overlooking the most essential attribute of the work. Paradoxically, it is the essential holism of the work that poses the greatest challenge to its investigation. As these thirteen case studies show, their authors have accepted the challenge. Each found a focus, defined a theme and investigated a problem; and from this focus, observed correlations among the multiple dimensions of Rolfing SI and its taxonomies of access (structural, functional, psychobiological, and energetic).

The researchers – all of whom administered to single clients ten structural sessions, and some of whom added movement integration sessions, as well – chose a variety of themes and perspectives, from how Rolfing SI affects aches and pains, to features Rolfing SI shares with psychoanalysis. Clients studied included men and women of all ages, in pain seeking relief, or pain-free and seeking a better quality of life. While some of the studies focus on the physical dimension, others concern the psychobiological or energetic, and still others the functional. While many of them evaluate quality of life and others measure symptoms or objective physiological phenomena, most record the clients' multidimensional experience.

Several researchers evaluated how the holistic approach of a Rolfing SI series could affect chronic aches and pains, including adhesive capsulitis, low-back and cervical pain, and plantar fascitis. Not only were pain reduced and function improved, but the clients' quality of life was measurably improved across various dimensions of being beyond the physical. One studied a client with both temporomandibular joint (TMJ) dysfunction and plantar fascitis. He found that by contextualizing the local pathologies in terms of their relationship to posture and considering them as multiple aspects of the same system, SI's holistic, global approach addressed and ameliorated both. Plus, the client's function and self-esteem both improved.

Another researcher who focused on TMJ dysfunctions studied two clients to assess whether posture and balance improvements from SI could contribute to the treatment of TMJ disorders and malocclusion. The clients underwent orthodontic evaluation before, during, and after the treatment series. The case study verified that the postural changes correlated with objective changes in craniometry and Rocabado analysis; and that the clients' perceived balance improvements correlated with objective changes in computerized baropodometry, stabilometry, and statokinesiometry.[4] One of the clients, who had been in severe pain prior to her series, experienced a 30% pain reduction (VAS assessment, see note 6).

Others investigated whether Rolfing SI could be useful in the management of chronic diseases. One case study showed that Rolfing SI, as one component of a multidisciplinary approach, allowed the client better to manage bipolar disorder and experience a higher quality of life. Both the psychotherapist's and the client's reports confirmed the improvement. The other case study showed that Rolfing SI improved the quality of life for a client with multiple sclerosis, this being confirmed not only through the WHOQOL questionnaire, but also through another quality-of-life questionnaire validated specifically for MS patients.[5]

Posture and awareness of the Rolfing SI 'Line' were the subjects of two more case studies. In one study, the client's postural improvement and heightened body awareness allowed greater congruence between her attitudes and her behavior, which led to a significant improvement in perceived quality of life, especially in the physical, psychological, and social dimensions. In the other study, the client's heightened awareness and perception of her Line correlated with reduced psychobiological symptoms and increased sense of well-being; and along with better stability, she reported greater structural, emotional, and spiritual balance.

One researcher chose to study the benefits of Rolfing SI for a professional aerial acrobat, and in particular, how postural changes and heightened body awareness altered her body concepts, movement, and structural organization. Photos documented postural improvements; and in questionnaires and interviews the client reported changes in body image and attitude, which allowed her to perform with freer movement and less bodily stress, and to feel her movement "from within."

Another researcher, having observed that many who seek somatic therapies lack a sense that certain body parts belong to them, explored in the context of Rolfing SI the psychoanalytic concept of *autotomy*, coined by Sándor Ferenczi, which refers to our tendency, for reasons of survival, to cleave off from the whole certain experiences or aspects of being; i.e., the tendency to reject the part that is in a state of tension. The client's questionnaire responses indicated that Rolfing SI facilitated, in addition to structural and emotional benefits, recognition and reintegration of body parts into the client's image of the whole self. The researcher concluded that psychoanalytic concepts like autotomy contribute to a richer understanding of relationships among various dimensions of being, and therefore advance the understanding of our work.

Finally, one researcher used case studies of two clients who sought to learn more about their physical conditions and to improve posture and function to explore the relationship between Rolfing SI and therapeutic process in light of the psychoanalytic theory and practice of Sándor Ferenczi and Fabio Landa. The researcher concluded that Rolfing SI is indeed a therapeutic process: like psychoanalysis, Rolfing SI is an event between two persons and there can be no Rolfing SI by oneself. For Rolfing SI to be therapeutic both practitioner and client must participate in the relationship as co-responsible agents; and, it is effective because it is a two-person therapeutic process – not because the practitioner applies any particular technique.

Our colleagues grappled with questions of methodology, as well. We can analyze data with both quantitative and qualitative measures. Various case studies in this group share the several metrics for outcome measurement, such as photos to assess posture; the Visual Analogue Scale (VAS) to assess pain;[6] the WHOQOL to assess

the client's perceived quality of life; and the NAPER questionnaires (or their precursors and successors) to elicit reports of multidimensional phenomena from various perspectives (practitioner, client, and the relationship between them). Having common tools with which to measure results is essential to building a coherent and intelligible body of literature.

With these case studies, we are taking a step forward, making gradual but definite progress on the methodological questions intrinsic to working in a holistic paradigm. The participants' analysis and discussion of the clinical outcomes of their studies show that each considered multiple aspects of being human *together* as they related to Rolfing SI; i.e., each case study was conceived and executed with a holistic, multidimensional perspective. For example, the participants:

- Related multiple symptoms to each other.
- Observed correlation among multiple perspectives, such as structure and function or the various components of quality of life.
- Discussed clinical outcomes in terms of correlation among multiple perspectives, such as the correlation of reduced physical pain with improved emotional state or quality of life, or how the integration of a physical part into the body image and how that relates to the person's sense of self in gravity.

Thus, at the same time the participants employed impeccable scientific methodology, they displayed an embodied holistic attitude, one congruent with the philosophical stance and conception of the human being that are fundamental to Rolfing SI. Put another way, these researchers walked their talk; they showed by example that science and holism can coexist, that there can indeed be a science regarding a holistic activity.

It is the scientific attitude that not only lights the way, but above all takes the first step, lays the first stone, on the path to finding and using scientific methods that respect the philosophical paradigm that Rolfing SI posits. Our experience shows that we can and should gradually develop more varied and precise instruments to yield even better qualitative descriptions. Still, what's important is that when we see a path, we will have access to it. And our practice will nourish future practices. We hope this example might inspire some of you also to join those practitioners pioneering the research of Rolfing SI.

The program participants and the topics of their inquiries are listed below. The full case studies are available (in Portuguese, with abstracts in English) at the Ida P. Rolf Library for Structural Integration (www.iprlibrary.com or www.pedroprado.com.br); at the ABR's library; and at Uniitalo Library's special collection of postgraduate program papers.

**Alfeu Ruggi**, Certified Advanced Rolfer, Rolf Movement Practitioner, "The effects of Rolfing SI and its holistic approach on chronic adhesive capsulitis."

**Ana Maria Gilioli**, Certified Rolfer, Rolf Movement Practitioner, "The effects of Rolfing SI and its holistic approach on chronic low back pain in an elderly client."

**Cornélia Rossi**, Certified Advanced Rolfer, Rolf Movement Practitioner, "Rolfing SI as one component of a multidisciplinary approach to the treatment of bipolar disorder."

**Hulda Bretones**, Certified Advanced Rolfer, Rolf Movement Practitioner, "The process of Rolfing SI as a therapeutic relationship between two people."

**José Henrique Bronze**, Certified Rolfer, Rolf Movement Practitioner, "Rolfing SI both ameliorates symptoms and enhances quality of life for a client suffering from the correlated conditions of temporomandibular dysfunction and plantar fasciitis."

**Marcela Nascimento**, Certified Rolfer, Rolf Movement Practitioner, "Effects of postural changes and enhanced body awareness from Rolfing SI on the body image and structural and functional organization of a professional acrobatic artist."

**Maria Helena Orlando**, Certified Advanced Rolfer, Rolf Movement Practitioner, "Rolfing SI as an agent of integration among posture, behavior and quality of life."

**Maria Lucila Freitas**, Certified Advanced Rolfer, Rolf Movement Practitioner, "How perception of the Rolfing® SI line enhances well-being."

**Marcia Cintra**, Certified Advanced Rolfer, Rolf Movement Practitioner, "Applying by analogy the psychoanalytic concept of autotomy in the practice of Rolfing SI."

**Mariana Moretto**, Certified Rolfer, Rolf Movement Practitioner, "The effects of Rolfing SI and its holistic approach on idiopathic low back pain."

**Marina Mattar**, Certified Rolfer, Rolf Movement Practitioner, "Rolfing SI enhances quality of life for a client suffering from cervical and lumbar pain."

**Monica Caspari**, Certified Advanced Rolfer, Rolf Movement Practitioner, "The contribution of Rolfing SI to the treatment of temporomandibular disorders."

**Taissa Rebouças**, Certified Rolfer, Rolf Movement Practitioner, "Rolfing SI enhances quality of life for a multiple sclerosis patient."

## Endnotes

1. Prado, Pedro, "The Making of a Science of Rolfing SI: From an Individual Path to a Collective Activity." *Structural Integration: The Journal of the Rolf Institute®*, Vol. 35, No. 4, December 2007, pp. 22-25.

2. Prado, Pedro, "Documentation for Clinical Practice and Research," available at www.iprlibrary.com or pedroprado.com.br.

3. Prado, Pedro, "Does Rolfing® SI Enhance Quality of Life – A Pilot Study." *Structural Integration: The Journal of the Rolf Institute®*, Vol. 38, No. 2, December 2010, pp. 43-47.

4. Craniometry, which is a radiographic technique, has various methods. At the University of Sao Paulo, they measure both sides of the face and take the average between the two, whereas Rocabado analysis measures the posture of the head in relation to the posture of the neck. Stabilometry is an objective method for the quantitative study of postural equilibrium, which has been shown to correlate with functional instability of the ankle joint. Statokinesiometry is an objective assessment of vestibular function, and is used to evaluate postural stability. Baropodometry is an objective assessment of pressure on the sole of the foot in standing, and is used to evaluate weight distribution between the two feet and within different regions of the foot.

5. This scale is the DEFU (Determinacao Funcional da Qualdidade de Vida de Pacientes com Escclerose Multipla).

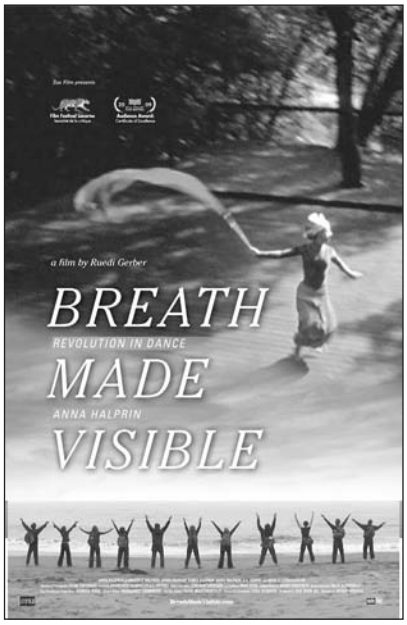
6. The VAS is a subjective psychometric response scale often used to measure the experience of pain. Subjects specify their pain levels by indicating positions along a continuous line between two end points.

# *Breath Made Visible (DVD)*

## A Film by Ruedi Gerber

**Reviewed by Robert McWilliams, Certified Advanced Rolfer™, Rolf Movement® Practitioner**

San Rafael-based modern dance pioneer Anna Halprin is an important dance artist and seminal figure in movement therapy, often mentioned in the same conversation along with Emilie Conrad and Bonnie Bainbridge Cohen. (These three co-presented the Soma Fest in Santa Monica in September of this year.) Her ability to elicit client movement, expression, and somatic response – and the creativity she has shown over decades of work in mixing elements of touch, drawing, and ritual – are very inspiring to me as a manual and movement therapist. I think that any Rolfer interested in movement work, or even in wanting to get a broader perspective on the therapeutic potentials in movement work, would love being more familiar with her work and life's journey.




*Breath Made Visible* Is an eighty-minute documentary on Halprin's life and work by Swiss filmmaker Ruedi Gerber. Dance on video is, for me, mostly about what 'gets lost in the translation,' like poetry in another language. In contrast, *Breath Made Visible* is beautiful, a nicely edited effort, mingling rare historic footage and contemporary material. Previous DVDs, *Returning Home* and *Embracing the Earth: Dances with Nature,*[1] showed us what she can do in this medium, and I highly recommend them. I suspect her life-long devotion to collaborative processes (notable in her RSVP Cycles,[2] evolved with famous architect and husband Lawrence Halprin[3]), has a lot to do with that.

Halprin's diverse career, which has spanned the field of dance since the late 1930s. In the 1950s, she realized she felt stymied by the drift towards conformity in modern dance (exemplified by Martha Graham, Doris Humphrey, and Jose Limon) at that time: "Something inside me started going dead . . . and I knew my career as a modern dancer had just died."[4] Her sense of the personal, in movement, was very often pushed out to embrace the political. She is known for mass choreographed demonstrations against the Vietnam War in downtown San Francisco in the late 1960s and early 1970s.

Halprin founded the groundbreaking San Francisco Dancer's Workshop in 1955 and the Tamalpa Institute in 1978 with her daughter Daria Halprin. Through her entre career we see her creating group events, like her global happening called "Earth Run," that use ritual and movement as powerful forces for positive change in the world. Though we associate these with the very loosely put-together "Happenings" that were prevalent then, her works were clear examples of very disciplined, structured improvisations.

We also learn in the DVD how in the early 1970s, Halprin met personal tragedy in the form of cancer. Interestingly for somatic practitioners, it was during a private practice of working with drawing and moving[5] that she got a strong intuition that she had a health problem, which turned out to be a pelvic cancer. Through focusing her feelings in art and movement, she feels that she was able to arrest the malignancy. Her discovery: it is necessary to express the dark side, to use its safely expressed power to help the healing process.

Watching this – and other healing ritual pieces in the DVD – is difficult, awe-inspiring and powerful. The main message we are left with: reverence for the body, and especially the aging body. There are stunning video excerpts of her dancing nude or scantily clad, and completely at peace, really transcendently graceful and evocative of the spirit power in the flesh. She treads a line near exposing something 'too personal' but does not cross it, nor does she aggrandize or wallow. It is simply a seldom-seen level of authenticity, brought forwards with courage, and the unfailing discipline and no-nonsense probity of the lifelong artist.

The trailer can be viewed at www.breathmadevisible.com, where there are also links to purchase the DVD in the U.S., Switzerland, Germany, and Austria for home use. For educational/institutional use, it can be purchased from www.argotpictures.com.

### Endnotes

1. More Anna Halprin DVDs: *Returning Home* (2003) by Andy Abrahams Wilson , a 45-minute dance documentary in which eighty-something Halprin uses movement as a means of connecting the individual to nature, and art to real life; and *Embracing The Earth: Dances With Nature* (1995) also by Andy Abrahams Wilson , a twenty-three-minute film that shows dancers … moving with the shapes, rhythms, and textures of nature. (Info summarized from www.annahalprin.org.)

2. For more info on these ideas and more on her "Life Art Process," see Halprin's *Moving Towards Life* (Hanover, NH: Wesleyan University Press, 1995).

3. Lawrence Halprin was the architect for the Levi Plaza Fountains in San Francisco and the Roosevelt Memorial in Washington D.C. He exemplified an investigation in architecture of the links between space, form, and human movement.

4. Taken from Jack Anderson's *Art Without Boundaries: The World of Modern Dance*, Iowa City: University of Iowa Press, 1997, pg. 214.

5. She said during a workshop that I attended in 1997 that she developed this process in collaboration with Fritz Perls at Esalen.

# *Animal Healing: The Power of Rolfing® Structural Integration*

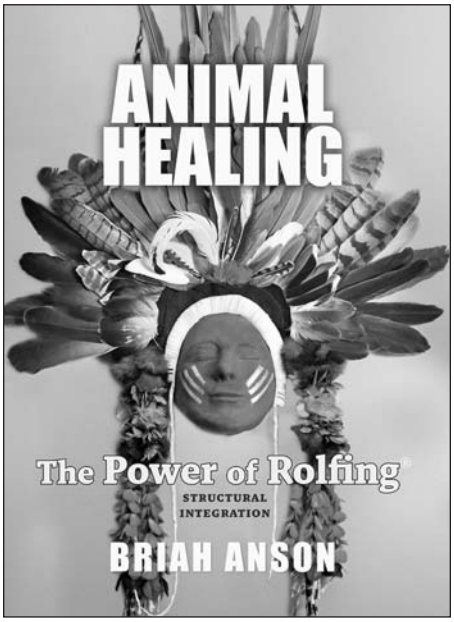
## by Briah Anson, Certified Advanced Rolfer™

**Reviewed by Marilyn Beech, Certified Rolfer™**

Briah Anson graduated from the Rolf Institute® of Structural Integration in 1979. Before she had even finished school, she had already experimented with applying the principles of structural integration (SI) to her pet dog. While her practice has always been filled with humans, her passion, curiosity, and innate natural connectedness has always been with animals.

Her second book, *Animal Healing: the Power of Rolfing® Structural Integration* (Mill City Press, 2011), is a generous offering of the knowledge she's gained during her thirty years as a pioneer in SI work with animals. As in her first book, *Rolfing: Stories of Personal Empowerment*, (North Atlantic Books, 1998), much of the material comes from the lived experience of this work. The subjects – which include dogs, cats, horses, birds, and guinea pigs – regain not just their structural integrity, but their ability to be themselves, and their owners bear witness to the transformational process. The book also allows its readers to learn about the fascinating lives of sled dogs in northern Minnesota, the art of working with eagles, and the transformations in working dogs, racehorses, and house cats.

On the surface, this looks like a book that is meant for pet owners and the few structural integrators who work with animals. This is not so, however. In reading Anson's notes and viewing the abundant photographs that illustrate how she looks at animals, how she proceeds with a series, and how she determines when to finish, we are reminded of the basic principles of SI that Dr. Rolf wanted us to remember: the relationship of gravity to the structure as a whole, and how to read that relationship in the lines of support and movement over the ground (or in the air, as the case may be). Add to this the requirement of finding connection with the SI client to which both




Anson and her animal-owners speak, and we have in this book both a fascinating read and an experiential reminder of our basic roots that make us structural integrators and not just fix-it folks.

Anson has also left us with the perfect antidote to the remark "I've heard it hurts!" Many of the pet owners have received a series of SI sessions after watching the effects on their animals. Over and over, Anson describes the behavior of dogs whose eyes roll back and whose tongues fall out, the mountain lion that lies down and purrs, the eagles with deadly talons and beaks that become glassy-eyed and drool. It's not a picture of pain.

Anson's expertise has often been used by veterinarians in Minnesota, and one of the book's stories, written by Dr. Julie Wilson, from the University of Minnesota, gives us an astounding look at the potential of SI for remedying birth defects. If it can be done with animals, what might be possible with humans? This book takes us on lively forays into the lives of animals and their owners, reminding us of the solidity of our root principles. It also reminds us that we can take those principles out into the world and let them fly in any way we can imagine.

*Animal Healing* is available directly from the publisher at www.briahansonrolfing-animalhealing.com.

### "Intersubjectivity and the Practice of Rolfing" by William Smythe

Structural Integration: The Journal of the Rolf Institute® would like to direct readers to a valuable resource for understanding intersubjectivity and how it impacts our work. Certified Advanced Rolfer™ William Smythe's master's degree thesis, "Intersubjectivity and the Practice of Rolfing®," is now available online at the Ida P. Rolf Library of Structural Integration (http://pedroprado.com.br/cgi-bin/cont_ipr.cgi) where it can be searched by author name or title. It's unique url is http://pedroprado.com.br/cgi-bin/cont_ipr.cgi?cmd=show1artigo&ling=eng&id=1168.

Smythe notes: "Although Rolfing SI has primarily emphasized the need to work with a person's structural and neurofascial network, I chose to shed light on the more subtle aspects of the work – the therapeutic relationship, sensation, affect, imagery, and so on. I particularly wanted to emphasize what goes on within the intrasubjective world of the practitioner as he/she conducts a session. My clinical and teaching experience has led me to understand that much of what brings about discomfort and pain within a Rolfing session has most to do with the practitioner's inner state of mind-body."

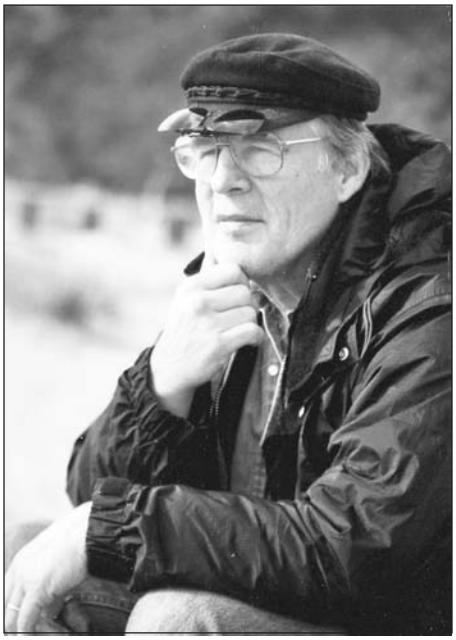
# A Tribute to Don Hazen, D.C., Certified Advanced Rolfer™

Don Hazen was more than a colleague, he was a good friend. We became friends when, soon after he started to practice Rolfing® Structural Integration (SI) in Berkeley, he invited me to dinner. That evening, I discovered that he was not only a good Rolfer but also an excellent cook. After dinner he brought out his collection of jewelry, which he had made. The work was meticulous and beautiful. I knew then that I had a friend and colleague with many talents. Over the years, Don's talents only proliferated, as he became skillful in carpentry, open-water kayaking, and eventually photography.

As a Rolfer, Don's interests led him eventually to chiropractic college at Life Chiropractic College West, from which he graduated cum laude. My wife Georgette Delvaux, who is also a Rolfer, was in school at Life Chiropractic College at the same time as Don. One day the two of them were standing in the corridor comparing notes on how ignorant some of the instructors were, when the academic dean of the school snuck up on them in the hall, laid one arm on each of them and said: "Both of you in one class would be dangerous!" The two of them did more than uphold the high standards of Rolfing SI during their time as students at Life Chiropractic College.

Don's interests after chiropractic college turned to neurology. He spent time in a post-graduate neurology program and also studied with J.P. Barral, eventually elaborating on the theory and technique of nerve release work. Don's insistence that nerves and the perineural sheath create structural restrictions that are of equal significance to the fascial restrictions of traditional Rolfing SI has added to our understanding of the myriad forces acting on structure.

As Don faced the grim prospects of a battle with cancer, it was apparent that he would manage his illness with the same intelligence and creativity with which he practiced as a healer. He continued to treat his patients and to be open with them about his illness. Many say that his powers as a healer increased during this time. He took time to wander in wild places, where he would find the inspiration that appeared in his remarkable photographs, one of which hangs in the Rolf Institute®. Visiting him in the last weeks, his body's weakness was evident, but talking to his wife Mollie, it was clear that Don's vital spark continued to burn. We are illuminated by his light.



A portrait of Don by his wife, Mollie Hazen

**Michael J. Salveson**
**Certified Advanced Rolfer**

Don Hazen had a fiery and fluid presence in the Rolf Institute. He sat on my selection committee back in the 1980s and added curiosity, enjoyment, vitality and a mischievous spirit to every discussion that occurred in that context. Where some people went down a predictable path, he would veer off spurred by his own interest in the person that would spark new thoughts.

I organized a workshop in New Mexico for him to come teach his Neurology of Posture. This would end up being one of the last ones he taught before he became ill. I am sure all those in the class would agree that his knowledge of the subject matter was not to be matched anywhere. Don had dug deeply for years to create this work from his Rolfer's viewpoint and touch. He is really the founder within the Rolf Institute of the understanding of how a Rolfer approaches and works on the nerves. He treated the nervous system as part of the structural system, not the visceral. He recognized that the nerves were palpable and said it completely changed his practice. He studied for years and brought all his humble "unknowing" as well as his knowing to the class. This was no mere hobby to make big money teaching workshops. This was his passion for sharing the depth of what he came to know about our ability to affect all the realms Rolfing SI can touch by working in the pathways of the nerves.

Don taught with generosity and emotion. He was not aloof or removed from his subject matter, ever. He was embodied in the true sense when he worked and when he taught. Even after he was very sick, he continued to work and see clients as this was his deepest way to stay alive and connected. Everyone who knows him remembers him dancing wildly with great abandonment at every annual meeting. His photography traveled with him to each workshop he taught, and he planned his workshops based on when and where he could take better pictures.

Don's contributions will last forever working their way into our hands, our curriculum, and our understanding of the human body in gravity. Thank you, Don, for evolving our work and adding the delicate profound work you taught.

**Valerie Berg**
**Certified Advanced Rolfer**

Don with Adyashanti, the Hazen's Buddhist spiritual guide and friend. Adyashanti notes "Don was a simply remarkable, incredible loving and gifted being who made a profound difference in the lives of all who met and knew him."

# 2011 RISI Membership Conference

**By Suzanne Picard, Certified Advanced Rolfer™**

The Rolf Institute® held its membership conference October 26-28 with the theme "Celebrating 40 Years of the Evolution of Dr. Rolf's Vision: Deep Roots and Soaring Branches." Michael Polon's opening statements and introductions began the event, reminding us of how our society looked back in 1971 when the Rolf Institute was founded, and how both our Institute and our world have grown. While our larger culture has evolved from Encyclopedia Britannica to Google, our profession has evolved from a small and highly dedicated tribe to a global community. In attendance were Rolfers who have worked in six different decades. Personally, it was a wonderful feeling to have each of these groups acknowledged, to feel the continuity of Dr. Rolf's vision and the passion that we all share for this work. We were also privileged to meet one of Rolf's sons and one of her grandsons.

The conference commenced with "Sharing the Gift of Inspiration: Remembering Dr. Rolf" a panel of seven Rolf-era graduates: Rosemary Feitis, Jim Asher, Peter Levine, Nicholas French, Eric Jacobson, Sharon Hancoff, and Karl Humiston. These elder statesmen shared their stories and insights, ranging from humorous to profound. Just as important, they shared their presence. One could not help but notice their calm and depth of being: each one a shining individual, together, a collective embodiment of Rolf's body of knowledge and wisdom. Watching them acknowledge their mentor, and bear witness to the effects of her work in their individual lives and in the inception and continued development of our field, was a moving experience. Humiston, now in his eighties, shared that he is still embodying new aspects of the work. Asher described how osteopaths would bring Rolf patients they were unable to help. Levine gave a moving account of when Rolf changed his moniker from "Peter Paper" (owing to a research project aimed at documenting changes in a client's magnetism utilizing magnetically-sensitive paper) to "Peter Hands," a nickname that had previously been given to Peter Melchior. Levine's description (paraphrased) of the session that earned this: "I took a breath, felt my back-line, sensed my feet on the floor, connected with the tissue, and it opened in front of my hands!" Feitis described overhearing Rolf call her a "thorn in my side," but then going on to say, "but that's alright. I am a thorn in her side too!"

The Plenary Session, William Smythe's "Healing the Trauma Body," was an eloquent, clear, and deeply informative presentation on this essential aspect of our work. (His master's thesis on Rolfing® Structural Integration (SI) and intersubjectivity is available online in the Ida P. Rolf Library of Structural Integration at http://pedroprado.com.br/cgi-bin/cont_ipr.cgi.)

Humiston, Hancoff, Jacobsen, Asher, Ray McCall, Linda Grace, Kevin McCoy, Thomas Walker, and Russell Stolzoff filled the first afternoon, as well as the next morning, with breakout sessions. I was able to attend McCall's and McCoy's. McCall led a lively discussion in Socratic form on the energetic taxonomy, continuing Rolf's fine tradition of questioning our underlying assumptions. McCoy shared his knowledge and experience, in lecture and demonstration, regarding working with arms and the connections they have, anatomically and embryologically, with our heart space.

Robert McWilliams was able to report to me on Jacobson's, Hancoff's, and Stolzoff's sessions. Jacobsen's "Quantitative Research on Effects of SI" examined some of the nuts and bolts of designing research projects, with a detailed breakdown of different types of studies, to improve our "research literacy." Also in this session, Karen Price presented her research done in partnership with Stanford University investigating the efficacy of SI for children with cerebral palsy. Through Price's efforts, the positive improvements and benefits to the children were recorded and brought to the attention of hundreds of thousands of physicians. "Integrating Scar Tissue into the Fascial Web" was the theme of Hancoff's session. The work she did with participant-models, though seemingly casual and quick, demonstrated how scar-specific techniques Hancoff has pioneered can help to quickly "re-engineer" the scars from accidents and invasive surgeries. Thomas Myers, also present, added his insight from laboratory experience of seeing large clumps of scar tissue completely disassemble, once removed from their myofascial context in the body. In his presentation "How to Start a Successful Ongoing Free Children's Clinic," Stolzoff described methods and wisdom he and colleagues in Bellingham, Washington have used while running regular clinics for over twelve years. He drew on his experience, as well as eliciting interesting questions and feedback from the audience, notably from Price and from Robert Toporek, whose work with children goes back to Rolf's time).]

Other breakout sessions included Walker's "Inherent Motion: Using the Body's Self-Organizing Processes to Enhance the Goals of SI," Grace's "Jazzing It Up: Basic Principles for Improvising Rolf Movement® Work within the Rolfing SI Session," Humiston's "Mental Health is in the Body," and Asher's "Low-Back Pain Conference Ideas on Pain." All of the presentations reinforced my belief in how radical and profound our work is when we bring its full potential into the world.

At all membership conferences we have the opportunity to connect with our colleagues from all over the world and to discover where their practices have taken them. This year was no exception. One shining light was Briah Anson, whose new book Animal Healing, the Power of Rolfing Structural Integration was so popular that this author will have to get her copy online. And, of course, a good time was had by all at the masquerade ball! The conference came full circle with the subsequent membership meeting, where members had the opportunity to meet our new Board of Directors Chair Kevin McCoy and hear from Executive Director Dianna Yourell.

# Congratulations to the New Graduates

***U.S. – July 2011***
**Faculty:** Larry Koliha (Instructor), Jeremiah Evers (Assistant)
**Students:** Thomas Bacon, Jason Beickert, Corin Blanchard, Anthony Buono, Scott Burd, Lynn Cohen, Chris Copp, Will Gallucci, Ryosuke Ito, Gina Kilgus, Patricia Laurin, Jenny Liu, Harriet Olmstead

# Class Schedule

*BOULDER, COLORADO*

*Phase I: Foundations of Rolfing® Structural Integration*

**January 30 – March 12, 2012**
Coordinator: Suzanne Picard

**June 11– July 23, 2012**
Coordinator: Adam Mentzell

**September 3 – October 15, 2012**
Coordinator: Michael Polon

*Phase I: Accelerated Foundations of Rolfing Structural Integration*

**October 30 – November 12, 2011**
Instructor: Suzanne Picard

**April 1 – April 14, 2012**
Instructor: Michael Polon

*Phase II: Embodiment of Rolfing Structural Integration & Rolf Movement® Integration*

**January 16 – March 8, 2012**
Instructor: Ray McCall
Principles Instructor: Mary Bond

**April 16 – June 7, 2012**
Instructor: Thomas Walker
Principles Instructor: Kevin Frank

**August 20 – October 11, 2012**
Instructor: Russell Stolzoff / Michael Murphy
Principles Instructor: Rebecca Carli-Mills

**October 22 – December 20, 2012**
Instructor: Larry Koliha
Principles Instructor: Carol Agneessens

*Phase III: Clinical Application of Rolfing Theory*

**October 17 – December 16, 2011**
Instructor: Valerie Berg
Anatomy Instructor: John Martine

**March 12 – May 4, 2012**
Instructor: Ashuan Seow
Anatomy Instructor: John Martine

**June 11 – August 3, 2012**
Instructor: Kevin McCoy
Anatomy Instructor: Michael Murphy

**October 22 – December 21, 2012**
Instructor: Bethany Ward
Anatomy Instructor: Juan David Velez

*Rolf Movement® Certification: Vision, Breath, and Orientation: The Key Elements of Movement Integration*

**March 21-24, 2012**
Instructor: Carol Agneessens

*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

*CHARLESTOWN WEST VIRGINIA*

*Rolf Movement® Certification: Our Spine in Motion*

**July 16-20, 2012**
Instrutor: Tessy Brungardt & Rebecca Carli

*HOLDERNESS, NEW HAMPSHIRE*

*Rolf Movement® Certification: Embodying Rolf's Structural Integration Recipe*

**August 22-28, 2012**
Instrutor: Kevin Frank

*SANTA CRUZ, CALIFORNIA*

*Rolf Movement® Certification: Interoception: The Primordial Roots of Sensation, Tonus and Gesture*

**October 9-13, 2012**
Instructor: Carol Agneessens.
with Hiroyoshi Tahata

*BALI*

*Phase I: Foundations of Rolfing® Structural Integration*

**January 30 – March 9, 2012**
Coordinator: Raquel Motta

*Phase II: Embodiment of Rolfing Structural Integration & Rolf Movement® Integration*

**May 7 – June 29, 2012**
Instructors: Jane Harrington, Raquel Motta

*Dual Training Phase III: Clinical Application of Rolfing Theory & Rolf Movement Certification*

**October 1 – December 7, 2012**
Instructor: Jörg Ahrend-Löns, Raquel Motta
Anatomy Instructor: Fernando Bertolucci

*Advanced Training*

**March 26 – April 27, 2012**
Instructors: Tessy Brungardt

*GERMANY*

*Basic Rolfing Training: Intensive*

**Phase 2: October 3 – November 23, 2011**
**Phase 3: January 30 – March 21, 2012**

*Rolf Movement® Training*

**Phase I: April 2-10**
**Phase II: June 9-19**

Instructors: Pierpaola Volpones & Giovanni Felicioni

*Advanced Training*

**Phase I: April 13-25, 2012 in Italy**
**Phase II: July 16 – August 1, 2012 in Germany**

Instructor: Peter Schwind
with Christoph Sommer

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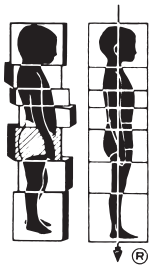

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