Structure, Function, Integration.

Journal of the
Dr. Ida Rolf Institute®

December 2025

EMBODIED PERFORMANCE

From the dance studio to the weight room to the USA Men's Pole Vault Champion, this issue illustrates how performance is enhanced through structural integration.

PROPRIOCEPTION AS INTERVENTION

Visualize proprioception as an equally weighted construct, alongside structure and movement, in our structural integration practices.

GROW YOUR PRACTICE WITHOUT SOCIAL MEDIA

Being in the business of providing a therapeutic relationship means we offer a high level of genuine rapport and trust; we don't have to play the algorithm game to be visible and viable.

Also in this issue

Aline Newton, with Rebecca Carli-Mills, invites us to participate in *Reimagining the Body* (2025).

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Graceful Tension (2025)

December Cover

Choreographer:
May Kesler

Dancers:
BetsyAnn Baron
Anne Willet
Tina Wang
Laura Bergmann
Zach Wrigh
May Kesler

Photographer:
Danielle Angell

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The cover image for the December 2025 issue of *Structure, Function, Integration* is inspired by *Graceful Tension*, a dance performance presented at the 7th Fascia Research Congress this summer in New Orleans, Louisiana. Created and performed by choreographer, dancer, physical therapist, and massage therapist May Kesler, the work embodies her lifelong dedication to healing through movement and to the evolving science of fascia.

Over her forty-five-year career in manual and movement medicine, and more than sixty-five years as a dancer – continually studying, teaching, and performing – Kesler has sought to bridge the science of anatomy in motion with somatic expression. She received a Master of Science in Physical Therapy from Columbia University and a Master of Arts in Dance from American University. Her introduction to fascia began with Barnes' Myofascial Release courses, and deepened through the pioneering fascia work of Dr. Jean-Claude Guimberteau. In 2015, she connected with the international community at the Fascia Research Society Congress in Washington, DC, and later at the British Fascia Symposium (2016), continuing her studies with leading teachers in biotensegrity, fascial anatomy, and dissection.

Kesler describes understanding the fascial system as a paradigm shift in her approach to healthcare. After witnessing Dr. Graham Scarr demonstrate tensegrity models made of sticks and elastic bands that emulate biotensegrity dynamics, she knew dance could communicate this living architecture in a way words alone could not. For years, she has choreographed fascia-inspired works using fabric, strings, and natural structures such as tree trunks to create environments resembling large-scale biotensegrity models, inviting dancers to interact with these forms as they move.

Creating movement to represent fascia – using her own body and materials shaped by other dancers – became a profound learning tool. "We have to live in our fascia to express what fascia is," she says. Kinetic, somatic exploration complements anatomical, visual, and auditory study by allowing embodied understanding.

For the 2025 Fascia Research Congress performance of *Graceful Tension*, Kesler assembled an ensemble of fascia researchers and health practitioners who are also dancers. Over several months of virtual rehearsals, she assigned fascial-centered movement investigations and curated their material into the final choreography. Inspired by Dr. Jaap van der Wal's embryological fascial models, the dance opened with an embryonic movement sequence before evolving into a dynamic group interaction, recalling images from Guimberteau's work as well. Wrapped in shimmering iridescent fabric and negotiating tension within a matrix of materials, the dancers illuminated the living interplay of compression, stretch, connection, and release.

Through moments of stillness, density, flow, and spaciousness, the performers individually explored their own fascial expression while simultaneously forming a unified connected whole – demonstrating the body as a lattice of evolving relationships. The work invited the audience members to sense our shared connectivity through fascia as a continuous, dynamic fabric.

Kesler's mission is to help people – especially scientists, healthcare providers, and bodyworkers – see fascia as an interconnected, fluid, bioelectric, vibrational, and nonmechanical system,

and to show them how to experience it through creative movement for both education and healing. She plans to offer fascia-focused dance retreats open to both dancers and non-dancers, using the same structured improvisation assignments developed for *Graceful Tension*. Her invitation is simple: explore a piece of fabric – twist it, tension it, release it – and let that exploration guide movement in your own body. Where does the fascia take you?

You can see Kesler's 2022 dance, *Fascia Illuminated*, presented at the 6th Fascia Research Congress in Montreal, Canada, on vimeo.com.

[https://vimeo.com/759112375]

For more information about May Kesler, you can contact her at: keslerpt@gmail.com, on Instagram at @mkbdancer, https://www.instagram.com/mkbdancer/ and you can visit her website at www.maykesler.com.

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Next Time

• Stressors, Forces, and Resiliency

Dr. Ida Rolf (1896-1979) was concerned with the physics of the body, the alignment of the myofascial structure; Rolf described fascia in the 1970s as the organ of structure. When this spatial organ is balanced in gravity, people experience ease and comfort in their bodies. In our next issue, June 2026, we hear from authors who are experts in the forces involved in being a human in our world, the physical stressors we interact with, and how orienting to gravity is involved in resiliency throughout our lifetime.

From the Editor-in-Chief

Lina Amy Hack

'There is a difference in energy levels of performance between the words "evoke" and "demand."'

– Dr. Ida Rolf, (1896-1979)
In ***Ida Rolf Talks about Rolfing and Physical Reality*** (1978, 94),
New York: Harper and Row Publishers.

Photo Credit: David Kirk-Campbell.

Honing in on our Expertise

Being an excellent manual and movement practitioner, requires that one keep an open mind as an active practice of expanding possibilities. That we may grow as the months and years of service as a Rolfer® go by in a way that is palpable not only to ourselves, but also professionally observable by our clients and community is beautiful. It's a positive, reinforcing cycle of expansion and unfolding. Coming together as professionals and listening to each other is where our intellectual riches can be nurtured and grow. In the past fifteen months, there have been many ways to do this in our structural integration community, for example: the Dr. Ida Rolf Institute® Global Summit (October 17 to 18th, 2025), the International Association for Structural Integrators symposium (Nov 9 to 10th, 2024), and the Fascia Research Congress in New Orleans, Louisiana (August 10 to 14th, 2025). I'm a big fan of all these offerings in our structural integration world, and you will notice in these pages that I personally share the passion for fascia research with our friends in the Fascia Research Society, and I hope you do too.

In that spirit, I offer you the December 2025 issue of *Structure, Function, Integration: The Journal of the Dr. Ida Rolf Institute®* (Issue 53, Number 2). A collection of articles by Rolfers® and Rolf Movement® practitioners exploring 'Embodied Performance', the intersectionality between athletics, gravity orientation, refined movement, and developing a rich proprioceptive map. We have a few instructors sharing their insights. Pierpaola Volpones has worked with many professional and amateur athletes; her article shares insights and examples of supporting athletes as they push their limits. Aline Newton and Rebecca Carli-Mills graciously allowed me to interview them about a concept that they presented in their 2022 Tonic Function Study Group: the idea that a client may have 'too much body' lingered with me long after the class ended. Good timing, as Aline's long-anticipated book has just been published; you can read a review of *Reimagining the Body* (2025) on page 78.

We have a new author in this issue, German Rolfer and sports scientist Jakob Reichardt, who has shared his perspectives on force and power in the context of Rolfing® Structural Integration. He links strength training with the myofascial and neuromuscular realities of movement in gravity. Want to meet a Rolfing client who competes on the world stage? Rolfers Mandy Cheek and Patrick Clough interviewed their client, American pole vaulter Austin Miller. After reading their conversation, I encourage you to look at Austin's videos on his Instagram account; it made clear to me what a multi-planar sport is.

Special note is deserved for Szaja Gottlieb's article, "Structure, Movement, Proprioception: A New Paradigm for Structural Integration" on page 64. Szaja, an artist and Rolfer, makes an excellent pitch to all of us to explicitly include an updated understanding of proprioception as an equal part of the work of structural integration, alongside 'structure' and 'movement'. While we are all working with proprioception when delivering the Rolfing Ten Series®, Szaja wants us to know about the recent discovery of Piezo channels, a direct molecular relationship between touch and proprioception. And he expands on the science to propose novel concepts – the propriosphere – and – propriosomatics – to transform our understanding of postural organization, movement patterns, and sensory awareness, further.

I would suggest you start with our columns; they are lovely bite sized articles that will take you on a journey to the Fascia Research Congress and a conversation I had with Dr. Carla Stecco about the status of fascia research, to the philosophical origins of the word 'somatics' with 'The Philosophical Touch' column, and a fresh take on practice building and social media – maybe we don't need to make videos to be great practitioners?! What a radical idea.

It has been a journey curating these articles for you, from a wonderful group of authors, with the help of a team of volunteer Rolfer-editors who make this journal possible, a design team who make the content beautifully organized for us, and our quality control copy editor who catches all those sneaky errors that seem to want to find their way into the final copy. Thank you to all of you. And thank you to you, the reader; we do all this for you. Please enjoy!

Lina Amy Hack

Editor-in-Chief of
Structure, Function, Integration

Fascia Insights

An Interview with Dr. Carla Stecco

By Lina Amy Hack, Certified Advanced Rolfer®, and Carla Stecco, MD

Carla Stecco

Lina Amy Hack

ABSTRACT *At the 7th Fascia Research Congress in New Orleans, Louisiana, Dr. Carla Stecco shared her enthusiasm about the growing global collaboration and scientific rigor in fascia research. Stecco discusses her keynote on lipedema, revealing that affected individuals have thicker, more collagen-rich superficial fascia and larger, poorly supported adipose lobules. Also, Stecco suggested that precise knowledge of which fascial layers are affected by fascial pathology can help practitioners choose the most appropriate manual techniques.*

Editor's note: This conversation took place in person on August 14th, 2025, at the 7th Fascia Research Congress at the Marriott Hotel in New Orleans, Louisiana. The four-day conference drew approximately 600 attendees, with Dr. Carla Stecco serving as one of the keynote speakers.

Connecting Fascia Researchers and Practitioners

Lina Amy Hack: We are here in New Orleans, Louisiana, for the 7th Fascia Research Congress (FRC) with Dr. Carla Stecco (see Figure 1). Thank you for meeting to discuss fascia research and your thoughts on fascia science. How has your experience been this week? What impressions stand out for you?

Carla Stecco: Thank you, Lina. I'm very happy because I saw people enthusiastic and looking for new connections to further their fascia research. All the people here at the conference have brought their knowledge, and they are also discovering new knowledge that others have shared. This is a unique feeling that we can have together in our congress. There is a lot of fun happening. I am finding that people really love this topic, and they want to connect with me about it, and that is amazing to me; so much joyful interest in fascia.

Also, I have felt happy because there has been very good research presented. I think that fascia research is moving to the next level of knowledge because we have started to have many different research groups from around the world that are looking at fascia in a scientific way. Some

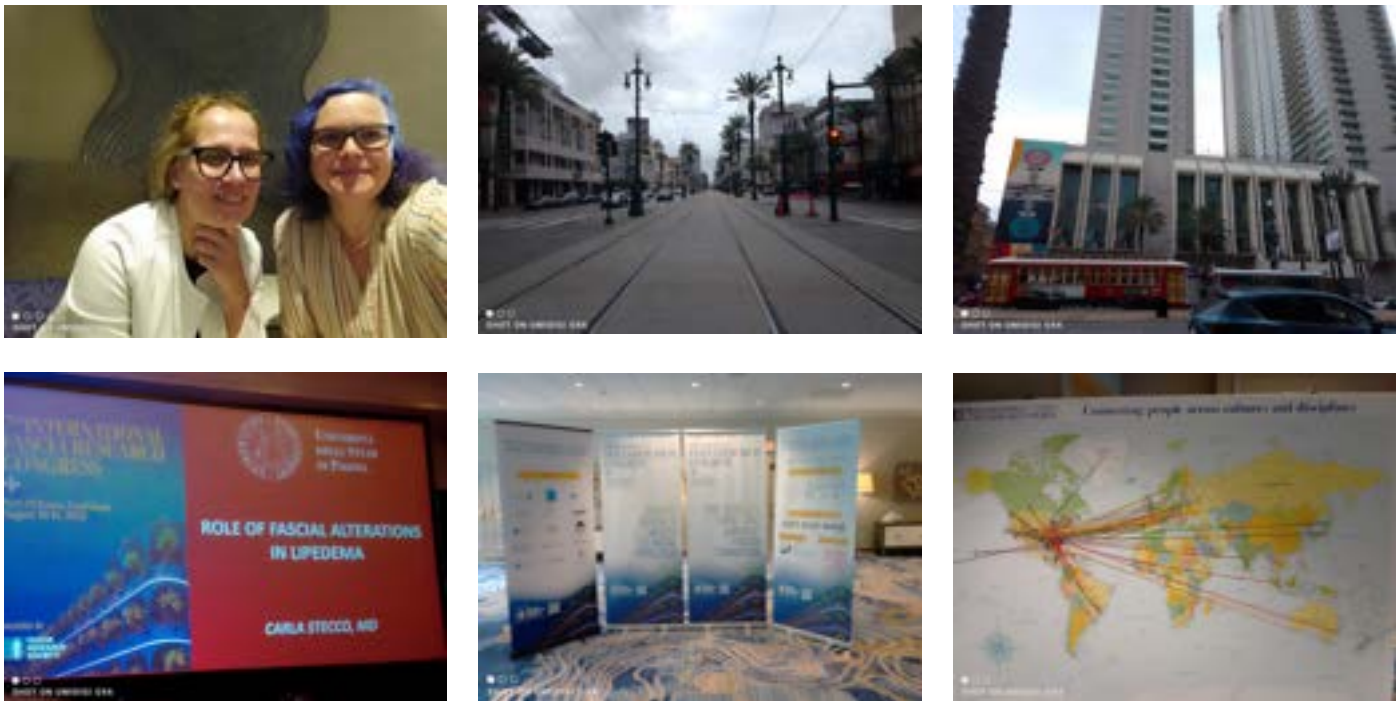

Figure 1: Dr. Carla Stecco and Lina Amy Hack at the New Orleans Marriott Hotel for the 7th Fascia Research Congress. Photos by Lina Amy Hack.

are demonstrating qualities about different fascia-related cells, new information about the innervation of fascia, and others are developing ultrasound techniques to ask new questions about fascia. It's all very good.

Lina: That is so true. Great research is being presented, and meaningful connections are being made between the talks. People seem very interested in engaging with new individuals, one-on-one and in small groups, which is so rewarding.

You delivered a keynote presentation on Monday morning titled, "Role of Fascial Alterations in Lipedema." And your talk focused on the superficial fascia of people with lipedema (see Figure 2). As a Rolfer®, I have had many clients over the years who present with this body condition. One part of your work that stayed in my mind was that you demonstrated that, for people with lipedema, the superficial fascia at the hip is thicker, has more collagen, a thicker retinacula cutis, and has larger fat lobules that are not well-supported by the retinacula cutis.

For Rolfers, we often work with our clients side-lying, and your talk had me thinking about the time I've spent doing compression and shearing work with this kind of tissue. I know what you mean when you described the lumpy nodules. The tissue needs special consideration; it could bruise easily, it seems inflamed, and the person may experience touch interventions as painful.

Anecdotally, I've had success with these clients; they tell me the Rolfing Ten Series® seemed to diminish their generalized experience of pain and increase their experience of comfort in their bodies.

Would you hypothesize that direct manual therapy targeting the superficial fascia in individuals with lipedema is addressing this tissue? Would you think that the fascia may become more organized with manual input? **Carla:** I think so. The better knowledge we have of what fascia is involved, then we know what tissue is involved with the person's discomfort, and this can allow us to be more precise in the manual technique we apply and also in the selection of the modality of the approach. Lipedema seems to be a pathology that is affecting the superficial fascia and what they call the deep deposition, which is the

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Figure 2:
Information presented by Dr. Carla Stecco on Monday, August 11th, 2025, at the 7th Fascia Research Congress in New Orleans, Louisiana. This information is from her slides of her talk, "Role of Fascial Alterations in Lipedema."

Lipedema

It is a painful chronic medical condition characterized by abnormal and symmetrical fat accumulation.

It is estimated that lipedema affects 10% of women.

It is resistant to diet and exercise-induced weight loss and lacks metabolic abnormalities.

The cause is unknown, but puberty and pregnancy often trigger or exacerbate it.

A typical aspect is microangiopathy [a disease of very fine blood vessels], which causes easy bruising and functional alteration of lymphatics.

Anatomical studies reveal:

Lipedema is painful:
Superficial fascia is well innervated (both sensitive and autonomic innervation).

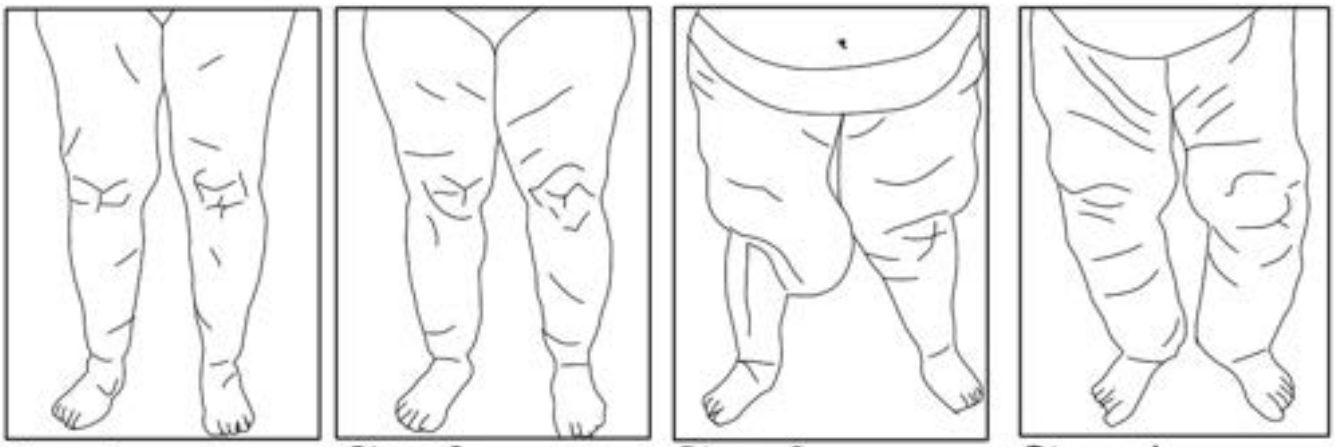
Lipedema has easy bruising and capillary fragility:
Superficial fascia has wide subcutaneous vascular plexuses.

Lipedema is associated with inflammation:
Superficial fascia hosts resident mast cells.

Lipedema has common features with lymphedema:
Superficial fascia is rich in lymphatic vessels.

Lipedema is affected by estrogen alterations:
Fasciae have receptors for sex hormones.

Stages of hip to ankle lipedema.



(Buso et al. 2019)

interface between the superficial fascia and the deep fascia. (See figure 3.) So, we need to focus on the mobilization of that part.

We know that in the lipedema patient, there is also inflammation, acute and chronic, and consequently probably we need to pay attention to not be too aggressive because they already have inflammation. So, we need to stimulate a better movement of the superficial fascia with respect to the deep fascia without stimulating the inflammation.

As a Fascia Manipulation® teacher, I'm not afraid of the inflammation because in the deep fascia, we are looking for the inflammation to stimulate the remodeling. But in this type of patient, I think that at least at the beginning, we need to silence the immunity component and not trigger too much inflammation.

Lina: Makes sense. The histology images that you presented showed that this fascia is more disorganized. Maybe this is a simple way to think about it, but do you think that there is an ideal manual therapy pressure and direction of force into these layers that may assist in the fascia becoming more organized?

Carla: Yes, I expect that. If we are able to restore mobilization between the superficial fascia and the deep fascia, the mechanical line of force may assist in the remodeling of the superficial fascia. Remember, all the time our superficial fascia is under remodeling, but if we have some adhesion, the remodeling is not going well. So we need to free the tissue, to restore the gliding, and that way the remodeling can work much better.

Paying Attention to Hyaluronan

Lina: Fascinating. You also reported the observation that the superficial fascia of lipedema patients has an increase of hyaluronan (also known as HA) and water, giving the lipedema adipose a stiffer quality. Also, HA can be linked to the induction of pro-inflammatory events. That's very interesting because I usually think about HA as a molecule that allows for the slide and glide between fascial layers.

Carla: Hyaluronan has an incredible spectrum of functions. Depending on the molecular weight of the HA in the tissue, it could be pro-inflammatory or it could

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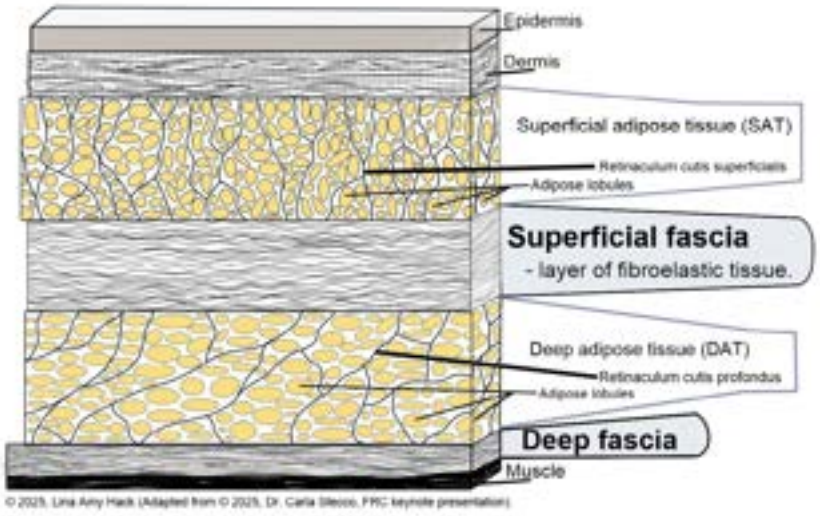

Figure 3: An illustration of a cross-section of superficial fascia, from the epidermis to the muscle, adapted from Dr. Stecco's slides from her keynote address.

Carla: Hyaluronan has an incredible spectrum of functions. Depending on the molecular weight of the HA in the tissue, it could be pro-inflammatory or it could be anti-inflammatory.

be anti-inflammatory. In some conditions, HA stimulates new vascularization, but in other conditions, HA can stop the vascularization. So, we are not sure what can cause the hyaluronan in lipedema patients to be stiff because we don't know the molecular weight of the hyaluronan that is produced for them specifically. But what it could be, we are sure that in the sample we found other cytokines such as the TNF-alpha, some metabolic lipids related with the inflammation that really suggests that we have an HA molecule associated with the inflammation inside the superficial fascia.

Lina: Your description leads me to think that HA is more a family of molecules, not just a singular molecule.

Carla: The molecule is always the same, but it can aggregate, and other chemical groups can be added on, changing its molecular weight. HA can be found as very small molecules that are just a few kilodalton's of weight, and there are also HA aggregates of 2,000 kilodaltons. Consequently, there is a really huge spectrum in size of hyaluronan, and different functions of the different sizes.

Lina: That is fascinating because hyaluronic acid is a buzzword in society now. I see it on cosmetic packaging; health products claim their products contain it, but your presentation got me thinking that it isn't just a singular molecule. It is more dynamic than that in the body, and we have to learn more about it.

Carla: Yes, absolutely. Also, in the media, hyaluronan is spoken of as something that is always good, but that is probably not exactly how we should think of it. People have started to inject hyaluronan inside the fascia, but what is the molecular weight that they are injecting? We don't need high molecular weight, most likely, as we do inside the joint, because we need something that is smaller, that allows gliding. We don't want something that creates resistance to the compression. So, yes, we need to pay more attention to this molecule.

Lina: I would think people need to be cautious about the source of the HA that they're injecting.

Carla: And that is another key problem, not only for the source of that external hyaluronan, but also who produced that product. We need to think about what are the correct inputs to stimulate inside the body for the production of our own hyaluronan.

Lina: This was one of my key takeaway messages from your talk. It painted a sophisticated picture about that molecule and that we shouldn't reduce it down to being just one thing.

Carla: Exactly.

Including the Interstitium

Lina: In January 2025, you and a team of fascia researchers published the paper, "Towards a Comprehensive Definition of the Human Fascial System" (Stecco et al. 2025). Can you tell us about the fascial interstitium? And is it always associated with the collagen-elastin matrix?

Carla: In this new definition, we tried to find a comprehensive definition that captures the microscopic nature of fascia to the macroscopic. Fascia is not only a layer that we can work with our hands, and dissect, but fascia is also the element that allows transmission of the force and creates a gliding interface that allows movement at the molecular level. And the interstitium is exactly the smallest; this definition includes the very small microscopic part of the fascia.

At the microscopic level, that is where we have the fluid that moves, this is where we have the gliding between different cellular structures, between the vessels and the surrounding tissue, between the small nerve and the surrounding tissue. So, I think we can include the interstitium in the definition of fascia, considering this very broad vision that moves from the macroscopic level to the microscopic.

Lina: That's exciting to hear. In the structural integration profession, we feel and listen to all the different fascial layers you and your colleagues describe. We will sometimes feel significant textural changes while working, where the tissue starts out stiff and firm, then becomes soft and pliable within minutes of our manual interventions. What do you think can account for these palpatory changes that manual therapists experience?

Carla: I think that is the hyaluronan and the water component that can modify easily because the fibrotic component, the collagen and elastin, can only be modified by remodeling. If manual interventions do free their tissue, if we recreate the gliding that is possible, then we can also improve the collagen fiber. But it's not a direct work of the manual treatment because fascia is much too stable to have modifications with just forces applied by hand.

The water component and the hyaluronan can easily be modified with the manual treatment. So, when we are stiff, it's like we expect that it is like a concentration of hyaluronan, an aggregation of hyaluronan that links water and creates a stiffer tissue. By applying manual forces, maybe we move the big water-bound molecules to become smaller aggregations, and we recreate the gliding.

We also trigger some inflammation, and that can trigger the remodeling of the fibrotic component. And it is for that reason that I think that manual treatment is a key element to start the process. When thinking about how to fix chronic issues in the fascia, manual therapy and adding some exercise along the direction

where we have broken the fixations and stimulate the correct alignment of the collagen fiber production.

The Work Continues After the Session

Lina: Ida Rolf [PhD, (1896-1979)] was known for saying to her students that the changes induced by manual fascial work happen after the client has left the session; the change happens after they leave the office. Your research seems to correlate with that observation, that the forces of manual therapy begin fascial remodelling that progresses for hours after the intervention. Is this true?

Carla: Yes, I totally agree with Rolf because I think that we just trigger a process, but we are not really able to modify fascia directly or in a stable way. The situation is, the body can stabilize the result of the input. And it's for this reason that finding the correct equilibrium in the point treated is important because otherwise, the patient comes back later.

Fascia Research at Health Conferences

Lina: These are the kinds of things being talked about at the FRC and it is both practitioners and researchers talking about two sides of the same fascia coin, so to speak. I've been wondering as I listen to everybody: doesn't fascia research also belong at other health and medical conferences?

Carla: I am sure that the information about the human fascia system needs to be brought to other conferences, but it's not as easy as you might think. Last year, I attended the World Congress of Pain, a conference held in Amsterdam, Netherlands, in August 2024. Professor Helene M. Langevin, director of the National Center for Complementary and Integrative Health (NCCIH), was with me, and together we were a pretty strong team.

Lina: Wow, you two are among our 'heavy hitters' in fascia research. How'd it go?

Carla: We were the only two people who spoke about fascia in the entire conference. It was disappointing because the conference was huge, with about 5,000 people in attendance, and nobody else spoke about fascia and pain. So, here we are at the fascia conference; we think that everyone knows about fascia. But it's not true. We have a lot of work to do to attract other medical and health professionals to be interested in what we know. And, it's the same with other conferences as well; there is a lot of work to do to let other professionals know about fascia research.

One profession that is curious about fascia is the anesthesiologists because they use the fascial planes to treat pain when patients need an anesthetic block. So they are a little more open-minded. We are starting to gain the interest of plastic surgeons, but there is still an incredible amount of work that needs to be done.

Lina: We have a big mountain to climb for fascia health to be considered important by general healthcare practitioners.

Carla: Exactly. And it is for that reason that I stress the concept of terminology in my publications because if we are not clear in the definition of what is fascia, why fascia is important, and what are the key elements that we need to explain this to professionals outside this circle here, then it would be very difficult to communicate with other people.

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Teaching Fascial System in Medical Schools

Lina: And last time we spoke in 2022, you mentioned the challenge it is to get fascia known and taught in medical schools. How is that line of education going? Are we still at the beginning of getting this information taught to future doctors?

Carla: It is going better in respect to last time. Two months ago, I was at the Congress of the American Anatomists, and I spoke to them in a session about fascia. I spoke about how important it is to teach the anatomy of fascia to students. And at the end of the session, one professor said, "Okay, we are convinced that we need to speak to our students about fascia. Now we just need to understand what are the ways to teach this information, in which course does fascia belong, and what are the key concepts that we need to transmit in the limited time we have with the students."

So I think this is good, now they have an interest in fascia and fascia research. Now, other feedback is needed to introduce this topic. From our side with our Fascia Research Society, we need to understand what has to be taught and in what way because they are now asking us about that problem.

Lina: That's great news! Thank you so much for doing this hard work in fascia research and communicating to the medical and health world about the human fascial system. I think our beloved Dr. Rolf would have loved talking with you and listening to your presentations. She certainly would have invited you into her parlour for coffee and tea many times to discuss all of this at great length. You are doing some heavy intellectual lifting for all manual therapists, and we are all here to support you. I see this with my own eyes here at this conference: so many talented movement and manual therapists mingling with the researchers. As a group, we value you. You are substantiating what we claim we are doing in our treatment rooms. Because of you, we bring to our clients scientific knowledge of what fascia is and how it responds to our work. Thank you for your time today, it is wonderful to see you in person.

Carla: You are welcome, Lina.

Dr. Carla Stecco is an orthopedic surgeon and professor of human anatomy and movement sciences at the University of Padova, Italy. She is a founding member of the Fascial Manipulation Association and of the Fascia Research Society. Her scientific activity is devoted to the study of the anatomy of human fasciae from a macroscopic, histological, and physio-pathological point of view. She has personally done over a hundred human cadaver dissections for research. She is the author of several books and more than a hundred and eighty peer-reviewed articles.

Lina Amy Hack, BS, BA, SEP, became a Rolfer® in 2004 and is now a Certified Advanced Rolfer (2016) practicing in Canada. She has an honors biochemistry degree from Simon Fraser University (2000) and a high-honors psychology degree from the University of Saskatchewan (2013), as well as a Somatic Experiencing® Practitioner (2015) certification. Hack is the Editor-in-Chief of Structure, Function, Integration*.*

References

Buso, Giacomo, Michele Depairon, Didier Tomson, Wassim Roffoul, Roberto Vettor, and Lucia Mazzolai. 2019. Lipedema: A call to action! *Obesity* 27:1567-1576.

Stecco, Carla, Rebecca Pratt, Laurice D. Nemetz, Robert Schleip, Antonio Stecco, and Neil D. Theise. 2025. Towards a comprehensive definition of the human fascial system. *Journal of Anatomy* 00:1-15.

Keywords

Fascia Research Congress; superficial fascia; lipedema; retinacula cutis; Rolfers; Fascia Manipulation; deep fascia; inflammation; hyaluronan; fascial interstitium; human fascial system. ■

The Philosophical Touch

Returning to the Root of "Somatics"

Andrew Rosenstock

By Andrew Rosenstock, Certified Rolfer®

ABSTRACT *For this third installment of The Philosophical Touch column, Rolfer® Andrew Rosenstock explores the philosophical origins and deeper meaning of the term 'somatics'. It emphasizes that somatics, coined by Thomas Hanna in 1976, refers to the body as experienced from within, rather than as an external object. The modern usage of the word somatics can at times be reduced to a buzzword, referring to slow or gentle practices, which overlooks its philosophical depth. For Rolfers, reclaiming the somatic perspective shifts their work from technical interventions to relational and perceptual offerings centered around the client's lived experiences.*

"The soma is the body as experienced from within."

Thomas Hanna (1988, 20-21)

The Philosophical Touch column is about the intersectionality of somatic bodywork and phenomenology, and is dedicated to the late Jeffrey Maitland, PhD (1943-2023), a treasured Advanced Rolfing® Instructor, philosophy professor, and author. My wish is to remind the structural integration community to challenge dualistic thinking when considering human structure and function. In the first column, I discussed language being like a mirror, the nature of meaning, prioritizing the client's lived experience, and linking mind and body as intimately connected (Rosenstock 2024).

In the last column, I explored that the body is not merely a vessel passively experiencing life; it is an active participant in perception, movement, and making sense of the world (Rosenstock 2025). I discussed the works of Austrian-German philosopher Edmund Husserl (1859-1938), the principal founder of phenomenology, and Maurice Merleau-Ponty (1908-1961), a French phenomenological philosopher. Their work supports us as somatic practitioners; it's through perception and responsiveness that our work truly comes alive. This article will continue to build on all these topics, bringing in the philosophical roots of embodiment, with a spirit of looking beneath the surface.

Let's turn now to the word *somatic*, a term many of us use without always pausing to ask what it actually means. Not what it's come to mean in popular culture and common usage, but what it meant originally when philosophy professor and movement theorist Thomas Hanna (1928-1990) coined it in 1976 to point toward lived, first-person experience (1988).

Today, somatic is used to describe everything from slow movement practices to trauma work, to anything that involves sensing the body from within. While those uses aren't entirely wrong, they

often miss the depth and precision the word once carried. In Hanna's original framing, somatics wasn't a technique or a trend. It was a philosophical stance – a way of recognizing the body not as an object to be acted upon, but as a living, perceiving subject.

That distinction changes everything.

And it didn't come from nowhere. Hanna drew from a rich philosophical lineage that includes Edmund Husserl and Maurice Merleau-Ponty – thinkers who insisted that perception is not something added on to the world, but something through which the world arises. To be somatic, in this sense, is not simply to slow down or turn inward. It is to live from within the world as a sensing being.

For Rolfers, this orientation matters. It shifts how we understand change, how we attune to the client, and how we make contact – not just with the body, but with the lived experience that body holds.

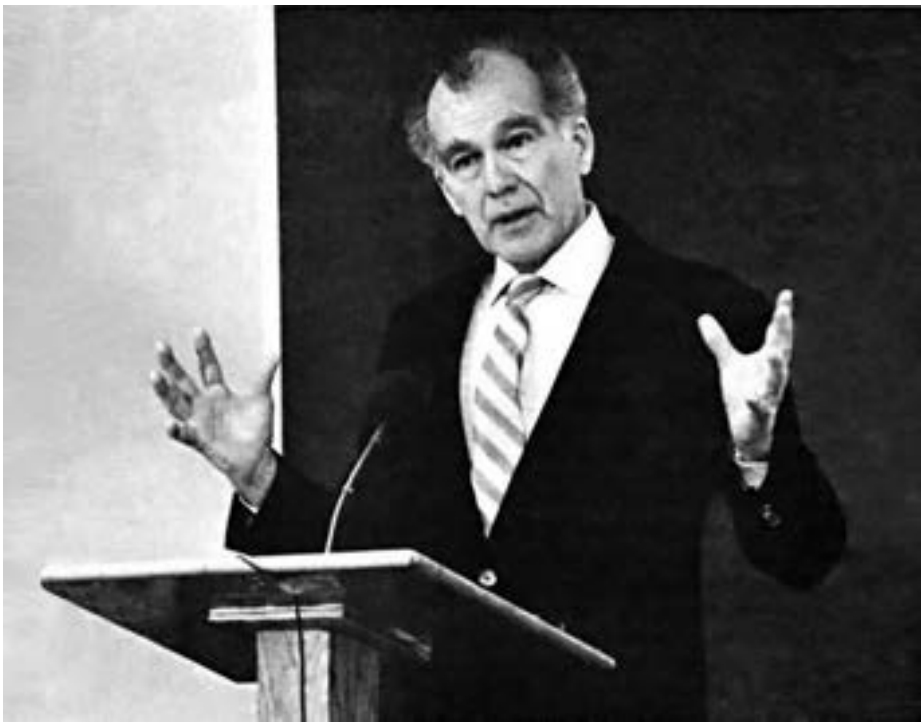
The body as self. The body as felt. The body as experienced from within. (Photo by sebastianosecondi on istockphoto.com.)

The Coining of Somatics: Hanna's Original Intent

In the 1970s, Thomas Hanna recognized a missing thread in the way we talked about the body. As a philosopher, educator, and practitioner, he saw how the dominant language of anatomy and medicine treated the body as an object – something observed from the outside, measured, diagnosed, and corrected.

But that wasn't how people lived in their bodies.

What he proposed was simple yet radical: we need a term that speaks not to the



Dr. Thomas Hanna (1928-1990). Photo published with permission from the Association for Hanna Somatic Education, and it can be found at https://www.associationforhannasomaticeducation.com/audio-recordings.

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From *Somatics: Reawakening the Mind's Control of Movement, Flexibility, and Health* (1988, 20-21):

"A soma is a body perceived from within. A somatic viewpoint is first-person, not third-person. It does not observe the body; it lives it."

– Thomas Hanna

body as *thing*, but to the body as *self*. The body as felt. The body as experienced from within.

And so, he coined the term somatics – from the Greek soma, meaning the living body in its wholeness – not separated into parts, not viewed from the outside, but encountered subjectively.

Hanna wasn't just inventing a word. He was reclaiming a way of knowing.

To be somatic, in his usage, wasn't about a particular method. It wasn't about being gentle, or slow, or trauma-informed – though all these can be expressions of somatic awareness. What Hanna named was an epistemology: a mode of perception grounded in internal experience, as opposed to detached analysis.

This was not a retreat from science. It was a call to include the observer – the feeler, the mover, the one who lives in the body – as a valid and essential part of understanding what the body is.

Hanna's ideas build on the work of Husserl and Merleau-Ponty. He didn't invent somatics so much as he gave a name and a frame to something philosophers had long been circling. In that sense, he was less a revolutionary and more a restorer – someone who found a pair of scuffed shoes, overlooked and gathering dust, and shined them just enough for people to notice their beauty again. His real contribution was in bringing these embodied insights into a practical field where they could be felt, practiced, and taught.

What Hanna named was an epistemology: a mode of perception grounded in internal experience, as opposed to detached analysis.

Instead of studying the body from a clinical remove, phenomenologists asked: *What is it like to be this body?* What can be known only from the inside. (Photo by PIKSEL on istockphoto.com.)

Lived Experience: From Husserl to Merleau-Ponty

Before Hanna, the idea of the *lived body* had already been carefully articulated by phenomenologists – those thinkers who turned philosophy toward direct experience, away from abstraction and toward perception itself.

Edmund Husserl made a crucial distinction between two German words for "body":

- *Körper* – The body as object, visible, measurable, and external.
- *Leib* – The body as lived, felt, and inhabited from the inside.

This distinction – between the anatomical body and the lived body – opened the door to a new way of thinking. Instead of studying the body from a clinical remove, phenomenologists asked: *What is it like to be this body?* What can be known only from the inside.

Merleau-Ponty, expanding on Husserl's ideas, brought this inquiry into full articulation. In the *Phenomenology of Perception* (1945, 146), he writes:

"*The body is our general medium for having a world*."

For Merleau-Ponty, perception is not something we *do* to the world – it's how the world shows up to us at all. And it shows up *through* the body, not just to it.

This wasn't a metaphor. It was ontology, the nature of being.

We do not stand outside our bodies, looking in. We live through them. We are them – not in a mechanical sense, but in a relational, perceptual one. The world and the body are not two separate domains. They co-arise.

Hanna absorbed these ideas and distilled them into language that could meet the felt sense of practitioners and clients alike. Where Merleau-Ponty spoke of reversibility, perception, and the flesh of the world, Hanna translated this into somatics: the study and practice of embodiment from the inside out.

To remember the lineage is to remember that *somatics* is not a trend or a technique. It is a philosophical reorientation toward *lived experience* – a turning inward that does not retreat from the world, but reveals how deeply intertwined we are with it.

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When a Word Loses Its Depths

In recent years, somatics has become something of a buzzword. It shows up on websites, in yoga classes, movement workshops, and various therapeutic modalities. It's often used to mean something like: slow, gentle, internal, or trauma-aware.

And while those qualities can indeed be somatic in nature, they aren't what somatics actually means. Not originally.

When the word is reduced to a style of movement or a flavor of therapy, we lose the philosophical precision Hanna intended – and with it, the depth of orientation that gives our work meaning.

Hanna wasn't naming a method. He was naming *a way of knowing*.

To be somatic is not to perform a technique. It's to operate from a first-person perspective. It's to recognize that the body is not just something to be observed, improved, or fixed, but a subject, a self, a living, experiencing, unfolding from within.

This confusion isn't just linguistic – it has consequences for practice. When we mistake somatic for "soft," "slow," or "movement-based," we risk flattening the range of what somatic awareness actually offers. We start thinking we need to change our technique to be more somatic, when in fact what needs to shift is our perception – how we listen, how we attend, how we meet the client's world from within their lived body, not just their structure.

And this is especially important in Rolfing® Structural Integration. Because we already work with tissue, sensation, orientation, and perception. But if we forget the root of what *somatics* means, we risk working on bodies, rather than with *somas*.

When we forget the original meaning of somatics, we risk reducing our work to a set of interventions. We become technicians, aiming to fix structure or optimize function, rather than practitioners engaging with lived, dynamic beings.

Why This Matters for Rolfers®

At its core, Rolfing Structural Integration is not just a manual technique. It's a perceptual practice – a relational art rooted in how we meet, sense, and respond to the living humans before us.

When we forget the original meaning of somatics, we risk reducing our work to a set of interventions. We become technicians, aiming to fix structure or optimize function, rather than practitioners engaging with lived, dynamic beings.

But when we reclaim the somatic perspective, something shifts. Our contact becomes less about correcting and more about listening. Our interventions become invitations. Our goals soften, not because we're less effective, but because we recognize that true change doesn't come from imposing – it comes from meeting.

Fascia doesn't change because we pressed hard enough. It changes because the system sensed something – and chose to reorganize. That sensing happens from within. And to meet it, we too must work from within – within ourselves, within our clients' perceptual field, within the relational flow that emerges in each session.

This is what it means to be a somatic practitioner – not because we do a certain thing, but because we attend in a certain way. So, when we say 'somatic', let's remember what we're pointing to. Not just the body. Not just movement. Not even just presence.

We're pointing to a way of knowing. A way of being. A way of returning again and again to the place where life is lived – not from the outside looking in, but from the inside out.

Fascia doesn't change because we pressed hard enough. It changes because the system sensed something – and chose to reorganize.

In reclaiming the depth of the word somatic, we're not just honoring a lineage – we're restoring clarity to the lens through which we practice. As Rolfers, we work with bodies, yes, but more truly, we work with lived experience. With sensing, perceiving beings. And when we remember that, our work deepens, not because we do more, but because we meet what's already there, more fully.

Andrew Rosenstock is a Certified Rolfer®, Registered Somatic Movement Therapist, Biodynamic Craniosacral Therapist, Board Certified Structural Integrator, Certified 1000 Hour Yoga Therapist (C-IAYT 1000), Certified Rolf Movement® Practitioner, meditation teacher, Esalen® Massage practitioner, and a whole bunch more. Outside of bodywork, Rosenstock enjoys travel, reading, and time with his wonderful wife, beautiful daughter, and adorable dog. Find out more at andrewrosenstock.com and rolfinginboston.com.

References

Hanna, Thomas. 1988. *Somatics: Reawakening the mind's control of movement, flexibility, and health.* New York, NY: Perseus Books.

Merleau-Ponty, Maurice. 1945. *Phenomenology of perception*. Translated by C. Smith in 1962. Publisher Routledge & Kegan Paul.

Rosenstock, Andrew. 2025. The philosophical touch: Embodied awareness. *Structure, Function, Integration* 53(1):16-20.

Rosenstock, Andrew. 2024. The philosophical touch: How Wittgenstein can enhance somatic therapies. *Structure, Function, Integration* 52(2):13-16.

Keywords

somatics; soma; Thomas Hanna; phenomenology; embodiment; lived experience; perception; Maurice Merleau-Ponty; Edmund Husserl; Rolfing Structural Integration; fascia; ontology; somatic awareness; internal experience; perceptual practice. ■

The Business of Rolfing® Structural Integration

Grow Your Practice Without Social Media

Brooke Thomas

By Brooke Thomas, Certified Rolfer®

ABSTRACT *Certified Rolfer® Brooke Thomas challenges the common belief that social media visibility is essential for attracting clients. She argues that cultivating genuine, real-world relationships is far more effective at building a Rolfing® practice and is also more rewarding. Social media posts are prioritized by their respective algorithms, which not only prioritize specific content, but also treat the wellness message as a product or as entertainment, which it is not. In contrast, Thomas reminds Rolfers that they are in the business of providing a therapeutic relationship that requires trust and rapport, which are not easily cultivated through social media. She offers some community-based strategies that are known to be more effective and sustainable for developing a busy Rolfing practice.*

I have been a Rolfing® Structural Integration practitioner for about twenty-five years, and I have supported other healing arts providers in private practice with their small business skills since 2009. The number one thing I have been hearing from practitioners for the last several years is, "I know I have to be more visible on social media to get more clients, but I hate it." Maybe you have said this, or felt this, yourself.

In this article, I will tackle the questions around if you need to "be more visible on social media," or "figure out your social media strategy," or "grow an audience," or whatever other phrase you may have uttered at some point. (And as a side note, if you *don't* hate it and you genuinely enjoy posting on social media and/or are getting good results in terms of nurturing your Rolfing practice – I am not trying to convince you to abandon something that is working for you.)

I will tell you my main point right up front: if you are a Rolfer with a private practice and you are hoping to either grow that practice or just to make sure that it remains busy enough to pay yourself what you need, you really and truly do not need to be on social media to accomplish these goals.

Now that I've cut to the chase, let me explain why this is so, and why you keep hearing from other people that you *should* be on social media.

Considering Social Media

Let's define what I mean by social media: I'm talking about TikTok, Instagram, X, and Facebook. To a lesser extent, I am also including YouTube here, which is a gray area between social media and a search engine. What all these platforms have in common is that they are mediated by an algorithm, which is developed and altered over time by the company that created each platform. The algorithm determines what gets seen and by whom.

If the algorithm is changed to prioritize video content over written content,

. . . if you are a Rolfer with a private practice and you are hoping to either grow that practice or just to make sure that it remains busy . . . you really and truly do not need to be on social media to accomplish these goals.

videos will be shown more, influencing you to create more videos in order to stay relevant. If the algorithm is biased so that people with certain political affiliations should only be shown certain content, and you want to have your posts seen by those people, you will be influenced by the algorithm to be more of that version of politics. If the algorithm decides that you can pay to play and prioritizes those who spend the most on ads, you will eventually be influenced to pay for ads.

The fact that an algorithm created by the social media platform determines what gets seen and shared is probably not news to you in 2025. I want to focus instead on why choosing to play the algorithm game does not work for those of us who are on social media in order to ensure our private practices remain visible and viable.

The algorithm determines what gets seen and by whom. (Photo by Jacob Wackerhausen on istockphoto.com.)

In our line of work, the thing that is 'for sale' is a therapeutic relationship. The therapeutic relationship being at the heart of what we do is also what makes our work quite different from so many of the things that we see being marketed all the time, both on social media and in other 'real world' ads and experiences, like walking through the grocery store, for example. What we see marketed all around us every day are: products (for example, a new cereal, a dining table, a sneaker brand, etc.), and entertainment (for example, a new television show, a movie, a music album, or a streaming service). Products and entertainment are constantly being sold to us and promoted.

In addition to seeing what 'stuff' is for sale, we also see how those things are sold to us. Both of these things are about having mass market appeal. In other words, they are traffic marketing businesses. Meaning, they need a large volume of awareness and attention in order to be viable as businesses. Because we are swimming in the cultural waters of seeing how these mass market businesses are being sold to us, we think we need to grow our practices with the same types of marketing strategies that we see for products and entertainment.

But in a therapeutic relationship business, what's required is a much higher level of genuine rapport and trust – at least enough to be willing to try an initial session with you. The bar is much lower for the level of rapport and trust that is needed to try out a new television show or a new brand of seltzer. And the stakes are even lower when it comes to the business model social media is best positioned to deliver, the business model it created itself: the influencer business model.

I want to focus instead on why choosing to play the algorithm game does not work for those of us who are on social media in order to ensure our private practices remain visible and viable.

To have a social media presence that gets you and your work seen by the kinds of people who would become clients of yours is still a traffic game. (Photo by Edualonso Rodenas by istockphoto.com.)

The Business of Being an Influencer

To choose to scroll a feed and be willing to interact with content that is going to be engaging for anywhere between a few seconds to a few minutes is a low bar indeed! And if we aren't trying to make a living as a social media influencer, and we just want to use these tools to give our Rolfing practices some visibility, I see why we hope and think it will deliver for us.

Social media came out of the gate seeming like an antidote to traffic marketing. Logically, especially if you've been around for the advent of social media as I was, when it was less of a flooded and crazy-making space, it seemed like this tool would be the perfect fit to get the word out about our types of businesses. It seemed more relationship-oriented in the first place because it's just individuals creating their feeds after all – how egalitarian!

The logical thought is that by posting on social media and cultivating a following there, you have access to these platforms where billions of people are already gathered, and where there aren't the traditional gatekeepers in charge of what gets seen. So it seems like it would have the effect of leveling the playing field for you, the small business owner, to get your work seen.

It also seems, at first glance, perfectly positioned as a tool to develop trust and rapport with potential clients because your posts can be personal, educational, and engaging in a way that a typical advertisement can't. Enter the business model of being an influencer.

To have a social media presence that gets you and your work seen by the kinds of people who would become clients of yours is still a traffic game. You need to understand the algorithm, you need to post enough, and enough of the exact content that the algorithm is prioritizing, to cultivate a following. Bear in mind that many people also pay for followers (bots) or spend money on ads, and we're right back to traffic marketing again: your posts are a needle in the haystack unless you are willing to play the influencer game.

In our structural integration world, our category of influencers is the wellness influencer, so let's take a look at that a bit. Let's say it is a best-case scenario wellness influencer business. Imagine someone who is well-trained and credentialed to speak about what they are posting on, who truly wants to help people by getting good information out there, and who hopes that by growing a following, some of those people will want to come and see them in their practice.

Unfortunately, this person now has two jobs, wellness practitioner and now social media influencer. They would have this second job of keeping up with the algorithm. And because of that, they would also have the gauze of their

Cultivating real, trustworthy relationships, outside of the algorithms, is what will grow our practices in the most reliable, effective, and quickest way, much more quickly than getting a social media following going.

influencer persona in between them and the therapeutic relationship with their client.

I will talk about this 'gauze' more in a moment. Here is my main message again: Cultivating real, trustworthy relationships, outside of the algorithms, is what will grow our practices in the most reliable, effective, and quickest way, much more quickly than getting a social media following going.

Why will being an influencer take time to attract people to our offices?

The Façade of Influence

Because the algorithm rewards specific qualities of videos, to succeed at growing a following large enough to bring in clients in the real world, you have to work within the context of what the algorithm likes. Here's what it likes:

- *Parasocial relationships.*

In other words, making people think they know you and your life, that they are friends with you even though they don't know your life, and they aren't friends with you.

- *Fear and/or outrage mongering.*

These emotions keep you glued to the feed.

- *Jaw-dropping moments, aha moments.*

Things that make people feel like their minds are expanding because they finally understand something that was previously mysterious. This could be, in our cases, about the human body, fascia, or movement. But do you want to have an edu-tainment relationship with your clients? And this is not quite the kind of a-ha the algorithm prefers. It tends to like a certain kind of a-ha that is more closely related to conspiracism.

- *Funny things.*

Funny things make you feel good and getting a quick giggle is a nice dopamine hit, which is what the algorithms are oriented towards because it keeps you on the platform.

None of these things are conducive to a client-practitioner therapeutic relationship. My primary care physician, my Rolfer, or my acupuncturist are people whom I think incredibly highly of, but I don't think they are gurus, and I don't want them to entertain me. I just think they are well-trained and effective professionals. Which is probably what you want people to think of you as well.

And so, what's old is new again. Tending your practice by cultivating real-world relationships with people in your community is the absolute best way to grow, nurture, and sustain your practice.

Because the algorithm rewards specific qualities of videos, to succeed at growing a following large enough to bring in clients in the real world, you have to work within the context of what the algorithm likes. (Photo by Stock-Asso on shutterstock.com.)

Being a Practitioner is your Profession

Here are a few ideas to get you started:

1. Get to know your local colleagues.

Invite them out to coffee or lunch. Start a local get-together for holistic healthcare professionals to meet and socialize once a month. Support them; cheer them on when something good happens for them (like a new office, new certification, etc.). Attend their workshops, talks, and group classes.

2. Find out where your potential clients are already gathering in your community, and then deliver something of value to them in that space.

Are people who would be a great fit to work with you already spending time at local yoga studios, gyms, meditation centers, local workplaces, theatre, or music groups? Instead of hosting an event that tries to get potential clients to come to you by offering an open house or a workshop that happens at your office, pitch these ideas in their local spaces and deliver an experiential offering that people well-suited for your work would want to attend.

I say *experiential* because people don't want to take time out of their busy lives for an infomercial – a talk about how Rolfing® Structural Integration could help them or what the Rolfing Ten Series® is. They will take time out of their lives to experience a shift in their bodies! You could offer a one-time event or a recurring weekly event. For example, a Rolf Movement® class in a local yoga studio or meditation center. Or you could deliver it before rehearsal to a local theater company or symphony. You could run fascial mobility workshops based on the Ten Series in local corporations as a workplace wellness initiative, or at local gyms/exercise facilities where people are engaged in something physical (like tennis courts, pickleball clubs, rock climbing gyms, cycling studios, or running groups).

3. Nurture your relationships with the people who are *already* your clients.

I know you do this simply by seeing them for sessions, but you can also let them

What all of these strategies for connecting with your local community have in common is that they are more uncomfortable and more demanding than clicking publish on a post.

know that you appreciate their referrals in ways that don't make them feel put on the spot. For example, you can add this line to your email signature, to your booking page, and to the footer of your website:

"*My practice grows through word-of-mouth referrals, from kind clients like you.*

Thank you for letting people know about my work."

You could run a refer-a-friend promotion that happens once or twice a year. You don't have to offer steep (or any) discounts to do this; you can simply email your current clients and announce that it's refer-a-friend month and that you'd be grateful to them for spreading the word that you are currently accepting new clients. Oftentimes, the reason why clients aren't referring to you more often is because they are just plain busy, and so it's not front-of-mind for them. These little nudges help you stay in their awareness when a friend or colleague of theirs could use your help. And none of them require pestering email campaigns or other 'ick' feeling things.

What all of these strategies for connecting with your local community have in common is that they are more uncomfortable and more demanding than clicking publish on a post. They require that we get a little more visible, that we stretch ourselves out of our comfort zone to reach out and connect with people. But the good news is that these strategies are so much more effective than publishing a social media post, and these local tasks don't become a constant hustle. Try one and see how it goes!

Take Home Message

In conclusion, if you are only on social media because you think you *have to* be there to get more clients, you don't. You can free yourself of that thought and spend your time on more valuable practice-building activities. And, because these practice-building activities are connection- and community-based, they also tend to be much more nourishing and enjoyable too!

Brooke Thomas is a Certified Rolfer® who practices in New Haven, Connecticut, and Seattle, Washington.

Keywords

Rolfing® Structural Integration; private practice; social media; therapeutic relationship; algorithm; wellness influencer; local community; holistic healthcare professionals; experiential offerings; word-of-mouth referrals; community-based strategies. ■

If you are only on social media because you think you have to be there to get more clients, you don't. You can free yourself of that thought and spend your time on more valuable practice-building activities.

Brooke Thomas

Embodied Performance

Training, Resilience, and the Human Spirit

By Pierpaola Volpones, Rolf Movement® Instructor,
Advanced Rolfing® Instructor

Pierpaola Volpones

ABSTRACT *Rolfing® Structural Integration enhances the relationship between the human body, mind, and athletic performance by exploring physical and perceptual capabilities. In this article, Advanced Rolfing® Instructor Pierpaola Volpones discusses the elegance and harmony of athletic gestures, the historical and cultural significance of sports, and the determination required for training and competition while highlighting testimonies from some athletes.*

Sport needs the body.

Sport also needs the mind.

The athletic gesture is elegant, beautiful, and harmonious, as evidenced by sculptures from ancient Greece.

The athlete's body expresses strength and energy; our mirror neurons resonate when we observe the lightness of a jump or the groundedness and solidity of a stance.

Mythology from every culture tells stories of heroes and demigods – courageous, clever individuals accomplishing extraordinary feats.

Humans have always played by moving their bodies; it's through play that children learn to control and refine their movements. Sport is a form of play that becomes structured and regulated.

Sport provides an opportunity to bring together peoples and cultures. The Olympic Games were born in ancient Greece as both athletic and religious events in honor of Zeus. During the Games, all wars were suspended. Winners were awarded a crown of olive leaves, a tree sacred to Zeus and symbol of glory, peace, and brotherhood.

What fascinates me about athletes is their tenacity, their ability to remain consistent and committed to training programs to improve their performance.

From ancient Greece to modern times, in Olympic performances and cultural demonstrations, the athletic gesture is elegant, beautiful, and harmonious. (Photos by Cebas, anton5146, Jackob Wackerhausen, and GeorgeRudy, respectively, on istockphoto.com.)

Competition is part of the sporting endeavor. We compete with ourselves to surpass our own limits, and with others to be the best. Victory is exhilarating. In common usage, competition implies winners and losers. But the origin of the word *competition* (from Latin *com-petere*) includes "*com*" – meaning *with* – and "*petere*," meaning *to strive together, to pursue a shared goal.*

To compete, one must train.

What fascinates me about athletes is their tenacity, their ability to remain consistent and committed to training programs to improve their performance. Athletes shape their lives around the demands of performance – nutrition, social life, and private life must all follow strict, precise rules, adhered to with consistency, determination, and motivation. The higher the level, the stricter the rules. Slipping up can be risky.

Consistency and Determination need Fuel

Where does this drive come from? How do they source it? And what kind of fuel do they need?

Certainly, physical energy is needed to sustain muscular effort. Athletes follow specific nutrition plans and maintain well-tuned metabolic, cardiac, vascular, and respiratory systems to ensure their bodies function optimally – bodies that maximize their potential. Sometimes, the line between use and abuse of one's body is very thin.

Supporting physical effort requires mental balance. Emotions play a crucial role. Staying focused and clear-headed is essential to push through fatigue or overcome the frustration of a poor result.

Take the Italian tennis player Jannik Sinner for example. He is ranked No. 1 in men's singles (as of September 9, 2025) in the world. I've heard him interviewed about his positive mindset, the techniques he uses, and whether he works with a psychologist, or does he just have a natural athletic drive? And he talked about, for his sport, how nothing is natural – there's a lot of work behind the accomplishments. He talked about accepting his flaws and his struggle with strength. Going into the sport, he thought he was strong, and as he progressed, he realized he wasn't strong in the way he needed to be. He's worked with elite trainers for years to help him challenge what he can do in tennis. It's up to the athlete to make the difference, to do the work behind the scenes.

The interviewer focused on the emotional component that helps achieve goals and success. Sinner affirmed that the athletic result, driven by physical abilities, is visible during competition. But the quality of performance and the journey to reach it requires a stable and clear mind.

How to Train One's Mind?

Years ago, during a Rolfing session with a client who had been on the Italian rhythmic gymnastics team as a child, a memory came up. She had a very strict coach who humiliated the girls when they made mistakes. After retiring from competition, my client became a coach herself. I asked her whether the coach's strategy has been effective in improving performance and achieving results – and to my surprise, she said yes. When she became a coach, she used the same strategy: scolding and humiliating athletes to push them beyond their limits.

I felt great sadness.

And yet, we know that dog trainers have learned that rewarding, not punishing, is more effective when teaching obedience or skills.

What Kind of Fuel Sustains Passion and Endures the Suffering Caused by Training Sessions?

Training is exhausting – how do athletes overcome fatigue?

It takes discipline to structure your days, weeks, and months around training. More victories lead to higher rankings, and to climb the rankings, you must win. Life becomes a timeline of milestones in the pursuit of victory.

When Victory Slips Away, Where Do You Draw from to Begin Again?

Athletic trainers know how to improve: endurance, strength, and explosiveness. They're like alchemists working to transform raw matter. And like true alchemists, they aim for inner and spiritual transformation. They weave this all together by studying the body, the movement patterns governed by muscle memory, and focus on achieving efficiency in motion, keeping the mind stable and focused.

Top athletes know the mind must be sharp. Negative thoughts waste energy and distract from goals.

– Emotional Control.

– Self-confidence.

– Resource Optimization.

– Stress Management.

– Efficient Action.

– Awareness.

– Self-Regulation.

This is the language used by coaches, emphasizing the need to not waste energy and to use it effectively. These concepts are aligned with Rolfing® Structural Integration: using energy efficiently, minimizing wasteful movements, seeking structural alignment so gravity can flow freely and act as a unifying force.

The Rolfing Ten Series® and athletes is a winning combination!

Athletes I've Met and Worked with as a Rolfer®

Matteo Semprini Cesari, Ironman Athlete

Matteo is an Italian Rolfer, friend, and triathlete who became passionate about Ironman after reading about John Dunbar, a United States Navy SEAL who finished second in the first two Ironman races in 1978 and 1979, which was among the most notorious competitive groups of athletes. Ironman is a triathlon that involves 3.8 kilometers of open-water swimming, 180 kilometers of cycling, and a 42.2-kilometer marathon.

Matteo's dream was to first compete in Hawaii, where the Ironman is an ultimate endurance test, where the swim is completed in the ocean, and the cycling and running segments are over the volcanic landscape. And his second dream was to become a Rolfer. He moved to Hawaii to train for the Ironman. He focused on daily workouts for ten months and entered ten other Ironman

Photograph of a photograph of Matteo training for the cycling section of the Ironman, in Maui, 1994. Permission to publish granted by both Matteo Semprini Cesear and Pierpaola Volpones.

races in preparation, completing three of them. His last Ironman was in 2008, and his most recent successful completion of the course was in Zurich in 2000 – a cool, rainy day helped him endure the strenuous effort. When it came time, running in the Hawaiian heat, he recalled to me, was incredibly demanding.

Matteo told me, "The limit can be in the body or in the mind. I was always a hyperactive child. I don't have great mental strength, but I do have strong discipline. Seeing and feeling how my body responded to consistent training (without doping), and knowing it was functioning at its best, gave me such good sensations that my mind would follow. I constantly pushed through fatigue but paid attention not to get injured. When the pain was too much, I slowed down or stopped. But when everything was working perfectly, I experienced moments of ecstasy! To get in shape, I received sports massages and Rolfing sessions. Working on the fascia gave my body the optimal conditions to express its full potential."

Professional motorcycle racer, Marco Mioncelli, on August 14th, 2011, after he got 3rd place in the MotoGP race in the world championship in Brno, Czech Republic. (Photo by haak78 on shutterstock.com.)

Marco Simoncelli, Professional Motorcycle Racer (1987-2011)

When Marco first came to my studio for Rolfing work, he was just a boy riding mini-motos. His mother had heard of Rolfing Structural Integration and noticed he couldn't stretch out properly on the bike to improve aerodynamics, especially being so tall for his age.

We completed the Ten Series, adapted for his age, and that year Marco won the Italian championship – his body had learned to adapt to the bike, becoming one with it. He competed in the MotoGP World Championships for ten years from 2002 to 2011. He continued receiving sessions during that time. The last time I saw him, he had earned his nickname "Sic" and "Super Sic," just before a MotoGP race in Valencia. Marco died in a crash at the young age of twenty-four on October 23, 2011, at the Malaysian Grand Prix on the Sepang International Circuit, Malaysia.

Adriana Serra Zanetti, Professional Tennis Player

Adriana was the first Italian woman to reach the quarterfinals at the Australian Open in 2002. Her highest career ranking was thirty-eighth on February 11th, 2002. She came to my Rolfing studio after rotator cuff surgery around that same time, just as she was returning to play.

At the beginning of the 2000s, during a difficult moment in her career, she decided to change her technical staff and move to Romanga, Italy. It was there, thanks to her homeopath, that she says she remembers meeting me and experiencing Rolfing sessions. At the time, she reminded me she had never heard of this method of work, but out of curiosity, she began her series of sessions.

She told me later that based on her experience with the work, she found benefits both physically and mentally, and as a result, her athletic performance improved. She knew this because, on the field, she felt more fluidic in her movements and more balanced.

Monica, Amateur Long Jump Athlete

When I asked Monica about her thoughts about her Rolfing sessions, she said, "Rolfing brought me back to athletics after two years of pain." For Monica, long jump was simply too important – and Rolfing sessions got her back on the track.

When I interviewed Monica about the injury that brought her to my Rolfing studio and the work we did together, here is what she said:

"It happened two years ago, I was competing in an athletics event when one long jump turned into a leap into darkness. I took off – and my knee shattered. Excruciating pain. My ACL was gone, along with the inner meniscus

We completed the Ten Series, adapted for his age, and that year Marco won the Italian championship – his body had learned to adapt to the bike, becoming one with it.

and the hamstring tendon. Then came six months of daily physiotherapy.

"By the end of that ordeal, I was back on my feet, but completely out of alignment. The most obvious problem was in my hips. One day, I put on a pair of low-rise jeans and, looking in the mirror, I saw that my hips were no longer at the same height.

"I consulted two or three specialists. The diagnosis was unanimous: one leg was shorter than the other. Impossible! My legs had always been the same length – what had happened?

"I was devastated. Not only had my sports career gone up in smoke, I couldn't even go for a short jog without pain all over. Then a friend told me about Rolfing [sic]. Six months ago, I began treatment. Already after the second session, I regained mobility in my knee. After two years, I finally felt good again. I could run. I felt free to move my body.

"Every session felt like shedding a layer of skin, like my body was being reprogrammed. People say Rolfing [sic] is painful because it works deeply. Personally, I never felt much pain, and even if I had, it wouldn't have mattered, because the benefits were priceless.

"I even started competing again, and my hip is slowly returning to normal. I put my low-rise jeans on, and now my legs are the same length again.

"In short – I was reborn."

My Own Athletic Competition

As a teenager, I played sports but never competitively. Then I discovered, through fencing, that competition scared me. Whether it was fear of winning or fear of losing, I still don't know.

I practiced fencing for several years – foil – to be precise. I was quite good in training; I learned quickly and improved steadily. So, my coach registered me for a tournament. But the moment I stepped onto the piste, I felt completely lost, and confused. Next to mine were several other pistes, filling a large exhibition hall with a background noise I wasn't used to. In our training gym, we only had two pistes and fewer than ten students. At the competitive event, everything was different, *too different*!

I faced my opponent, almost unable to react. She scored five points in five bouts (that's what they're called), and victory was hers. I think the round consisted of four matches. I won the last one because I faced an opponent even more confused and paralyzed with fear than I was. Five easy points for me, but not enough to continue in the competition. My tournament ended there.

What a relief!

Stress, performance anxiety – to continue with fencing, I would have needed to look deep into my soul, maybe with help and guidance, because I truly loved the sport. But instead, I quit.

What remains is a photo taken at the start of that match, during weapon check.

A photo of Pierpaola Volpones fencing, courtesy of Pierpaola.

Conclusion

I've worked with many professional and amateur athletes, and all of them benefitted from the sessions. They learned to understand – and respect – their bodies. They discovered their limits and how to overcome them by improving coordination, breathing, and their ability to respond to environmental stimuli.

Pierpaola Volpones discovered Rolfing® Structural Integration through her bodywork endeavors and research into well-being and somatic expression. She studied in Munich, Germany, with Stacey Mills and Michael Salveson in her Basic Training and with Michael Salveson and Jeffrey Maitland, PhD, in her Rolfing Advanced Training. Her Rolf Movement® training took place in Italy with Janie French and Annie Duggan. She began her training to be an instructor with the Dr. Ida Rolf Institute® (DIRI) almost twenty years ago, and she has been teaching with DIRI since 2006 with the school in Boulder, Colorado, and the European Rolfing® Association e.V.. She runs a practice in Rimini, Italy. For more information, see www.volpones.it.

Keywords

sport; body; mind; movement; performance; training; competition; play; strength; determination; Rolfing Structural Integration; coaching; mental training; Jannik Sinner; Matteo Semprini Cesari; Marco Simoncelli; overcoming limits. ■

Too Much Body

By Lina Amy Hack, Certified Advanced Rolfer®,
Aline Newton, Rolf Movement® Instructor, Certified Advanced Rolfer, and
Rebecca Carli-Mills, Rolf Movement Instructor, Certified Advanced Rolfer

Aline Newton

Rebecca Carli-Mills

Lina Amy Hack

ABSTRACT *In this in-depth dialogue, Lina Amy Hack speaks with Aline Newton and Rebecca Carli-Mills about the expression "too much body," which came up in the context of the 2022 Tonic Function Study Group online class exploring the approach of French Rolfer®, Hubert Godard. Together they explore how clients may have become overly focused on their bodies as objects – on shape, symmetry, and control – rather than on embodied experience, relationship with gravity, and the environment. Newton and Carli-Mills emphasize that embodiment is a quality every human has, and perception of our embodiment is not a fixed state but an ongoing process of sensing and relating to the world. Through examples from dance, athletic training, and client work, they show how overemphasis on visual correction and muscular control can interfere with natural coordination and expression.*

Editor's note: This conversation took place on June 9th, 2025, over Zoom. The authors have edited their words for clarity and format.

Lina Amy Hack: Hi Aline and Rebecca, thank you for meeting with me to discuss an idea that I first heard in your 2022 Tonic Function Study Group – *too much body*. This idea was presented, if I recall correctly, in the context of clients seeking Rolfing® Structural and Movement Integration sessions to enhance their athletic and artistic performance. The concept continues to stand out to me as I look back at the study notes from your classes, and I am excited to share our dialogue with the readers of *Structure, Function, Integration*.

I have asked you both to collaborate with me to deepen our understanding about what you mean by the expression 'too much body'. And before I forget, I hope you will also tell us about your newly published book, *Reimagining the Body* (2025). Please let us know about that as well.

Embodiment

Lina: To start at the beginning, let me first hear in your own words what embodiment is. And what do we mean when we say we want to help our clients become embodied?

Aline Newton: Thank you, Lina, for asking us to weigh in on this topic. At the most basic level, we are all already embodied. Embodied is being a body on the planet, in the gravitational field. And this may seem like quibbling over details, but I think it is important to be clear about our terminology.

As Rolfers, we are heirs of Ida Rolf [PhD (1896-1979)], whose premise was "appropriate relationship with gravity." You are somewhere, and you're relating to gravity. What we are seeing when we observe what we call the body is how that relationship is unfolding. How the body is unfolding moment to moment, but also, how it has been unfolding for the person's whole lifetime. The patterns we see in people's bodies reflect this

Rebecca, Aline, and Lina chatting over Zoom.

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unfolding. How are they managing to move and express themselves in this gravitational field?

Being embodied is what you already are because you're a human being who is incarnate. Personally, I don't use the word embodied to describe a quality of being. Everybody is embodied. There's nobody without a body. And there's no body without a location. Philosophically, it's really important that we are clear and grounded about our terminology, because it immediately changes our orientation. And that's the point. The point is, you're not inside this body disconnected from everything; you're always in a relationship with your surroundings. It doesn't mean other people don't use the term differently. Within the Rolfing community, you're going to find a lot of different uses of the word embodiment.

Thank you for bringing up our book, as it covers this material more systematically and in greater detail, including our discussion of embodied intelligence. Oddly, embodied intelligence usually refers to making robots, to artificial intelligence, not to somatics. For more information, people can refer to *Reimagining the Body* (2025).

Lina: Very good point, and please do talk about philosophical and theoretical edges to our terminology. Advanced Rolfing Instructor Jan Sultan often talks about that, too, how Rolf emphasized being concrete in our understanding of the words we are using. And truthfully, this is why I wanted to do this article with you both in the first place, to keep grounding my understanding of embodiment in reliable notions that are backed up by Dr. Ida Rolf Institute® faculty members.

Rebecca Carli-Mills: I find it interesting that both *embodiment* and *somatics* have become such popular words – they show up everywhere now: in psychology, bodywork, wellness, physical therapy, neuroscience, psychedelics, philosophy, and more. Sometimes they're used with depth and meaning, and other times they're sprinkled in like a bit of salt and pepper because, at the moment, they sell.

For me, the verb *embodying* is more alive than the noun embodiment. While we are living on earth, we are constantly embodying our relationship with the world around us – including gravity. We experience life through our senses, receiving an ongoing flow of sensory information that we continually filter

and organize into what we perceive as a coherent world. This process of perception is unique to each of us, shaped by our individual histories, cultures, and neurobiology. So, embodying isn't a fixed state; it's an ongoing, dynamic process of relating to and perceiving the world moment by moment.

The term embodiment can also refer to a specific movement practice – such as those developed by French Rolfer and movement expert Hubert Godard and described by Aline in her book. These practices expand, refine, and direct our perceptual capacities, allowing us to gather new kinds of sensory information from our environment – information that may have been overlooked because of our habitual perceptual patterns. With this fresh sensory input, new pathways and possibilities for movement become available to us.

As practitioners, our own process of embodying is fundamental to the effectiveness of our work. Through consistent practice, we cultivate a kind of paired awareness – one that allows us to remain centered, relaxed, and self-regulated while simultaneously attuning to and engaging skillfully with another person. In doing so, we convey a sense of ease and communicate, both implicitly and explicitly, that we are meeting our client as a whole being – someone in relationship with the world – rather than as an object on our table in need of fixing.

Lina: That's beautiful. Anything to add, Aline?

Aline: I would add one thing that comes up over and over again is this inside-outside division. We seem to have accepted it as fact that there is a "me" inside that is separate from that out there. Yet, consider, for example, the simplest level of the exchange going on with the environment in breathing. Interoception follows certain neural pathways, and we are also engaged in proprioception to know *where* we are, which involves different neural pathways. And there's how the brain perceives the space around the body – the kinesphere or the perception of peripersonal space. Hubert would sometimes describe proprioception as "50% body, 50% world." To live in this world, orientation to our surroundings is as important as interoception, but not always given the attention it deserves, I think.

Rebecca Carli-Mills: For me, the verb *embodying* is more alive than the noun embodiment. While we are living on earth, we are constantly embodying our relationship with the world around us – including gravity.

Lina's Client: Romy

Lina: I would like to describe a case from my practice and hear your reflections about it. The high-performance client I have in mind was a classically trained dancer in her youth, and her career now has many different elements of performance: social media posts to a large following, public speaking engagements, teaching movement to groups, and musical performance as a lead singer. She wanted help with some back and neck discomfort she was experiencing from injuries and life stress. She's a super-mom, her young children are her main passion, and at the same time, she makes time to take care of her body as wellness is a priority for her. Let's call her Romy.

When we met for her First Hour of the Rolfing Ten Series®, Romy wanted my assistance with persistent pains she felt were related to her inability to achieve better alignment. When it was time to do her body reading together, she went right to the mirror to show me what she felt were glaring asymmetries. And when I observed her in that moment, her main focus was on how her body looked from the outside, which made me think immediately – is this what Aline and Rebecca were teaching us? When a client's orientation is *too much about their body*?

Part of the work I did right away with Romy included inviting her away from the mirror and orienting her toward feeling her alignment without visual cues. It seemed hard for her to trust her own ability to sense a balanced body at first. When in front of the mirror, I noticed she spoke very quickly, and she shared many details she wanted me to understand about her body. When away from the mirror, feeling into her body, she showed signs of nervous system regulation, like spontaneous long exhales that were relaxing. I invited her gently to the idea of orienting to feeling her own sensations, the balance her body has, and she observed how comfortable that was. We mused together about what it might be like to perform from this feeling-self place, and this did feel great for her. She described the possibility of having some freedom from the tight places she seems to always have in her body.

Anyone who has studied with you both will know the movement work you teach using a stick as a prop. From your inspiring instruction, I have a long stick from my apple tree in my front yard, and I invited Romy to hold the stick horizontally in front of her and feel into her body sensations and body orientation to gravity all at the same time. Not only did her speech slow right down, but her focus on body symmetry melted away, and she understood the idea of being in relationship with the stick. She smiled and experienced that joyful curiosity when we played with imagining that the stick could move itself. When she imagined that, the stick was just floating upward on its own, while her hands experienced the texture of the stick's surface. Her body became pain-free all on its own for that moment, and she marveled at this happening. We were just ten minutes into the first session and I hadn't even touched her yet. It made her curious about what was happening to her.

Aline: I give Hubert Godard credit for the practice with the stick as well as the expression, "too much body." . . . I think of the expression – too much body – as a *koan*, not a formula. It's a paradox that leads us to wonder rather than a definition that is always applied the same way regardless of conditions.

In my mind, I was thinking, "This might be what Aline and Rebecca meant when they taught us about some people having *too much body*."

Was Romy focused on the external view of her body as an object?

Were the comfort and joy she expressed from a re-orientation to her body as being?

A Koan, not a Formula

Aline: It's great to hear about your experience with your client and how you use the idea of 'too much body' in your own way while working with people. Your client's story touches on so many important aspects of movement integration, including how much can change in a person's way of being or orienting in gravity without necessarily starting with manual manipulation.

I give Hubert Godard credit for the practice with the stick as well as the expression, "too much body." I first encountered these approaches in workshops with him in the 1990s. It's hard to talk in the abstract about Hubert's brilliant work because so much of it arises from a particular context, the moment in which the topic and expression arose.

Hubert was the first person to draw my attention to the importance of the contact with what I am touching, the stick in this case, which is a contrast with the tendency to locate ourselves inside our body. Instead, Hubert invited us to notice – where is the place of contact? Where is the exchange happening? From this perspective, 'body' is an ongoing relationship, with gravity, with our surroundings.

In this spirit, I think of the expression – too much body – as a *koan*, not a formula. It's a paradox that leads us to wonder rather than a definition that is always applied the same way regardless of conditions. Like the famous koan, *what is the sound of one hand clapping*?

Rebecca: For me, part of the beauty of calling it a koan means that we don't take these words literally.

Aline: Dr. Rolf also had her koans, one of which was, '*in movement the pelvis should disappear*'. Taking these two expressions together may be helpful: Dr. Rolf was inviting us to see that movement and anatomy are not the same. When we watch someone walk, if we see the pelvis behaving like a bowl, fixed and unmoving, it may suggest unnecessary muscular holding around the bony framework. When the proper coordination is available, the pelvis 'disappears' in walking – we see *expression*, a play of weight and space. Each element has its part in the whole: perceptual systems active, spine free to be the spinal engine, side-bending and rotating, pelvic muscles not interfering. In a moving person, we hope *not* to see 'pelvis' in the same way as it is represented in anatomy books that show a dissected cadaver.

To me, Rolf's koan is the other side of the idea of 'too much body'. In the context I originally heard the expression,

Aline Newton demonstrating the stick exercise. Photo by Peter Shapiro.

Hubert was speaking of a dancer. How do we describe what goes into graceful movement or what gets in the way? The body's shape can disappear and all we are aware of is the movement and expression, the way we feel or the experience – for both the dancer and the observer.

Conversely, as in the case you described, we might see 'too much body' as too much effort or too much emphasis on shape, and as your session suggests, too much reflection in the mirror. At the Boston Conservatory, where I have taught commercial dancers, there are curtains to cover the floor-to-ceiling mirrors on all the walls. But I often see the young dancers pushing those curtains open so they can learn their choreography in front of the mirror. They inadvertently shape their bodies to what they see, a body image, not how they feel, their kinesthetic sense. The visual is so dominant!

Body Representation in Traditional Dance Training

Rebecca: When Hubert first used the phrase 'too much body', it lit something up in me – like fireworks – an *aha* moment, for sure. I'd been dancing, training in classical ballet and modern dance, since I was four, all the way through graduate school and beyond, and suddenly I could see it: I'd been trained in exactly that – too much body. So much of my dance education was built around the visual – the mirror, the image, the shape, rules of alignment, and most of the coaching was "inside body based," not body in relationship with the surroundings, the environment.

At that time, other dance forms emerged, such as contact improvisation, the work at Judson Church, Skinner Release, Anna Halprin, Authentic Movement, and others. These approaches challenged the emphasis on visual form and mirror image, instead of exploring movement guided by kinesthetic awareness, gravity, weight, and spatial relationship. However, I didn't encounter these influences until graduate school, by which point many of my perceptual habits were already deeply formed.

In my youth, even technical achievement was taught almost exclusively on "inside body." For example, as a child, I was taught the broken-down biomechanics of how to jump. The belief was that you jumped higher because your leg hit the right position, not because you began with the impulse to jump – like when you leap across a stream. When out in nature, you don't think, *Is my toe touching my knee?* You want to get across the stream and land dry – or perhaps you are feeling particularly exuberant that day, so you sail across and still land dry. Jumping, like throwing, includes opening one's perception to the space, not by solely focusing on what's happening within one's body. Some of us are natural jumpers, so this comes more easily; for those of us who aren't, starting with biomechanics about placement or position, jams the gears. After studying with Hubert, I am a much more natural jumper at sixty-seven years old, than I was when I was ten in ballet class!

Expression in Dance

Rebecca: I did have an inkling about what I was missing. As an undergraduate, I remember one duet that was full of tricky balances. Rehearsing in front of the mirror, my head was full of commands: *Point your foot. Place your ribs. Tuck your pelvis to catch your balance. Align this with that.* The result? My dancing looked exactly how it felt – stiff, effortful, and joyless.

Then my friend Liz, a beautiful performer, dropped by rehearsal. I asked her for help. To my surprise, instead of more alignment cues, she invited me into relationship – with the expression, the space, with my partner Rudy. Together we played with a little story:

The warm sun draws me upwards from the floor. . . . My gaze takes in and welcomes Rudy. . . . His presence draws my arms and heart towards him, while the toes of my back foot linger with the space behind. (I am not balancing on one leg.) . . . Until my arms with this great stretch and I run towards Ruby, inhaling his embrace. . . . and so on . . .

This was now the song in my mind instead of all the biomechanical commands. Yes, there was a more expressive quality, but beneath that, relationship was created between me and earth and sky, inner and outer. The biomechanics arose from a natural impulse.

That shift – from fixing my body to following meaning, interacting with the space – changed everything. Suddenly the balances worked. The movement carried me. Technical precision arrived on its own once I connected to purpose, space, and relationship. Yes, I had trained and knew the technique and steps – the choreography – but that didn't translate into flow.

Of course, depending on the style, dancers need technique that includes form. But if training only focuses on internal corrections and visual shapes, the flow disappears. I began to see that expression isn't extra – it's essential to successful technique. And as I believe Dr. Rolf understood and Hubert Godard taught, at the core of expression is our relationship with gravity – how we feel our weight, connect to the environment around us, underlies the felt meaning of the moment.

Lina: As you reflect on that, would you call it an easing from the 'too much body' state of being? Changing the channel, new neural circuitry? New vectors of force through the fascia?

Rebecca: Yes, all that you mentioned, changing the channel, different neural pathways, different vectors, it begins with a perceptual shift. I was choosing to tune into different information that organized my movement differently. My training and habitual mode of perception was to focus almost solely inside my body – positioning its alignment. Now, I was including the interface between my senses, body, and the world. My senses attuned to information that was essential to balance, movement, connection, and the choreography followed. Also, the world felt more welcoming and kind when I wasn't consumed by worry if my toes were placed just right at my knee, but rather, I was also taking in the ground as supportive, my partner as welcoming, etc. When we begin moving by shifting our perception to take in meaningful information, we shift our coordination without getting in our way – jamming our gears.

Aline writes about the neuroscience of perception and movement beautifully in *Reimagining the Body* (2025).

Duncan Dancer Example

Aline: Years ago, I went to see a group of three-year-old dancers in a performance done in the tradition of Isadora Duncan. They were so young, so of course, they could not memorize complex choreography. Instead, the teacher had a pouch by her side with feathers in it, and she threw the feathers up in the air, and all the children reached up spontaneously as the feathers floated down. The teacher then brought out a large hoop, and holding

on to the hoop, the children walked together in a perfect circle. The children were moving together in response to a situation, relating to the present moment not to their memory of how their movement should look to another.

Unfortunately, our culture promotes the image of a body that is supposed to look a certain way: a flat stomach, or shoulders back, for example. "How should I look? What's a good body? What's a strong body? Where should my shoulders be?" People tell me their shoulders are too far forward based on seeing themselves in endless images on social media. They think they should be holding some other, better posture. There is an image in their mind, an idea of the body. But that line of thinking doesn't lead to a body where we feel good and we feel secure. The competence that enables us to meet each situation does not arise from looking right. It arises from being able to respond to the particular circumstances without losing our balance.

Lina: Here we are, years later, and I'm still working with this notion in my own body and in my sessions with my clients.

When I was in your class, the discussion of the 'too much body' koan was at first so confusing; I had no idea what we were talking about. Hearing each colleague discuss the idea gave me a big *aha*: having too much body was not something I had experienced directly. My direct experience in my first Ten Series, my Rolfer helped me originally to have 'more body', and I would say that I suffered 'not enough body'. I had not considered the performance aspect of emphasizing the body as an object, observed from the outside. And how that may be in the way of a rich perception of the body's sensations, relationship with self, and the world.

Is this a visual field effect in part? Is this part of performers being trained to attune to the information from their visual field, about themselves?

Aline: I think it stems from the tendency in our culture to describe movements in terms of shape and position, instead of quality of being and responsiveness. Let's take the sun salutation as an example. Most often we learn the movement sequence by following the teacher and imitating what we see. This series of movements may be taught as a set of commands: Lift your arms; touch the floor.

Then what happens to saying hello to the sun? Greeting the sun, every day, that's what a sun salutation is about. It is an opportunity to recognize or register something life-giving and important beyond ourselves. It is not a choreography performed from memory. Before Hubert Godard's classes, I'd never been to a yoga class where I was invited to greet the sun in the sun salutation. With Hubert, it was a completely different experience, in which my attention was directed at a quality of relationship.

It's big. The two words – sun salutation – don't define the movements. They open the door so that each of us is invited to notice an experience in this moment. How is my relationship with ground, with space, with sun, in each meeting? That is why I like to call these phrases koans. In the practice of contemplating a koan, something happens and you address the question, but you never answer it. In a relationship, you are never *done*.

Lina: That is so helpful to hear this reflected back; it's deepening.

Examples from Practice

Lina: Would you say that people who are deeply dedicated to their athletic or performance pursuits could benefit from reflecting on this idea of too much body?

Rebecca: Absolutely. It comes up often in my practice. I work with many dancers – and athletes find their way to me too. Your questions brings to mind two people in particular: a dancer and a CrossFit instructor.

Rebecca's Dancer Client, Joe

Rebecca: A highly-skilled dancer, Joe came in with a mild shoulder irritation issue. He showed me how he was managing it: he believed his lower ribs tended to flare out, so he tried to "fix" the pattern by drawing his ribs in and locking them down.

As he demonstrated, I watched his whole body. The more he focused on controlling his ribs, the more his weight shifted backward – towards his heels – his toes began to grip – and his focus narrowed sharply forward. I could see the effort it took to hold that shape. His breath had nowhere to go. Hubert Godard often said that when we start controlling our masses – treating parts of the body like blocks to be arranged – it's the beginning of the end of movement. Once our coordination is preoccupied with controlling parts, what's left for movement that's responsive, expressive, or adaptive?

My work with Joe began by asking him to simply notice the floor through the soles of his feet. Taking it further, I asked him to let go of his whole upper

Aline: Then what happens to saying hello to the sun? Greeting the sun, every day, that's what a sun salutation is about. It is an opportunity to recognize or register something life-giving and important beyond ourselves. (Photo by Thai Noipho on istockphoto.com.)

Rebecca: Hubert Godard often said that when we start controlling our masses – treating parts of the body like blocks to be arranged – it's the beginning of the end of movement. Once our coordination is preoccupied with controlling parts, what's left for movement that's responsive, expressive, or adaptive?

body, allow his shoulders and chest to round and soften forward, release his head, somewhat like a ragdoll, bigger audible exhales, so that he could more fully sense his weight flowing through his ankles and feet into the floor. Playfully, he began to plod around, like a large bear. Yes, this is an exaggeration of the movement, but that is often necessary when working with very refined movers who are accustomed to employing miniscule controls. As Joe began to play and enjoy this movement, he let go of the fixed position of his ribs. He could feel his weight spread through his feet and relate to the ground. He enjoyed feeling the freedom of his breath.

Then I asked him to open his senses to the space around him – the sounds in the space, the whole expanse of his visual field, imagining sun warming his back. He enjoyed hearing the sounds of children playing on a neighborhood playground. This brought him to a more upright posture without holding and I also noticed without rib flare or tucking. More importantly, both Joe and I sensed that he was more oriented and connected to the present moment – we were now working in real time. He discovered that his body already knew how to organize itself, if he stopped interrupting it by micromanaging the parts.

From here, we could explore what was actually happening with his shoulder, which as you might imagine, because of his rib tucking, involved his pectoralis minor shortening and pulling down creating neurovascular compression. I could have released this at the start, but then what would have happened if he went back to micromanaging.

Just to note, Joe is a very successful and beautiful mover who got trapped by trying to fix a painful issue by focusing solely on his body parts. Too often, culture teaches us to do this; think about orthopedics, we take our parts to a parts specialist, as if they are disconnected from our whole – and even if there is something surgical to fix in that part, how often does postsurgical rehabilitation involve reconnecting back to our whole being, sensing earth and space, moving in a context, moving in an environment that includes gravity?

Lina: That is an interesting example. And the other?

Rebecca's CrossFit Client, Ella

Rebecca: The other example that comes to mind is a woman, Ella, who is a CrossFit trainer. She wanted to show me her deadlift. She was having pain in her outer left hip. As she demonstrated, she explained that her key focus was "activating" her left gluteal muscle group before she lifted. But as soon as she did that, I noticed her weight rolled to the outside edge of her left foot. That small shift meant she lost her connection to support from the ground. Essentially, she was trying to prepare for a powerful, whole-body lift by isolating one muscle – using that as the *premovement* for the action.

I see this pattern all the time. It's a reflection of our culture – how much emphasis we place on control. Well-intentioned teachers, trainers, physical therapists, and coaches often give people cues like "activate this," "hold that," and "place this here." These instructions come from a good place, but they often pull us away from our body's innate capacity to organize itself.

If we can instead help people rediscover their innate connection – to gravity, to feel the ground, attune to the environment right now – they find support that's alive and responsive. That shift in premovement changes everything.

In Ella's case, once she stopped *doing* the activation and started feeling her weight through her feet connected to the ground as the premovement, the lift became smoother, stronger, and pain-free. The extra effort dropped away because she wasn't layering conscious control on top of her natural capacity for stabilization.

Premovement and Perception

Aline: Yes, let's consider premovement for a moment. This expression is shorthand for: How do we prepare to move? What happens before an observer would see any obvious action? Below the conscious level, preparing to move is a complex process involving perception and memory and it always includes anticipating changes in balance.

The Russian neurophysiologist Nikolai Bernstein's work on coordination makes clear that cognitively, we can't micromanage the complexity of the numerous muscles and joints involved in creating even a fairly simple movement. Instead, the nervous system creates a motor pattern that links all the parts together. You could imagine that we have a kind of *start button,* and once that is pressed, the movement pattern unfolds. You can't change a part of the

Aline: The Russian neurophysiologist Nikolai Bernstein's work on coordination makes clear that cognitively, we can't micromanage the complexity of the numerous muscles and joints involved in creating even a fairly simple movement. Instead, the nervous system creates a motor pattern that links all the parts together. You could imagine that we have a kind of *start button,* and once that is pressed, the movement pattern unfolds.

coordinated sequence once the start button has been pressed. Instead, you have to change the start button. But what is the start button? Scientists say the movement begins with a perceptual process – orienting to the environment by feeling the ground, sensing the space, or whatever we are imagining: soft earth, for example. That's what happens first – how we are receiving and experiencing and imagining our environment – which includes the body. Noticing and working with the premovement is a perceptual act, it is not a voluntary command such as, "Contract your gluteal muscles."

Hubert digested this very complicated idea into saying, "What is a well-organized movement? It's a movement that you don't see where it begins, because it begins in perception." You may see me lift my arm, but what you see will change depending on whether I let myself receive the ground's support before I move, or whether I let the space behind me expand, for example. Skillfulness is to be able to organize these coordinations from very different starting points depending on what is needed in the circumstances. It's not a shape. It's never going to be a shape. We can say these ideas, but I think Rebecca, you would agree, that it's something that you work with over and over, and after a while it becomes obvious.

If I lift my arm with only you as a focus, even over our Zoom video, you can see my neck contract. But if I rest into the ground, and imagine opening the space around me before I open my arms, I've got core stability now. I didn't tell my transversus abdominis to contract, I changed my relationship to my environment and changed my perception. And that changes the coordination, which includes stability.

Rebecca and I use a shared vocabulary, and there is a lot behind it. This is why I wrote my book, and it was worth writing 300,000 words to go in depth with these ideas and experiential practices that lead the reader to their own embodiment. The culture has a very primitive view of posture and movement which suggests that I should hold my shoulders back, or activate my gluteal muscles. That is one way to see and understand movement. But for me, when I deliberately contract my gluteal muscles, you can see as I lift my arm, that I have lost my range of motion.

Lina: You've made your case in my opinion. My body changed from taking those Zoom courses from you both, and I know that is true for many of us who have been your students. And I'm eager to read this information in a book format. We can only go so deep in an article; this is the tip of the iceberg!

Perceptual Learning in Practice

Lina: What would you suggest for practitioners to begin to address this kind of perceptual learning for their clients?

Rebecca: Opportunities for perceptual learning appear in every session. In fact, I encourage practitioners to consider the whole session, door to door, as an invitation for perceptual learning.

New clients may come in for their first appointment with the idea that we, like many other medical and fitness professionals, will begin by analyzing what's wrong, tell them about their weaknesses, and offer instruction and corrections that they are supposed to do. A client may say, "I know that I should stand like this, [with their shoulders pinned back,] but I find myself standing like this, [pelvis tucked under, shoulders rolling forwards]." Or the person may have many complicated microcorrections based on visits to other well-meaning practitioners. I wrote about this in my article about scoliosis (Carli-Mills 2018). My client, Colette, would stand in front of me, continually rearranging her torso, pausing momentarily to ask, "Is this better . . . no wait . . . [more micromovements] how about this . . . Is this the right position? Am I straighter?"

So, what if, early on, we begin by sharing what we notice is working well and not just in a superficial way? What do we admire about this client's stance and movement? Where in ourselves do we feel enjoyment when we watch them move? Perhaps there is an overall sense of balance and continuity, or a grounded sense in their gait, the way their feet meet the earth. Whatever it is, what if we begin from this place, by establishing a foundation of positive resources from which we can build, and our client can participate. Often, I find that this practice allows the client to have a whole-body

sense of letting go, or, in some cases, at least an exhale.

Perceptual learning unfolds, less like a technique and more like a thread you continually weave through everything you do. You may help your client notice reference points, such as the felt sense of the floor coming up to meet them or the space between the top of their head and the ceiling or sky. Which part of their back meets the chair? What happens if they invite their sit bones far back into the corner of the chair? Now, which parts of their body meet the chair? Instead of telling the client how to sit, you evoke contrast and curiosity and build a more refined capacity to sense the difference.

You may work with multiple perceptual channels by inviting awareness of shifts in the habitual ways a client may organize their senses. As the client is doing a rotational movement, invite "if you allow your eyes to soften, what changes in your spine?" And, "What happens when you allow the sounds of the birds to gently turn your head?" These kinds of subtle experiments help clients discover different qualities and pathways of movement rather than instructing or constructing them.

So important in our work is the concept of touch as a perceptual conversation, instead of an applied fix-it tool. I remember when Hubert taught us to be aware that the client is touching us, to receive the touch, and then to meet the client's touch before launching into any agenda; we are working *with* the client, not *on* the client. Also, our hands don't just release tissue; they also orient attention. In combination with our presence, our touch can offer direction, focused attention, reinforce boundaries and safety, evoke continuity, encourage spaciousness, and more. We offer perceptual learning through the felt sense, rather than force or correction.

It's important to remember that perceptual learning and reorganization often happen in pauses – give the client time and space to notice what they notice. They may need time to experience the shift, rather than understanding it through immediate verbal information. Value the pauses and silence that may be necessary for integration.

Creating a Therapeutic Alliance

Lina: These are such beautiful examples, because all of us structural integration practitioners have some variation of these kinds of clients. The clients want us to join them in their world concept. I attune with them in their world view to build a therapeutic alliance with them, and then, I challenge them to join me in this other concept; come over here. For me, it can be an experience of push-pull a little bit. They may push back and say, "Oh, but no, don't you see I am like this?" And I say, "Yes, I do, I see what you're talking about." And then I breathe. And then I allow my own concepts of ground, sky, and gravity orientation-space orientation fill my being with silence; hoping to inspire their curiosity with presence. You've said it so clearly for us.

Aline: Listening to both of you talk, what strikes me is exactly that, curiosity with presence. Rebecca, as you were talking about what it is to work with a client, your voice was creating safety and a valuing of something that the culture might not value. Almost like you're embodying the possibility that there's a way to be here that is not about so much effort. This reminds me of a few lines of the popular Mary Oliver poem, *Wild Geese* (14, 1986):

You do not have to be good.
You do not have to walk on your knees
for a hundred miles through the
desert repenting.
You only have to let the soft animal of
your body love what it loves.

Most people have gotten the idea that they should work hard to have good posture and they feel they are doing something wrong. As a culture, we're very much suffering from that. As a practitioner, we can offer a different tone, through our voice and our own body's receptivity and clarity. Hubert emphasized being able to stay with our own center of gravity when touching another. We can offer an invitation that suggests maybe there's another way to feel safe.

People have a movement strategy that has a meaning behind it: whatever the pattern, they are choosing that one for a reason, which is often nonverbal or preverbal, and for the purpose of safety. We definitely do not want to strip that away with a misguided notion that they should be some other way. What we can do is have a conversation, a physical conversation, and a verbal conversation about the experience.

I often invite my clients to show me an example of what they think of as 'good posture'. When they're in their idea of good posture, I can push them over. And when they do the thing that they've been forbidden to do, to let go, perhaps feeling they are slouching, they're very rooted and strong. Each person can immediately experience this. Then we negotiate with the possibilities.

It doesn't make sense to take things away from people; that's not what we are trying to do. We're meeting them in their world, and then together, we explore a range of options.

Rebecca: Opportunities for perceptual learning appear in every session. In fact, I encourage practitioners to consider the whole session, door to door, as an invitation for perceptual learning.

What Can We Learn from Robots?

Lina: In the Tonic Function Study Group in 2022, you mentioned teaching a class at MIT and talking about these perceptual concepts with students working on the development of humanoid robots.

These stories you shared helped my learning, hearing about how you have used the robots to highlight aspects of what goes into moving on two legs – taking something rather complex and making it tangible so that it can inform us practitioners when working with clients.

Aline: Yes, I enjoy following the progress of humanoid robots. The robots are a foil that helps us see ourselves: early robots fell a lot, and even the robots that just recently ran the half-marathon in China were still mostly held by a rope, and had to constantly be picked up by people. The one that succeeded is not a segmented creature. It has a body made of one block of material and then legs that move very differently from the bodies evolution led us to have. Most recently, a robot was used at a fashion show, and was celebrated for having five poses in its repertoire. But it was not able to manage stairs, a much more complex action that we mostly take for granted. The robots' struggles help us see what is remarkable about human movement capacity.

Lina: After taking your class, I sounded so smart sharing your lessons with my clients in my treatment room. People love hearing about robots. There are some clients for whom this is the perfect metaphor to help them feel what their living, breathing, and pulsing tissue is doing.

What is Happening in the Stick Exercise: Action-Based Proprioception

Lina: Let me bring it back to Romy. This fits in perfectly here. I'd love to hear you talk about why the stick exercise works so well for helping a person soften the held places and engage the quiet places.

When I had asked her to feel her feet, she was quick to say, "Yes, I'm feeling my feet." It was an easy thing for a yoga instructor to do. When Romy and I worked with her holding the stick, it was something new she had never done before, and she has done so much. It was meaningful for her. I led her on the steps that you gave us in class, and there she was, letting go, and the stick floated upward. We discussed whether her weight training could benefit from this type of sensory-movement playfulness.

This is the heart of what I've wanted to ask you – *why did this work*? Is it going to work like this for other people?

Aline: Well, I think there is a lot there. For one thing, the invitation to meet the stick instead of grasping it, is a change in perception, a change in premovement. In addition, our nervous systems are action-based. Our movement patterns are based on action in the world, and on perception. And yet another dimension is the way a stick can be a transitional object, bringing us all the way back to early childhood. So, when you put something in someone's hand, you are potentially touching a lot of different dimensions of a person's nervous system.

Rebecca and I study tai chi with Don Miller [https://mastodontaichi.com/dt_therapist/don-ethan-miller/], who teaches a very unique approach in which we don't learn a choreography, a predictable sequence of moves. We often alternate between using equipment in an actual action, such as holding a stick or moving a chair, and then find the same movement – forward/back or side to side – empty-handed. We are also using imagination: I can imagine pushing the air that resists me. I can also imagine assistance: something drawing my arms up. Holding the stick can make it easier to imagine, to start with a different premovement. I change what begins this movement by imagining a different quality in my surroundings, and that changes the whole coordination.

And let me add, that as you practice inviting clients to feel their feet, remember we're not talking about feeling our feet, we're talking about the feeling the weight as it meets the floor through our feet, or as with the stick, feeling the place of contact, the meeting.

But as to your question, "Will it work for other people, or every time?" There are multiple doors you can go through to invite a sense of weight. A lot of the time, the art is in how to reimagine what we're doing so that we can keep coming up with new approaches to allow each client to access a new coordination. A coordination that will allow more options so that they can be more comfortable in more situations, instead of just the one that they have that's working for them. But maybe it's not working all that well, or they wouldn't have come in to see us.

Rebecca: It feels like magic when Don, our tai chi teacher, asks us to use real objects in class. We might be practicing extremely slow low weaving steps across the floor, pausing with each one. I feel my balance challenged – I have moments of clarity and more of fogginess. Then Don asks us to do the same movements while holding a stick as if it's a spear. Now, I feel that my whole intention has changed – my focus consolidates, the movement has purpose, and any slight balance wobbles or concerns about the technique seem to magically disappear. It all comes together and makes sense.

Coming Home / Skill Building

Lina: When I first came to this work as a client, I didn't have the language to understand my body as I have now, twenty years later, after decades of study and practice. When I arrived for my first Rolfing session, I would say my big body was paired with a proprioceptive map that suffered from what we could call 'too little body'. I wished to be smaller and take up less space, and as a result, I didn't inhabit my actual bodily self. I have previously discussed being in a larger body (Hack and Black 2022). The healing process Rolfing work gave me was coming home to myself, amplifying my body sensations. I imagine you have experience with clients on this side of the embodiment spectrum? If I can even frame it as a spectrum?

Aline: We also spend a lot of time thinking about this question. And what you just said, which is the context of Lina describing her experience as arriving and locating, that's a beautiful description, and it makes total sense. I might not say someone doesn't have enough body, for the reasons I mentioned at the start of our conversation, because all of us are embodied. But I'm not you, and hearing you say your experience, it's a beautiful poem for me, it's again, a koan. It's not a formula. We aren't doing math where variables have to become equal. One is not the opposite of the other, not at all.

In a sense, both 'too much body' and what you're calling 'too little body' are qualities of organizing in gravity and in orientation that could be more skillful. In a sense, they're both habits, or ways of approaching things, of orienting. That's an important question: What is a skillful embodiment? And that always depends on what you're faced with.

Maybe occupying a space on the ceiling is a very skillful response for certain highly stressful situations, but is it the only quality we would want to be able to employ in all

Aline: In a sense, both 'too much body' and what you're calling 'too little body' are qualities of organizing in gravity and in orientation that could be more skillful. In a sense, they're both habits, or ways of approaching things, of orienting.

situations? Then it's a question of skill-building for different situations.

The skin can be an important metaphor or physical boundary to attend to when we are not sure where we are in space. By directing attention to the places of contact, by differentiating clearly where I meet you in touch, we can at times help the earliest sense of wholeness.

There is a whole range of movements that support a variety of expressive needs, responses, and different qualities of being that we need just to get through a day. Can I expand and take up space without unbalancing myself? Can I focus and condense, and still breathe? We're looking for a system with a lot of available responses, and they always include not falling over.

We have to see, how do we organize? Everybody's doing okay if they're walking around or wheeling around, but there are other responses that maybe they haven't considered.

In a sense, we're all dancers in the expressive quality sense of the term. We need to be organized with gravity. For me, there are times when I don't expand, because when I expand, it feels unbalanced. I need to start with rooting and then I can find that expansion. So that's a practice for me. Another person might need something else.

Rebecca: When I think about *too little body*, I first think of psychological states like dissociation or depersonalization. These can arise from a mix of trauma, biology, and environment. In those moments, leaving one's body can be a wise and necessary coping mechanism. It may have been the best option available at the time. Part of our work is to help create safety and a cohesive container so the person can gradually return, release, and build resilience.

Some clients arrive without a language for sensing their body; they've simply never been invited to pay attention in that way. Since developing our kinesthetic sense isn't yet mainstream, it becomes an opportunity to help them build awareness – what do they notice, sense, or feel, and why might that matter? Even small steps in that direction can open a whole new world.

Lina: I appreciate your reflections. That mathematical part of my brain does like to create 'variables' and 'equations', which can lead a person into dualities, a limiting notion that reduces a concept to only two things. And cultivating vocabulary, that is my poem of my embodiment story. Thank you for reflecting these ideas back to me.

Rebecca: I also recognize too little body in my own dance career. I could be intensely focused on form – too much body in the external, visual sense – yet at the same time, too little because I was living inside a limiting body image. I wasn't really feeling my own weight, my place in space. In that way, I was both too much and too little body at once.

Lina: That is insightful. I enjoyed listening to your poem; it has enriched my understanding.

Aline: This brings to mind one of my clients who is a dynamic fellow, up and busy; he even walks fast. His wife often tells him that he walks *very* fast. And he has only negative associations to letting his weight be supported – feeling like an old man for instance. We found a way in through sighing. When I invited him to sigh, he was able to let his weight drop. So, it had the same effect as working with the stick, but a different way in. At his next session, he told me of being in the middle of a doubles game of tennis, and he had a moment of rest, and remembered the sigh. He marveled at how powerful his swing was after that.

Our clients are so dear to our hearts because it's thrilling to see the joy they experience when they find a cue that helps them in their lives outside our offices. As each person's story unpacks, there's so much in it. That is part of what I love about being a Rolfer, that we're in the exploration of what really matters, which is how people feel about being in their life and how they organize. It is beautiful – using both poetry *and* biomechanics.

There's something important about not letting go of the meaning-making nature of our lives, which can so easily be discarded in the mechanized and medicalized body. But that's not the body we are. For me, it's not so much 'too little body', but as Rebecca says, it's stuck in one way of responding. Is it a body image that doesn't allow the organism to be one with everything? As organisms, we are embedded in the environment. Our minds are all that separates us, our thinking. It's a deep topic you've brought to us to discuss.

Lina: Yes, wow, very deep. Thank you for having this deep dive conversation with me. I feel inspired, like I always do, after listening to you two communicate your knowledge. I look forward to reading your book! People can also read a review of your book in this issue (see page 78). How can people order the book?

Aline: *Reimagining the Body* (2025) is available through your local bookstore or on the Singing Dragon website or through Amazon.

Lina: Perfect. And here is the link for people who read our journal digitally:

https://www.amazon.com/Reimagining-Body-Embodiment-Curriculum-Century/dp/1805013769

Rebecca: That's great. Thank you, Lina.

Aline: We appreciate your interest.

Aline Newton, MA, is a Certified Advanced Rolfer®, a Rolf Movement® Instructor, and Chair of the Rolf Movement Faculty. Aline has been offering Rolfing® work since 1984. She has studied with Hubert Godard since 1990 and continues to be inspired by his perspective. Her book, Reimagining the Body: Somatic Practice, Embodiment, and the Science of Movement, *was published by Handspring Publishing in October 2025. In addition to her private practice in Cambridge, Massachusetts, Newton teaches experiential anatomy at the Boston Conservatory's Alexander Institute. For more information, see her website at www.alinenewton.com.*

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References

Carli-Mills, Rebecca. 2018. Embody, disembody, re-embody, body: Working with Scoliosis and Embodiment. *Structure, Function, Integration* 46(3):14-24.

Hack, Lina Amy, and Nicole Black. 2022. Finding body love after experiencing fat shame. *Structure, Function, Integration* 50(3):52-57.

Newton, Aline, and Rebecca Carli-Mills. 2025. *Reimagining the body: Somatic practice, embodiment, and the science of movement.* Philadelphia, PA: Handspring Publishing.

Oliver, Mary. 1986. "Wild geese." In *Dream Work,* New York, NY: Atlantic Monthly Press.

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Force and Power

Perspectives of a Rolfer® and Sports Scientist

By Jakob Reichardt, Certified Rolfer®

Jakob Reichardt

ABSTRACT *This article by Rolfer® and sports scientist Jakob Reichardt integrates the philosophy of Rolfing® Structural Integration with athletics, biomechanics, and neurology to optimize movement and performance in gravity. Key mechanical properties explored are force and power, and the rate of force application. The myofascial system, particularly the structure and tension of the fascia, is shown to amplify muscular strength and participate in force transmission. Neurologically, fast, high-impact movements rely heavily on rapid reflex arcs and the precise monitoring provided by muscle spindles and the Golgi tendon organs. Reichardt critically assesses traditional Rolfing approaches, like releasing hamstring tension in the First Hour of a Rolfing Ten Series®. The author also urges the Rolfing community to overcome its biases against strength training, emphasizing its crucial role in injury prevention, metabolic health, and supporting a client's ability to cope with the strenuous demands of daily work or sport. Ultimately, effective Rolfing work for clients who engage with high-impact movement requires integrating the demands of force and power with the myofascial and neuromuscular realities of movement in gravity.*

The basic premise of the Rolfing® Structural Integration process is to address the body's alignment and integration in gravity. The Rolfing Ten Series® brings the client closer to their core line, their vertical center, allowing them to move harmoniously and naturally with the pull of gravity throughout their body as they move. Being balanced offers more economic movements and improved overall well-being. Since French Rolfer® Hubert Godard's insights into tonic function for exploring movement, Rolfers® are very aware of the continuous sensorimotor feedback our body experiences while in the field of gravity (Newton 1992, Frank 1995). Motor output generates sensory information, and sensory information initiates/modulates motor action. Our internal (body) and external (context) environments are in constant communication, a feedback loop. And gravity is constant.

My goal is to integrate insights from sports science, biomechanics, and neurology to explore force and power production and its relevance to Rolfing Structural Integration.

As a sports scientist, athlete, and Rolfer, I am passionate about the force and power generating capacities of human locomotion. Rolfing Structural Integration's unique perspective and conceptualization of movement made me realize how these raw physical capacities are integrated within a sensory-coordinative framework, embedded in the gravitational field. After some years of trying out and probing for myself, I came to the conclusion that our Rolfing world and the weight room are not that far apart as I initially presumed. We often think of fascia, muscle, and nervous system tissue as behaving in a relaxed, conscious mode of movement; the moment we engage in an explosive, high-impact activity, the sensory-motor context changes completely, calling for a very different set of structural and psychobiological responses. Moreover, exercise interventions don't need to be flashy or overly complicated to address a client's needs. In my practice, I try to embrace my clients' movement habits and their distinct physical qualities, assessing the clients' force-production capacities if needed. It is exciting to see how at the right time during the Rolfing process, the introduction of appropriate strength exercises can foster our structural work on the table.

The moment we engage in movement, in addition to our present sensorimotor state, internal and external forces with their own distinct sensorimotor qualities will act upon our bodies. The intensity and velocity of these forces, as well as our emotional state and the context of our surroundings – *the movement context* – all have an impact on our body's processing and response to a motor demand. The chaotic nature of our environment requires the human body to be adaptable and cope with various degrees of forces continuously acting upon it. Gravity meets movement.

In this article, I present to you a condensed version of the ideas originally written in a paper for my application to be an anatomy instructor for the European Rolfing® Association e.V., and I have made some amendments to this version for a broader audience. My goal is to integrate insights from sports science, biomechanics, and neurology to explore force and power production and its relevance to Rolfing Structural Integration.

Mechanical Properties of Movement

Kinematic Basics

Newtonian mechanics describes force as a faculty that can change an object's velocity (force = mass x acceleration). Force has directionality, and its vector is represented by a line with an arrow indicating the direction of force. In kinetics, the branch of science that deals with the effects of forces on bodies, this is further specified by distinguishing between *internal* and *external* forces. Hence, a movement can be either initiated, arrested, or modified from within our body's anatomy (actively via muscle or passively via connective tissue) or from entities meeting our structure from the outside (e.g., gravity). The term *strength* is defined more practically as the human exertion of force on a physical object (Neumann 2017).

Power, on the other hand, expresses the relationship between force and speed (power = force x velocity). Its focal point is the body's ability to generate the greatest amount of force in the quickest way possible, which can be further elaborated as *the transfer of energy per time*. Kinetic energy, the form of energy that allows a mass to have motion, in its simplest understanding, is directly proportional to the object's mass and the square of its velocity. In contrast to force, power is a scalar quantity, meaning it measures the rate of energy transfer and not direction (it is not a vectorial quantity), although its assertions are only valid when force and velocity are oriented in the same direction.

Force and power have an inverse relationship within the context of a constant power output. Quite practically, a high-power output can only occur at compromised levels of either force or contraction speed. The faster a movement becomes, the less absolute force can be produced, and vice versa. This is a feature to keep in mind when biomechanical theory about the human body is transferred into the field practice of athletic performance and physically demanding occupations. But, it is important to note that the literature on strength, power, and speed is clear about maximum strength being the basic property involved in the highest possible power output (Wang et al. 2023). This is predicated on the specific neuromuscular and myofascial adaptation process of strength exercise.

Biomechanical Properties of Muscle and Fascia

The structural makeup of different muscles, muscle groups, and their connective tissue content influences the ability of the human body to produce force and power in a distinct manner. Muscles and the fibers that they're made of are encased in layers of connective tissue – the epimysium, the perimysium, and the endomysium[1]. These tissue layers are the myofascial component, known as myofascia, organized in a coherent fashion throughout the body with the neurofascia, viscerofascia, and superficial fascia, in totality called the *human fascial system* (Stecco et al. 2025). Fiber numbers in muscles can range from a few hundred to over a million. The smallest contractile unit of a muscle is the sarcomere, and it is stacked in a way that gives the musculature of the locomotive system its striated appearance (Schoenfeld 2021).

After some years of trying out and probing for myself, I came to the conclusion that our Rolfing world and the weight room are not that far apart as I initially presumed. We often think of fascia, muscle, and nervous system tissue as behaving in a relaxed, conscious mode of movement; the moment we engage in an explosive, high-impact activity, the sensory-motor context changes completely, calling for a very different set of structural and psychobiological responses.

Jakob Reichardt

A muscle's fascial layers directly participate in the transmission, stabilization, modulation, and amplification of muscular strength as the sarcomeres contract. Not only does the fascia transmit the force resulting from a muscular contraction longitudinally via the muscle's tendons, but it also transmits laterally between neighboring fibers and even neighboring muscles (up to 30% of force transmission is intermuscular). The effectiveness of a muscular contraction depends on the state of the fascia, the collagenous matrix in which the muscles are invested. Fascial tension amplifies muscular strength, comparable with a hydraulic pressure system: as a muscle contracts, it widens and hence, increases the intra-fascial pressure, resulting in an amplification of the muscular force produced (Pilat 2022).

In order to estimate a muscle's contractile strength, physiologists determine the physiological cross-sectional area (PCSA), which is the peak area of a muscle's cross-section perpendicular to its fiber orientation. Generally, the larger the PCSA, the higher the potential muscle force output. An increase in PCSA (i.e., hypertrophy) can be defined as the parallel/serial addition of sarcomeres, an increase in the amount of connective tissue, and an enhanced sarcoplasmic fluid content. Parallel adding is mostly achieved through concentric workloads; in-series adding can be observed in cases where muscles must adapt to a new functional length (e.g., loaded stretching, like eccentric-focused training). Sarcomere adding and arrangement are more or less genetically determined. Whereas a parallel sarcomere arrangement allows greater force production and strength, a serial sarcomere arrangement is associated with greater speed of contraction (Schoenfeld 2021).

In conjunction with the PCSA, a muscle's innate architecture further dictates its contractile properties. Fiber length and fiber angulation influence the *relative* PCSA and hence contribute to the force and speed of contraction. In general, thick and short muscles (e.g., *m. gluteus maximus*) are able to produce higher forces, whereas long muscles (e.g., *m. rectus femoris*) show a high contraction velocity. The reason is the sarcomere arrangement. In muscles showing a pennate fiber organization, that is to say, the fibers are oriented at an angle to the line of action, leads to an increased PSCA. Consequently, a pennate fiber arrangement allows muscle, relative to its length and mass, to contract more forcefully, even over a larger distance.

As fiber angulation increases, so does the PCSA, and hence, increasing the force-producing capacities, while at the same rate, contraction velocity decreases. A classic example would be *m. fibularis longus*. The majority of muscles in the human body show a parallel fiber arrangement, their fibers are oriented in direction with the line of action. The linear organization allows the fibers to contract fast and extensively, but following the laws of mechanics, with relatively less force. Fusiform, strap, and convergent muscles display a parallel fiber organization (Bosch 2015, Wackwitz et al. 2024).

In summary, the structural makeup of the fascial tissue of a muscle will amplify that muscle's force production capacities. The fascial tissue amplifies a muscle's strength. Due to the triple-helical organization of the collagen fibers of the fascia and the unique orientation of the fibers they constitute, collagen fibers actively participate in the storage, transmission, and release of kinetic energy. Some muscles have higher connective tissue content, but not all of them. That's why different muscles have different mechanical properties. The muscular tissue is embedded within a denser and more comprehensive collagenous matrix. Similar to the relatively larger PCSA of some muscles due to the angulation of their fibers, an increase in a muscle's connective tissue content will also contribute to an enlarged PCSA. Keep in mind that while some muscles appear long and thin (like *m. rectus abdominis* or *m. ischiocrurales*), they have a relatively large PCSA due to the high proportion of connective tissue associated with the muscle fibers. This means they are capable of producing a relatively high force. Their high connective tissue content, combined with their large PCSA, makes those muscles prone to high-impact, powerful movements.

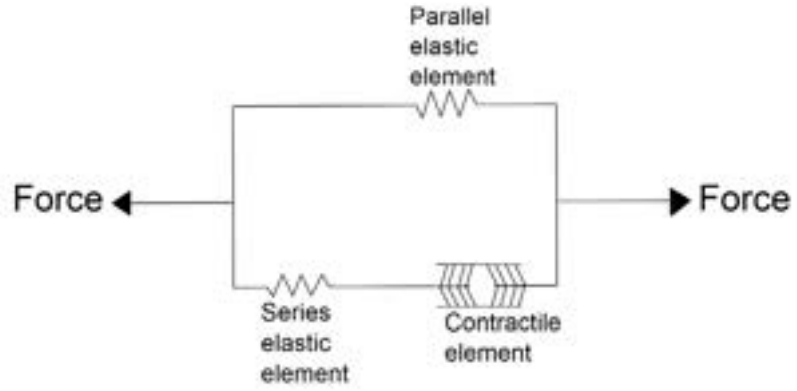
The Hill model explains how elastic properties are utilized in a movement context (Pilat 2022; Bosch 2015). This introduces a physical reality into our thinking about force and power, as well as its physiological implications. How the morphological make-up of muscular tissue is more or less prone to certain types of effort, and how fascia (the tissue of our focus) has its rightful place within the context of force and power.

Fascial tension amplifies muscular strength, comparable with a hydraulic pressure system: as a muscle contracts, it widens and hence, increases the intra-fascial pressure, resulting in an amplification of the muscular force produced (Pilat 2022).

The Hill Model

The Hill model distinguishes between contractile elements (i.e., muscle fibers), elastic elements that are together in series (i.e., tendons and investing fascia), and parallel elastic components (i.e., passive connective tissue) in a muscle. In the case where an opposing torque exceeds a muscle's contractile elements' isometric capacity, the muscle will lengthen and the series elastic elements will stretch. If the contractile element can isometrically match the opposing torque, that is to say, the forces would be equal

The Hill model.



in measure, the series elastic parts are now in a position to store and release elastic energy. And remember, isometric strength, such as when gripping a weight and holding it steady, by definition, involves no movement but does have a high level of tension in the muscle. In order for a muscle to make use of the particular mechanical properties of the fascia, that muscle's fibers must bear the potential to produce peak isometric forces. Only then can proper storage, transmission, and release of kinetic energy happen.

The hamstring group is a prime example. When running, sprinters experience ground reaction forces of three to six times their body weight. In order to counteract and adapt to this impact, the hamstrings must be able to produce peak isometric forces themselves (Bosch 2015, Rochau et al. 2024).

Our colleague, fellow Rolfer, Robert Schleip, PhD, describes a similar phenomenon in the paper, "Training Principles for Fascia Connective Tissues" (Schleip and Müller 2013). Schleip and Müller (2013) describe how various forms of tissue strain influence the fascia. Actively loaded stretches appear to stimulate the fascial web in the most comprehensive way, the different strands of collagen (serial, extra-muscular-transverse, parallel) are addressed almost entirely. For this to happen, the muscle needs to be contracted isometrically. Among other things, Schleip and Müller recommend that athletes incorporate counter-movements and pre-stretches into their training routine to make use of the mechanical properties of fascia and address the fascial sheet comprehensively. In the context of high-impact movements, I would disagree with these recommendations. I will elaborate further in a moment.

Neuromuscular Basics for Force and Power

The central nervous system of humans is able to recruit 75% of muscle fibers for voluntary concentric action (i.e., *maximum voluntary contraction*). In other words, our brain underestimates the body's muscular capacities in order to protect its structural integrity (i.e., *autonomously protected reserve*). If humans were able to voluntarily contract all of their muscle fibers at the same time, maximally, the force generated would be strong enough to rip the flesh from the bone.

Stimulus Size and Processing

Force production happens due to the size of the *stimulus* experienced. Following the so-called *size principle*, low-threshold motor units (slow-twitch fibers) get activated first, whereas high-threshold motor units (fast-twitch fibers) need a stronger stimulus to get recruited. Under a sub-maximal load, the human body can produce a maximal counter-force only when recruiting low- and high-threshold motor units alike, synchronizing slow-twitch-fiber and fast-twitch-fiber activation.

The size principle makes it possible for the central nervous system to estimate force production more efficiently. It is important to note that the regulation of (high) force and power production mostly takes place at the spinal cord level by way of reflex arcs. The higher-order central nervous system regions (basal ganglia, cerebellum, motor cortex) then modulate what can be regulated automatically at the spinal level.

Athletes and people with physically demanding jobs must be able to execute fast movements, often with a lot of strength. The high-impact movements will at times be responses through the reflex arc mechanism. This mechanism makes a lot of sense since supraspinal/cortical processing of high-impact sensorimotor information takes longer to neurologically process, and the need to react quickly would take a cortical response too much time. Depending on where you focus in the literature, monosynaptic reflexes have a latency of twenty to forty milliseconds, whereas the reaction time for voluntary movements (which includes sensory input + brain processing + muscle action) takes between 200 to 250 milliseconds. Yet, signaling through the spinal pathway is still not fast enough when our body needs to react, generate, or modulate peak forces. A more rapid control is needed. The key component of this demand is the mechanical properties of myofascial and the human body's coordinative ability to control high-impact sensorimotor feedback (Eisen et al. 1985, Bosch 2015, Kim et al. 2022).

When running, sprinters experience ground reaction forces of three to six times their body weight. In order to counteract and adapt to this impact, the hamstrings must be able to produce peak isometric forces themselves (Bosch 2015, Rochau et al. 2024). (Photo by Jakob Reichardt.)

The discussion about isometric loading, high-impact movement, reflex arcs, and the interplay between muscle spindle and Golgi tendon organ activity is compelling; they are neuromuscular and biomechanical peculiarities about force and power production, and may have already provided an incentive to rethink some of the approaches we Rolfers use in our daily manual and movement practice.

Proprioceptors of the Somatosensory Pathway

The Rolfing Ten Series emphasizes the importance of the gamma motor system due to its key role in our constant engagement with gravity. When it comes to force and power production, the gamma system must be able to adapt to the changing sensorimotor context of high-impact movement. Gamma-system regulation is predominantly achieved through the proprioceptive organs of the *alpha fibers* and the *muscle spindles*, in accordance with the *Golgi tendon organs*.[2]

Muscle spindles are *intrafusal* structures that are three to seven millimeters long. They are sensory receptors located in the perimysial and endomysial fascia, parallel to *extrafusal* muscle fibers, and they transmit changes in the muscle fiber length to the central nervous system.[3] They communicate to the central nervous system about the change in length within itself and the speed of that change of length. This information is processed by alpha and gamma motor neurons alike. The alpha motor neurons activate associated extrafusal muscle fibers (i.e., *stretch reflex*), whereas the gamma motor neurons stimulate intrafusal muscle fibers. This *alpha-gamma coactivation* enables our body to continuously maintain and fine-tune a particular fiber length, even under the influence of perturbing external and/or internal forces.

The Golgi tendon organs are sensory receptors located at the border between muscle and tendon (i.e., *the myotendinous junction*), which monitor a muscle's force output. By being stretched passively, one Golgi tendon organ registers the tensing of the fibers of one motor unit (i.e., ten to twenty muscle fibers per Golgi tendon organ). Depending on stimulus size, the agonist motor unit (the motor neuron and its muscle fibers driving the voluntary movement) will be inhibited by spinal interneurons, while the antagonist motor neurons will be stimulated (the motor neuron and muscle fibers that oppose the voluntary movement) through the *Golgi tendon reflex*. The Golgi tendon organ pathway continuously provides our body with precise information about muscle force, thus allowing us to maintain steady levels of muscular tension to counteract perturbing forces (Juhan 2003).

The permanent excitatory and inhibitory interplay between muscle spindle and Golgi tendon organ activity sets the tone for movement patterns to be executed efficiently, while constantly readjusting to unpredictable external and/or internal forces. More strenuous and intense activities will produce a different sensorimotor context, an environment that muscle spindles and Golgi tendon organs will experience and process differently. Besides the predominant structures and pathways of pure motor control, it is important to note that complex cortical networks modulate movement initiation and execution via sympathetic pathways to the adrenal medulla and vice versa. Thus, the affective state we're in will greatly influence our capacity to execute movements (Dum, Levinthal, and Strick 2019).

Force and Power in the Context of Rolfing Structural Integration:

Conceptualizations, Discussion, and Perspectives

The discussion about isometric loading, high-impact movement, reflex arcs, and the interplay between muscle spindle and Golgi tendon organ activity is compelling; they are neuromuscular and biomechanical peculiarities about force and power production, and may have already provided an incentive to rethink some of the approaches we Rolfers use in our daily manual and movement practice. Our nervous system reacts and adapts to the sensorimotor context in which we find ourselves. Furthermore, the diversity of muscle architecture can provide us with new practical implications on how to approach these structures manually or with movement. Loading each myofascial structure in the same way, or just releasing tissue tension throughout the whole body, would negate the innate peculiarities of different myofascial and neuromuscular structures in the context of high-intensity movement.

Under the influence of high forces, the need to adapt to a more strenuous environment will create an equivalent sensorimotor context. For example, a Rugby player experiences constant changes in force and speed during a match. The consequential sensorimotor chaos has to be controlled in order for the

athlete to perform the necessary motor response that is forceful, fast, and also economical. In my understanding, the tools we Rolfers offer to such an athlete may be limited and even insufficient to assist our exemplary Rugby player in dealing with the demands of the sport. But, becoming aware of the influence of high forces will not only help you with your work with athletes, but also with laborers, tradespeople, farmers, and blue-collar workers alike to adapt to and generate high forces in their daily work.

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Strategies to Implement Force and Power in the Rolfing Practice:

A) Bernstein's Probability Theory

Strength, the exertion of force on an object, is highly situation-dependent. The demands of the environment change constantly, hence the sensorimotor tasks involved are highly variable. Therefore, the ability to maximally contract a muscle must be rooted in a coordinative framework of movement. Nikolai Aleksandrovich Bernstein (1896-1966) was a Soviet neurophysiologist and biomechanist responsible for introducing the hierarchies of movement construction (Profeta and Turvey 2018, Derouesné 2022), and his probability theory can be a useful tool to address this process. According to Bernstein's probability theory, the central nervous system estimates its environment and anticipates a desired future state plus the necessary properties available to achieve that. It is an estimation of the sensory and motor signals arising after the desired movement. Therefore, the central nervous system relies on past experiences and a fixed set of previous successful motor actions. The estimated state and consequential force production – the future sensorimotor context – after a yoga asana, chopping firewood, catching a football, or tackling an opponent, to give you several examples, will be completely different from each other. But, to be able to rely on a fixed set of successful motor answers, our body has to find out which movements are the most effective and economical.

B) Range of Motion

Since movement most often includes several joints, each with its own particular range of motion (ROM), our body is faced with numerous possible ROM combinations to produce the desired movement. But a body confronted with peak forces must be able to initiate an appropriate motor response quickly. For this reason, our central nervous system eliminates superfluous alternatives in joint articulation to produce the most effective and economical motor response. In light of this challenge, I would disagree with the conviction of many of my Rolfing colleagues that we should categorically aim for increasing ROM in our clients. An enhanced range of joint articulation does not transfer automatically into a more powerful motor response. Again, the sensorimotor context is different.

In my professional practice as a strength and conditioning coach, I often encounter this issue with dedicated yogis who wish to participate in power- and force-oriented sports. Despite their great range of motion, they often lack the ability to react fast and/or powerfully. In this regard, Alfonso et al. (2021) argue that strength training can be as effective as stretching in increasing ROM. I will elaborate further on the topic of ROM when talking about biarticular muscles. To address the force and power-producing capacities of our body, we need to be aware of the musculoskeletal structures that are more prone to coping with high-

In my professional practice as a strength and conditioning coach, I often encounter this issue with dedicated yogis who wish to participate in power- and force-oriented sports. Despite their great range of motion, they often lack the ability to react fast and/or powerfully.

impact perturbations. Additionally, motor patterns that provide the most robust answer to the movement must be found. These motor patterns should be stable and economical, yet flexible enough to react to environmental changes.

C) Reflex-Supported Approaches

One way to approach the task at hand lies within our central nervous system, specifically in the *primary rhythmic patterns of movement* or *reflexes*. These are automatic stereotypical motor reactions in response to particular stimuli. The consequential intermuscular movement patterns are constantly adjusted and readjusted due to the permanent flow of sensory information. A reflex-supported approach allows our body to respond with a basic set of motor responses to the demands of a changing environment. Two such primary reflexes are the '*stumble reflex*' and the '*crossed extensor reflex*'. The stumble reflex states that moving one leg posterior (e.g., the stance leg in relation to the trunk) will cause the other leg to move anterior (i.e., the swing leg). The crossed extensor reflex, on the other hand, states that flexion of the swing leg (triple-flexion of hip, knee, and ankle) is linked to extension of the stance leg (triple-extension of hip, knee, and ankle), plus elevation of the pelvis on the swing side. The rapid succession of excitation and inhibition in high-impact movements needs reflex support in order to meet the peak external perturbations fast yet purposefully.

D) Co-Contractions

The faster and more powerful a movement becomes, the more signaling errors the central nervous system will produce. The need to stabilize motor signaling can be ensured by the simultaneous action of agonists and antagonists. Co-contractions around joints, particularly relevant for certain movement patterns, regulate pretension and hence protect the joint. The consequential joint stiffness limits muscle slack and excessive pre-stretching, both of which have been identified to compromise speed and power (Bosch 2015). Balanced co-contractions depend on the innate architecture of the myofascial and its elastic properties. Hence, some structures are more suited to remain in a co-contracted state during movement. In running and sprinting, the hip would be a prime example where co-contraction is advisable. At toe-off, the knee and hip extend in the sagittal plane. This extension is necessary to transmit elastic energy. A more economical and faster transfer of energy happens only when the hip stays in a locked position at the end of the extension. Otherwise, excessive movements in and around the pelvis must be compensated; transfer of energy is compromised.

E) Dynamic Systems Theory – Attractors and Fluctuators

Another way of establishing robust motor patterns can be achieved by implementing the concept of '*attractors*' and '*fluctuators*' from dynamic systems theory (Bosch 2015). In biomechanical terms, attractors are defined as stable and economical motor patterns deriving from the inherent biomechanical logic of our musculoskeletal system. They are abstract motor principles, close to the aforementioned reflex patterns. Under

Jakob Reichardt performing the exercise he calls "1-Leg 3-ext BB Clean," meaning a single-leg triple extension barbell clean. You can view the whole movement available on his online video library: https://www.rolfingreichardt.com/athletics/v/1leg-3ext-bb-clean?categoryId=6783b9d051c7c12d05707b75. This exercise is used to develop specific power capacities for forward propulsion at toe-off. The single-leg and forward-bent stance adds an extra layer of difficulty (especially for the posterior chain) to movement execution. There are perturbatory elements that need to be stabilized while maintaining triple extension of the ankle, knee, and hip. The end position is similar to a running posture, suggesting the possibility of weight exercises that are transferable to running and sprinting. (Photo courtesy of Jakob Reichardt.)

the influence of rapid and high-impact environmental changes, attractors can provide our body with more controllable motor responses. Fluctuators, on the other hand, are less stable, high-energy cost motor patterns. But, contrary to attractors, they are very adaptable to change. Both attractors and fluctuators feed into the self-organization potential of our body in a constantly changing environment. As a strength and conditioning coach and manual therapist, I focus on identifying both persistent and transient movement patterns within the client at hand.

F) Biarticular Muscles and Co-Contractions as Attractors

Biarticular muscles, those that relate to two joints, due to the nature of their spatial organization, rarely change their total length during movement (i.e., they have a constant ROM). Hamstring action during running is a good example of this phenomenon. Their predominant job is the transfer of kinetic energy. As I mentioned above, the transfer of energy happens best when a muscle is contracted isometrically. Sports scientists and biomechanical researchers have reported on the responsiveness of the mechanical properties of fascia being almost *nil* (Bosch 2015). This phenomenon is called '*preflexes*'. The more strenuous and faster a movement becomes, the higher the need to control the subsequent sensorimotor chaos. Extrafusal alpha signaling travels at around fifty to sixty millimeters per second, and intrafusal gamma signaling ranges from four to twenty-four millimeters per second. Compared to preflex responsiveness, alpha- and gamma-signaling takes too much time.

Applying the idea of attractors and fluctuators, the hamstrings should then be trained to remain in an attractor state during sprinting. Meaning, *they must be trained to generate peak isometric forces at a particular length in order for the connective tissue to function in a preflex manner*. As described above, this derives from their particular structural organization and myofascial makeup. As coaches and manual therapists, we can facilitate this process by prescribing submaximal isometric strength training in addition to their manual protocol.

Peak isometric strength is strongly associated with enhanced fiber recruitment and power output. In contrast to a 75% maximum voluntary contraction, some sport scientists claim that the human body is capable of contracting 85% of its muscle fibers in an isometric manner (Schoenfeld 2021). Considering the aforementioned high ground-reaction forces a sprinter has to cope with, about three to six times their body weight, our body should be able to create a counter-force high enough to withstand this impact. Co-contractions around the hip would be another example of a function to preferably be in an attractor state during high-impact movements. Single-leg hinge exercises with a moderate load, performed explosively, can help establish sufficient co-contractions around the hip. The goal is to stabilize the hip in extension at the end of the movement. In this way, the body is taught to generate peak forces around a joint in an end-range position quickly. I have elaborated on the advantages of co-contractions, which effectively stabilize a joint via agonist-antagonist contraction, preventing excessive movements from being compensated for. This allows the elastic properties of the myofascial system to transmit and release kinetic energy effectively.

The peculiarities of biarticular muscles and the coordinative challenges during high-impact movements, as I have already mentioned, lead me to disagree with Dr. Schleip's recommendation to explicitly integrate counter-movements and pre-stretches into an athlete's workout routine in order to make use of fascia's mechanical peculiarities. Especially for power athletes, high-impact environments call for peak force and power responses. Pre-stretches and counter-movements further stretch the tissue. Muscles that work best at a particular length – like the group of biarticular muscles or muscles with a high connective tissue content – are now brought into a position where an additional distance has to be covered. This will require additional force and time. The Hill model clearly demonstrated that by means of counter-movements, muscle slack increases and the capacity to store elastic energy is reduced. Counter-movements and pre-stretches can affect human explosive power in the initial phase of training this specific capacity, and can be a safe method for beginners. But due to the low-level loading, these two methods appear disadvantageous compared to loaded high-impact exercises in the long term.

In my understanding, tight hamstrings are rarely the prime lesion. Among numerous other possibilities, hamstring tightness is most often a compensatory tension due to physical inactivity or secondary to hip flexor tightness (*m. rectus femoris* or *iliacus* in particular).

Reassessing Traditional Rolfing® Principles

As Rolfers®, I would suggest that we rethink some of our propositions on particular myofascial structures and update our concepts about movement.

Transferability of Force and Power Concepts into Rolfing Structural Integration

One of the main anatomical structures addressed in the first session of the Rolfing Ten Series®, known as the First Hour, is the hamstring group. In order

Apart from our traditional approaches, I would suggest incorporating neuromuscular testing with power athletes, specifically examining the firing pattern of their hip extensors (i.e., the gluteus maximus and hamstrings).

to foster better breathing, we are taught to release tension from the posterior thigh. In theory, this allows the pelvis to be more aligned with the thorax and hence the diaphragmatic movement in breathing. But what does 'releasing tension' mean, and what will that do in terms of hamstring function? In my understanding, tight hamstrings are rarely the prime lesion. Among numerous other possibilities, hamstring tightness is most often a compensatory tension due to physical inactivity or secondary to hip flexor tightness (*m. rectus femoris* or *iliacus* in particular).

Releasing the fascial tension in the hamstring compartment may result in a sense of well-being and maybe in a repositioning of the pelvis. However, it does not guarantee an improvement in hamstring function during high-impact movement. The sensorimotor context (e.g., torque, joint angle, and velocity) will be completely different. To withstand and meet external perturbations effectively, they must be trained to generate peak isometric forces (Rochau et al. 2024). Releasing tension and teaching a power athlete the '*pelvic rock*' afterwards will not transfer into enhanced movement execution.

A) Neuromuscular Testing for Hip Extensors

Among manual therapists, Rolfers bear the unique potential to relate our clients' structure to their sensorimotor context. We are aware of what sport scientists call 'transferability', which is the similarity in intermuscular coordination between exercise and performance. By addressing the structure meaningfully with our hands, we can establish a relationship within the tissue.

Apart from our traditional approaches, I would suggest incorporating neuromuscular testing with power athletes, specifically examining the firing pattern of their hip extensors (i.e., the gluteus maximus and hamstrings). This can be done with the athlete in the prone position. To test hamstring availability, the client flexes one knee to one hundred degrees and attempts to resist the subsequent pull from the practitioner to extend the knee. The client should be able to sufficiently withstand forced knee extension. Look closely to spot any compensatory patterns arising from the client's effort. Flexion of the ipsilateral hip plus spinal flexion is a typical compensatory pattern. For further refinement, the leg to be tested can be rotated internally and externally to emphasize either *semimembranosus*, *semitendinosus*, or *biceps femoris* activity.

I would recommend including the gluteus maximus in this testing scheme. The *m. gluteus maximus* sets the stage for the hamstrings to transfer kinetic energy. During the stance phase of running, the gluteus maximus helps stabilize the trunk in an upright position by extending the hip of the stance leg. The hamstrings are now in a position to transfer energy and don't have to compensate for a lack of hip or trunk stability. This is important to remember when interpreting the results of the gluteus maximus test.

To do the gluteus maximus test, the client is in the prone position. One leg is flexed to ninety degrees at the knee, and the knee is slightly elevated above the table, allowing for hip extension. Place one hand on the contralateral ilium, holding the client on the table, and the other hand on the ipsilateral hamstring. The client is instructed to resist the therapist's push to extend the knee. A sufficient gluteus maximus firing pattern would enable the practitioner to put almost all their weight on the elevated leg. Typical compensatory patterns are spinal hyperextension and rotation. Accessory movements can give us hints on additional areas of the body to work on manually.

Rolfing Structural Integration's unique approach to the hapticity of the feet and their interdependence with the hip and spine can serve as a distinct resource to foster better stability under the influence of external perturbations.

B) Motor Learning Strategies

Bernstein's probability theory and the *action effect hypothesis* can facilitate the process of motor learning and exercise design. The action-effect hypothesis states that movements are best planned and controlled based on intention and the outcome of the movement, rather than by focusing on the movements themselves. Motor learning is improved when an athlete provides sensory feedback about their sensorimotor state after a movement. Only the most effective motor control mechanisms, which are motor patterns proven to be stable enough under the influence of a rapidly changing environment, will be stored by our central nervous system, which is yet another circumscription for attractor.

Two things are important when applying this concept. First, movements must be executed with maximal intent. Gonzáles-Badillo et al. (2014) found that participants who intentionally lifted a bar quickly had significantly greater strength gains than the control group, which lifted at normal speed. Through further refinement in training, the initial sensorimotor chaos will eventually become more controllable. Secondly, top performance needs fluctuator flexibility. Although attractors are easy to practice, they bear the risk of becoming rigid and monotonous.

The sensorimotor context of high-impact movements is a constant state of excitatory and inhibitory chaos. We need variability in our movement practice to react to this chaos with a certain degree of spontaneity. One method of achieving this would be to 'detach' an attractor pattern from its context and perform it under unstable conditions. Practically, a triple extension of the stance leg and the subsequent hip lock can be performed on an unstable platform or with a water bag swung overhead. Rolfing Structural Integration's unique approach to the hapticity of the feet and their interdependence with the hip and spine can serve as a distinct resource to foster better stability under the influence of external perturbations.

C) Biomechanical and Structural Peculiarities of Myofascia

Now that I have explained the structural peculiarities of myofascia in view of force and power production, as Rolfers, I think we should educate ourselves on some of these anatomical peculiarities, especially when working with athletes or people whose work requires them to use their strength and power. Some structures are more prone to force production, while others have higher contraction velocities.

It is our responsibility as manual therapists to recognize the distinct features of our clients' movement context and develop strategies to support maintenance, development, and/or strengthening on the table through purposeful manual intervention.

The abdominal and erector spinae muscles both show a pennate fiber orientation and relatively high amounts of intramuscular connective tissue. Accordingly, they show great maximal force production capacities at a particular fiber length. In terms of running, the abdominal and erector spinae muscles should be adapted to stabilize the trunk and prevent excessive rotation. This guarantees a more economical transfer of kinetic energy from the lower to the upper body.

As mentioned above, the intra-fascial pressure created through muscular contraction can further amplify the force produced. It is within the thoracolumbar fascia, where these two structures meet, that dynamic stability is created, allowing for the proper transfer of kinetic energy. Our traditional Rolfing approach works with the deep fascia of the back, and its various interdependencies can be further complemented by taking this biomechanical peculiarity into account.

The Rolfers' beloved psoas plays a key part in loading the hamstrings of the swing leg during running. First, the abdominals and erector spinae must be sufficient to control excessive trunk rotations. The psoas of the stance leg is now in a position to integrate the sensorial information coming from hip extension and to prevent excessive extension of the hip. Furthermore, the psoas' isometric pretension allows for a subsequent powerful flexion of the hip. Hip flexion should occur as rapidly as possible and to a minimum of ninety degrees. The swing leg is now brought into a position where foot-plant and loading of the hamstrings can happen in the direction of the ground reaction force.

A psoas that has to compensate for a lack of trunk stability will not be in a position to sufficiently integrate sensorial information and contract powerfully. 'Freeing' the psoas manually, as we do in the Fifth Hour of the Rolfing Ten Series, and educating the client to access their psoas in walking can be regarded as part of a more comprehensive protocol. Further education could be offered where the person's psoas could be trained within the coordinative context of explosive and forceful movements. The aforementioned intermuscular interdependencies and the psoas' role in a particular sensorimotor environment are considerations to keep in mind when creating exercises or teaching movement.

D) Changing Perception on Manual Input

Scientists have clarified what happens to myofascial tissue when a mechanical stressor in the form of a manual therapeutic intervention is applied to the human body. The stressor can be pressure or shearing tension. Depending on the intensity of the initial forces, the vector of that force, and the kinetic state of the various components of the connective tissue matrix, each individual will respond differently.

Strength training is safe and beneficial for healthy individuals of all age groups (Kittilsen et al. 2021). In case of particular health problems, any intervention must be revised individually.

When receiving a tensional load, the fibroblasts (cells that produce collagen fibers within the myofascial layers) reorient in the direction of the greatest mechanical stress. As the conditions within the tissue change, fibroblasts start to remodel the extracellular matrix, also known as the interstitium (Benias et al. 2018). In the presence of different growth factors, collagen synthesis is upregulated, as well as the extracellular matrix's water-binding capacities. As the intensity of manual pressure and shear tension increases, so does the expression of proinflammatory cytokines (a group of proteins involved in local cellular communication, which are part of the immune system's response). The cytokines expressed by the fibroblasts can also decrease collagen synthesis and upregulate deposition of superfluous collagen fibers. The mechanical input is translated into a chemical reaction (a mechanism called *mechanotransduction*). This is the process of fascial remodeling, and it requires both mechanisms to function properly and in synchrony. It enables our fascia to maintain its high degree of dynamic and contextual stability (Schleip et al. 2012, Pilat 2022).

Under pressure and compression, myofascial tissue exhibits a distinct behavior. The force and power imposed on the tissue initiates and sustains tensotaxis, a phenomenon where tensile stress or strain affects cell migration (Lin et al. 2009). As the tensotaxis within the tissue changes, the afferent signaling from the various intrafascial receptors and nerve endings decreases. This change in mechanosensitive information will be processed by the central and autonomic nervous systems, often resulting in a subsequent release of tension due to parasympathetic signaling (Chaitow 1996).

The moment we Rolfers apply an intentional force, with a specific amount of power, to the fascia of our client, we foster remodeling and reorganization. Since our nervous system receives most of the information on the tensional state of our body's tissues from receptors and nerve endings in the connective tissue, a properly functioning fascia system is indispensable for any meaningful and coordinated motor action. But the mechanical stressor leading to a change in fascia tissue organization can also come from repeated high-impact movements.

The difference between the input we deliver as Rolfers and the perturbatory forces of a high-impact movement lies in the magnitude of force and the sensorimotor context. It is our responsibility as manual therapists to recognize the distinct features of our clients' movement context and develop strategies to support maintenance, development, and/or strengthening on the table through purposeful manual intervention. In light of all this information about strength and power, the targeted muscle groups, their anatomical and biomechanical peculiarities, and their distinct place in the movement context of our client must be evaluated thoughtfully. Using the hip extensor muscles as an example again, before balancing the fascial tension within these structures, test how they behave under a more strenuous load using the neuromuscular testing protocol. Evaluate how your client is able to integrate these specific movement contexts and how a manual and/or exercise intervention could benefit them.

Perception of Strength and Power within the Rolfing Community

In my view, our Rolfing community should reconsider some of the prejudices surrounding strength training. The literature on the long-term benefits for human health is becoming more robust.

Apart from our association of muscles and strength as merely mechanical properties, the human musculature must also be considered as an organ of metabolic health. Higher lean muscle mass in the elderly is associated with a significantly reduced risk of diabetes, Alzheimer's disease, stroke, heart attack, and other metabolic dysfunctions. Sarcopenia, the age-related loss of muscle mass and motor competence in our society, is nothing short of an epidemic. In a study by Lauersen, Bertelsen, and Andersen (2014), it was found that stretching decreases injury risk by 4%, whereas strength training decreases injury risk by 69%. Frequenting the weight room more often can not only slow down sarcopenia, but also help us maintain our capacity for meaningful movement. Sometimes our environment requires that our movement be more strenuous and faster.

Releasing tissue and educating our clients to move more harmoniously is a unique feature of our work, but the human structure behaves differently when faced with peak external forces and the resulting need to react quickly. This applies to both athletes and laborers. As Rolfers, we should be more aware of the particular needs of those populations and the benefits our work can bring to them. Rolfing Structural Integration's unique conceptualization of human structure and movement could be further expanded by incorporating insights from other disciplines. Loaded strenuous exercise can be a crucial tool to further enhance our clients' newfound awareness for movement, especially when we manage to relate it to a meaningful sensorimotor context for them.

Strength training is safe and beneficial for healthy individuals of all age groups (Kittilsen et al. 2021). In case of particular health problems, any intervention must be revised individually. Training frequency and intensity are a particularly heated topic among sports physiologists and coaches. Any type of desired muscular adaptation

(like increasing one's muscle mass) needs an adequate frequency of training sessions per week. Two training sessions per week are sufficient to increase strength and muscle mass. Individuals over the age of sixty may benefit more from spreading the training volume over three to four days (Schoenfeld 2021).

Conclusion

As we have seen, the human body behaves differently when faced with high external and internal forces. Rolfers can support athletes and laborers in coping with those intensities in a unique way. Not only can we release excess tension in the tissues with our manual interventions, we additionally can also educate the nervous system of our clients to integrate the felt sensations into their movement routine. The heightened awareness of one's own kinesphere (the three-dimensional spherical space the body occupies) and the resulting potential for action give the ability to integrate proprioceptive and interoceptive information more economically. These can be the result of a comprehensive Rolfing Ten Series.

The anatomical structures of interest in each of the ten sessions in a Rolfing Ten Series could be reevaluated in light of the client's possible necessity to generate strength and power. The aforementioned myofascial peculiarities of the structures I mentioned and how they are more or less prone to respond under the influence of peak external perturbations could be part of a broader view of the anatomical landmarks that Rolfers attend to during the Ten Series.

Furthermore, the Rolfing-specific conceptualization of movement could be revised, opening it up to include movements that are fast and powerful. Godard's contribution to Rolfing Structural Integration is unique in its approach, as it bridges movement and meaning. But, clients requiring more strenuous movement will anticipate 'space as the potential for action' according to their individual context. Besides Godard's conceptualization, other hypotheses and theories about motor learning describe strength and power more comprehensively and should be considered.

At last, as Rolfers, we must not forget the physical demands of numerous occupations. Having a clear understanding of how to generate strength in a specific context can be beneficial for both laborers and athletes. As Rolfers, we would miss out on the specific needs of people with physically demanding jobs, athletes, and tradespeople, who may or may not be people who regularly visit the gym. More research is needed to understand the effects that a Rolfing Ten Series may have on speed and strength training. There are great opportunities for Rolfing Structural Integration to further develop when we manage to open up to the insights of other movement-related disciplines and start to be more critical of our own principles.

Endnotes

1. The epimysium, the outermost layer that is a sheath around the entire muscle; the perimysium, connective tissue that covers each fasciculus; and the endomysium that is the innermost sheath covering individual muscle fibers (Heeransh, Shook, and Varacallo 2023).
2. Alpha motor neurons play a crucial role in transmitting signals from the motor cortex and spinal interneurons to the muscles. Gamma motor neurons regulate the stretch reflex by adjusting the level of tension in the intrafusal muscle fibers of the muscle spindle.
3. *Intrafusal* structures are mechanoreceptors within the muscle, while *extrafusal* muscle fibers are the large and numerous fibers that generate almost all the muscle tension produced during locomotion and maintenance of posture (Walro and Kucera 1999).

For his whole life, Jakob Reichardt has been about movement and sport. From his recreational sports to his competitive accomplishments, he has been fascinated by the anatomy, physiology, and biomechanics of the human body. Learning Rolfing® Structural Integration gave him the theoretical understanding of how to practice his athletics in a way that was more intelligent and had a positive and lasting impact on his body and well-being, both in sports and in everyday life. Being a Rolfer has allowed Reichardt to collaborate with his clients, whether they be competitive athletes, craftspeople, or office workers, to support balance in his or her posture and personal exercise routines. Starting out as a personal trainer, in 2018, he completed his Bachelor of Sports Sciences from the Technical University of Munich (TUM), and in 2021 became a Certified Rolfer. He practices in Munich, Germany. See www.rolfingreichardt.com for more information.

References

Afonso, José, Rodrigo Ramirez-Compillo, João Moscão, Tiago Rocha, Rodrigo Zacca, Alexandre Martins, André A. Milheiro, João Ferreira, Hugo Sarmento, and Filipe Manuel Clemente. 2021. Strength trainings versus stretching for improving range of motion: A systematic review and meta-analysis. *Healthcare Basel* 9(4):427.

Benias, Petros C., Rebecca G. Wells, Bridget Sackey-Aboagye, Heather Klavan, Jason Reidy, Darren Buonocore, Markus Miranda, Susan Kornacki, Michael Wayne, David L. Carr-Locke, and Neil D. Theise. 2018. Structure and distribution of an unrecognized interstitium in human tissues. *Scientific Reports* 8:4947.

Bosch, Frans. 2015. *Strength training and coordination: An integrative approach*. Netherlands: 20/10 Publishers.

Chaitow, Leon. 1996. *Positional release techniques*. London, UK: Churchill Livingstone.

Derouesné, Christian. 2022. Nicolas Bernstein and Pyotr Anokhin: Pioneers of modern psychophysiology. *Gériatrie et Psychologie Neuropsychiatrie du Vieillissement*. Available from https://pubmed.ncbi.nlm.nih.gov/35165080/.

Dum, Richard P., David J. Levinthal, and Peter L. Strick. 2019. The mind-body problem: Circuits that link the cerebral cortex to the adrenal medulla. *Proceedings of the National Academy of Sciences of the United States of America* 116(52):26321-26328.

Eisen, A., M. Hoirch, M. Fink, T. Goya, and D. Calne. 1985. Noninvasive measurement of central sensory and motor conduction. *Neurology* 35(4):503-509.

Frank, Kevin. 1995. Tonic function: A gravity response model for Rolfing Structural and Movement Integration. *Rolf Lines* 21(1):12-20.

Gonzáles-Badillo, Juan José, David Rodríguez-Rosell, Luis Sánchez-Medina, Esteban M. Gorostiaga, and Fernando Pareja-Blanco. 2014. Maximal intended velocity training induces greater gains in bench press performance than deliberately slower half-velocity training. *European Journal of Sports Science* 14(8):772-781.

Heeransh, D. Dave, Micah Shook, and Matthew A. Varacallo. 2023. Anatomy, skeletal muscle. *National Library of Medicine*. Available from https://www.ncbi.nlm.nih.gov/books/NBK537236/.

Juhan, Deane. 2003. Job's body: A handbook for bodywork. New York: Barrytown/Station Hill.

Kim, Joo-Sung, Kyung-Min Kim, Eunwook Chang, Hyun Chul Jung, Jung-Min Lee, and Alan R. Needle. 2022. Conduction velocity of spinal reflex in patients with acute lateral ankle sprain. *Healthcare (Basel)* 10(9):1794.

Kittilsen, Hans Torvild, Sannija Goleva-Fjellet, Baard Ingegerdsson Freberg, Iver Nicolaisen, Eva Maria Støa, Solfrid Bratland-Sanda, Jan Helgerud, Eivind Wang, Mona Sæbø, and Øyvind Støren. 2021. Responses to maximal strength training in different age and gender groups. *Frontiers in Physiology* 12:636972.

Lauersen, Jeppe Bo, Ditte Marie Bertelsen, and Lars Bo Andersen. 2014. The effectiveness of exercise interventions to prevent sports injuries: A systematic review and meta-analysis of randomised controlled trials. *British Journal of Sports Medicine* 48(11):871-877.

Lin, Shu-Li, Jen-Chang Yang, Kuo-Ning Ho, Chau-Hsiang Wang, Chien-Wu Yeh, and Haw-Ming Huang. 2009. Effects of compressive residual stress on the morphologic changes of fibroblasts. *Medical & Biological Engineering & Computing* 47:1273-1279.

Neumann, Donald A. 2017. *Kinesiology of the musculoskeletal system: Foundations for rehabilitation, 3rd edition*. New York: Elsevier.

Newton, Aline. 1992. An interview with Hubert Godard. *Rolf Lines* 20(1):42-49.

Pilat, Andrzej. 2022. *Myofascial induction: An anatomical approach to the treatment of fascial dysfunction. Volume 1, the upper body*. London, UK: Handspring Publishing.

Profeta, Vitor L.S., and Michael T. Turvey. 2018. Bernstein's levels of movement construction: A contemporary perspective. *Human Movement Science* 57:111-133.

Rochau, Kyle, Wesley Gawel, Jarrod Burton, Andrew Layne, Mike H. Stone, Guy Hornsby. 2024. Force-time characteristics in collegiate weightlifters using two isometric pull protocols. *International Journal of Strength and Conditioning* 4(1):1-4.

Schleip, Robert, and Divo Gitta Müller. 2013. Training principles for fascial connective tissues: Scientific foundation and suggested practical applications. *Journal of Bodywork and Movement Therapies* 17(1):103-115.

Schleip, Robert, Lutz Duerselen, Andry Vleeming, Ian L. Naylor, Frank Lehmann-Horn, Adjo Zorn, Heike Jaeger, and Werner Klingler. 2012. Strain hardening of fascia: Static stretching of dense fibrous connective tissues can induce a temporary stiffness increase accompanied by enhanced matrix hydration. *Journal of Bodywork and Movement Therapies* 16(1):94-100.

Schoenfeld, Brad. 2021. *Science and development of muscle hypertrophy, 2nd edition*. Champaign, IL: Human Kinetics.

Stecco, Carla, Rebecca Pratt, Laurice D. Nemetz, Robert Schleip, Antonio Stecco, and Neil D. Theise. 2025. Towards a comprehensive definition of the human fascial system. *Journal of Anatomy* 00:1-15.

Wachwitz, Thomas, Clare Minahan, Eline Lievens, Ben Kennedy, Wim Derave, and Phillip Belllinger. 2024. Muscle-fiber typology is associated with sprint-cycling characteristics in world-class and elite track cyclists. *International Journal of Sports Physiology and Performance* 20(1):142-148.

Walro, J. M. and J. Kucera. 1999. Why adult mammalian intrafusal and extrafusal fibers contain different myosin heavy-chain isoforms. *Trends in Neuroscience* 22(4):180-184.

Wang, Xiaolin, ChanghaiL v, Xinmin Qin, Shuyu Ji, and Delong Dong. 2023. Effectiveness of plyometric training vs. complex training on the explosive power of lower limbs: A systematic review. *Frontiers in Physiology* 13, 1061110.

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Rolfing Structural Integration; gravity; sensorimotor feedback; force; strength; kinetics; myofascia; fascia; sarcomere; Hill model; peak isometric forces; reflex arcs; muscle spindles; Golgi tendon organs; proprioceptors; attractors; fluctuators; co-contractions; biarticular muscles; pre-flexes; high impact movement; hamstring tension; neuromuscular testing; motor learning; fascia remodeling; mechanotransduction; strength training. ■

However we think about fascia, muscle, or nervous system tissue, and how it behaves in a relaxed and conscious mode of movement, the moment we engage in an explosive, high-impact activity, the sensory-motor context changes completely. We are asking for a very different set of structural as well as psychological and emotional responses. (Photo by Jakob Reichardt.)

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Working with Multi-Planar Sports

An Interview with American Pole Vaulter, Austin Miller

By Mandy Cheek, Certified Rolfer®, Austin Miller, and Patrick Clough, Certified Advanced Rolfer

Austin Miller

Mandy Cheek

Patrick Clough

ABSTRACT *This interview with American pole vaulter Austin Miller explores his athletic career and his experience with Rolfing® Structural Integration. Miller describes how he entered pole vaulting in high school and gradually developed into a world-class athlete. He outlines his demanding weekly training schedule, including track work, weightlifting, coaching, and regular manual therapies. Rolfing sessions have been among his central maintenance routines, along with physical therapy, chiropractic, and acupuncture. Rolfer Patrick Clough explains studying an athlete's specific movement patterns to address fascial demands and prevent structural imbalances for clients like Miller.*

Editor's note: Conversation took place on Wednesday, September 3rd, 2025, in person in the offices of Rolfing® Associates of the Triad, located in Greensboro, North Carolina. The authors have lightly edited the interview for clarity. At the time of the conversation, Austin Miller had not yet competed in Tokyo, Japan. The text has been updated to refer to Tokyo in the past tense, and details have been included to reflect the December 2025 printing.

Two Rolfers and a Champion

Mandy Cheek: Hi Austin, thank you for talking with me today. Let me introduce you to our readers. You are an American pole vaulter from Virginia who is currently ranked 13th in the world for men's pole vault. You were crowned USA men's pole vault champion this past summer, where your jump was 5.92 meters (19'5"), a personal best. Very impressive! And we know each other because I have worked with you during your Rolfing® journey.

Patrick Clough is also with us; thanks for joining us, Patrick. Readers will know we work together if they saw our interview in the December 2024 issue of *Structure, Function, Integration*, "Meet My Rolfer" (Cheek and Clough 2024). Patrick is also your Rolfer.

Patrick Clough: Hello to you both.

Mandy: Austin, thank you for sharing your story as an athlete who has experienced the Rolfing Ten Series® and Rolfing work in general. Every Rolfing

American pole vaulter Austin Miller and Senior Rolfer Patrick Clough

Mandy Cheek: So, are you working out five days a week?

Austin Miller: More like four times a week. If I'm doing serious workouts each time, I keep it to four. My Sunday workout was very light, just activation lifting, that doesn't take more than ninety minutes total. And then Monday, I was working out for five or six hours, doing a lot more. Then Tuesday, I was doing nothing but physio and getting treatment.

session is confidential. My editor thought it might be difficult to find an athlete who wants to share their Rolfing experience, which made me think that you would be happy to talk about the work. You are always enthusiastic when speaking about Rolfing® [Structural Integration]. We appreciate you talking with us.

Austin Miller: Yes, you are welcome. You are right, I talk about Rolfing [Structural Integration] all the time. I tell everyone that they should find a good Rolfer.

Mandy: First off, can you give us a brief background about yourself and how you became a pole vaulter?

Austin: Initially, I got into pole vaulting because I went out for the indoor track team in high school to get in shape for lacrosse season. At the first meeting, they announced that they would be offering pole vaulting that year because they had hired a pole vault coach. And I was like, "Oh, that's the thing with the stick, and it bends. That looks pretty fun, I want to try that."

I tried it and I was not very good at it, and so I didn't stick with it in freshman year. And then I came back my sophomore year, I'd grown up a little bit, and then did well enough that I could make it to the district championship. It doesn't take a lot to do that; all you have to do is clear a single bar at some point in the year. I did that and I got to go to the district championship. And that meant I got to be a varsity athlete. I was like, "Yes! I'm a varsity athlete."

Mandy: You got a varsity letter.

Austin: Yes. And I thought, "I can do this." That's how I got into pole vaulting. It was something that not a lot of other people do, and that made me think it could be a thing that I do. It could be my thing.

Mandy: And so how tall were you at that point in high school? Being six foot three, you have a little bit of a height advantage already, would you say?

Austin: When I started my freshman year, I was only five feet six inches, and then by the time I got into sophomore year, I was in that six-foot range. And yes, it helps. It also comes with its own set of disadvantages. There's a certain gymnastic component to pole vault that gets much harder when you're long and lanky. There's a reason why you don't see long, lanky gymnasts. That component of the sport gets a little bit harder when you're really long and stretched out. But there are other physics components that get much easier when you have a higher leverage point.

A Day in the Life of a Pole Vaulter

Mandy: What is an average day for you during your long jumping season?

Austin: I'll tell you what I went through yesterday. So, yesterday, I woke up, had breakfast, and then got to the track around 11:30am, set up what I was going to do for my workout, and did the workout. Then, I was working on the track and jumping until around 3:30pm or so. From there, I went into the weight room. I was in the weight room for another ninety minutes or so. After that, I got some dinner real quick, just to get something in my body, and then I coached the club lacrosse team from 6:30pm to 8:00pm.

Mandy: Right. So, are you working out five days a week?

Austin: More like four times a week. If I'm doing serious workouts each time, I keep it to four. My Sunday workout was very light, just activation lifting, that doesn't take more than ninety minutes total. And then Monday, I was working out for five or six hours, doing a lot more. Then Tuesday, I was doing nothing but physio and getting treatment. So whether it's going to the chiropractor or dry needling or Rolfing sessions, I have a day of doing errands and taking care of my other work. And then tomorrow, I'll do a very light activation lift, and then Friday, have a big long lift session in the gym and coaching again.

Mandy: How did you come to incorporate Rolfing work into your maintenance schedule?

Austin: Great question. In 2021, I had a bit of the starting stages of a sports hernia going on, and I was coming up on the Olympic trials, so I needed to get that in shape or just solve it. The alternative was to keep training through it, and then eventually it was going to get to a point where I was probably going to need surgery. And I really didn't want to go under the knife. And so, my agent, he was a pole vaulter back in the late 1990s and early 2000s and he was one of the best pole vaulters in the world at that time, he told me that he used to get this thing called Rolfing done when he was an athlete. He said that I should maybe try to see if I could find a therapist somewhere near me. That's when I looked up "Rolfing in Greensboro" and found you. I did a Rolfing Ten Series, and here we are now.

Mandy: Yes, here we are now. And at this point, you've worked with all the Rolfers in our clinic: me, Kathy Rooney, and Patrick. How do you feel your performance has changed since you started having Rolfing sessions?

Austin: Yes, I've seen the entire crew. I always leave here better than when I walked in. And for me, it's a huge longevity game in this sport. Especially because pole vault in particular is such a technical event, sometimes it takes a long time to figure out the technical component while trying to build your body up enough to be able to do it at an elite level. Everyone's timeline is much different. I was always identified as a late bloomer from an athletic standpoint. For me, it's been crucial to make sure that I'm able to stop little tweaks in my body from becoming kinks in my system later on. And when I'm able to piece together a healthy year, after a healthy year, after a healthy year, then the physical progress is inevitable. And then there's also career progress that comes with it just being constantly visible at the events and constantly competing.

I've been able to stay on the circuit and not take any time off of it, which is really important because, especially in the United States, we have so much depth of talent that if you lose your spot on the circuit, then there is somebody else waiting to pick it up. So once on the top performing list, I need to be able to stay on it, and I credit my sessions with you as having helped me not take too much time off.

Mandy: I remember when you first came for some work, we talked about the hernia that you were concerned about. Has that been resolved? It seems to me it has, because you clearly have been healthy and not had the problem.

Austin: Yes. As you know, my hips and pelvis tend to typically be my trouble area. Now I know the feelings of tightness in that area, and I am much more capable now of resolving it through the range of manual therapists I see. Whether it is with my physical therapists, through a Rolfing session, getting some Active Release Technique in that area, or getting some dry needling on my adductors, or something like that.

I've gotten so familiar with the reality that typically, if something is going to bother me, it's in my pelvis. It's either my adductors that are real tight or the connections in my rectus abdominis, and all those areas along the waistband, are just kind of gummed up. Sometimes it's the transverse abdominis getting involved too. It's typically one of those things, and when I feel something is in 'red alert', then I just throw the kitchen sink at it and see my practitioners.

Study the Performance

Mandy: So, Patrick, I know that when you started working with Austin, you watched videos of Austin at his high jumping competitions, looking to see what his body was going through while doing the sport.

Austin: Yes, I've seen the entire crew [Rolfers Mandy Cheek, Kathy Rooney, and Patrick Clough]. I always leave here better than when I walked in. And for me, it's a huge longevity game in this sport. Especially because pole vault in particular is such a technical event, sometimes it takes a long time to figure out the technical component while trying to build your body up enough to be able to do it at an elite level.

Patrick: Right.

Mandy: What sort of special considerations do you make when working with a pole vaulter? And, what about working with an athlete in general within the context of the Rolfing Ten Series®? What would you share with other Rolfers for them to keep in mind?

Patrick: Those are very different questions. Here's the first thing when working with any athlete. You can think about ballet dancers in a dance company, construction workers who are using jackhammers, or any of the professions where people are actually sacrificing their bodies to their profession. There's no way you can be a top ballerina without injuring yourself. Football players, their bodies are notorious for the injuries they experience. Rolfers included, doing our work without doing some kind of injury to your body is rare. Rolfers often have shoulder girdle issues.

Now, for each body of these different kinds of athletes, there will be their own unique area that they are bound to have trouble with. And so, for me, I always want to look at what they're doing. At one point, I went to Austin's practice session at High Point University, and I watched him do his thing so I could get a sense of what he was doing. I saw for myself his movements and how that was affecting his adductors, his groin, and his shoulder girdle. I thought about what issues there might be in that particular sport. If I'm working with a ballerina, I go to a ballet to see what she is doing. I try to do that for every seriously athletic client.

I think it's important as a Rolfer to know two things. Number one, if we are working with what we're calling an athlete (someone who's using their body professionally), they're going to be doing things that an accountant, for example, would not be doing with his or her body. Okay? The things the athlete does are things that you would recommend your accountant client not to do because of the wear and tear. Athletes are putting stress into their bodies. Secondly, know specifically what your athlete is doing. I would watch tennis players, golfers, etc., to see how they use their bodies, to get a sense of how it ended up that they had a groin pull, or they had tennis elbow. They have foot problems and they are ballet dancers, I want to see them in action. It's different to work with an athlete in general. But, it's also about the specific kind of athlete you're working with.

Mandy: Working with multi-planar forces is also what we do.

Austin: I remember there was one time when you and I were working, and one of the things that you mentioned was that getting everything back into alignment allows the body to access a greater percentage of its overall strength. That resonated with me.

Mandy: I don't know if you've had a chance to see any of the workouts he does on Instagram [@a_milli29], but they are intense. Like one foot pulling one way and the arm is doing something else, you can tell that they're little subsections of the movement that he has to do for pole vaulting. They are a lot. It's not a walk in the park.

Austin: Pole vaulting is an event that has a single action that is among the most all-encompassing in track and field. The decathlon is probably the most involved, where you're doing all of the events. But in just a singular event, it has the most multi-planar movement. It starts with sprinting as fast as you can down the runway, then you have to be able to jump off the ground, followed by absorbing a huge amount of force at takeoff, and having to try to redistribute it while maintaining some semblance of control over your body and the whole thing.

For this sport, it is primarily focused in the legs, but once you're off the ground, there's so much more going on. There's also a fair amount of risk involved too. And occasionally a jump does not go right and you hit the mat in a weird way, something's kind of going a little squirrely, and you're still taking all of that impact of falling into your body in some way, shape, or form. Over the course of a year, we probably take up to 1,000 jumps, depending on the athlete, it is a lot. There is just a lot of force absorption and redistribution in a variety of planes that is happening all the time.

And so the training has to include that too. You're trying to get your body capable of doing all of that in a very effective manner, and so, at least for myself, because I write all of my own training, that's something that I try to focus on. Especially from an injury prevention standpoint, I try to do as many complex movements, multi-planar things, as possible, just to try and make my body as efficient at moving as possible. In a boiled down manner, all I'm trying to do with all of my training off the runway is making my body as efficient as possible.

Mandy: It makes sense that Rolfing sessions would be a part of that, because adaptability is one of the core things we do.

Austin: Yes, 100%.

Mandy: Working with multi-planar forces is also what we do.

Austin: I remember there was one time when you and I were working, and one of the things that you mentioned was that getting everything back into alignment allows the body to access a greater percentage of its overall strength. That resonated with me. In a way, that idea inspired a cornerstone of my training this year. The idea of trying to maximize the


Photo credit: Islam Daghestani.


Photo credit: Brynn Kleinke.

American Pole Vaulter Austin Miller winning Gold at the 2025 USA Track & Field Outdoor Championships. Images courtesy of Austin Miller.


Photo credit: Brynn Kleinke.

overall percentage of output that my body is capable of obtaining has been what I've keyed in on this year. I've introduced a lot of isometric training, which inherently has a way of stiffening up the muscle fibers without building new ones. This makes everything much more elastic and much more explosive, but also teaches the body that it can safely access a higher percentage of its power output than it neurologically thought it could prior to that point.

Mandy: That is fantastic. And it shows in your personal jump this year (5.92 meters; 19'5"), winning you the 2025 USA Track & Field Outdoor Championship and qualifying you to compete in the 2025 World Athletic Championship in Tokyo, Japan, which you did recently. Congratulations on all your events this year. What helped you get yourself to this point? I know it's a mix of a lot of things, like experience and strength training, but also diet and sleep.

Austin: Yes, thank you so much. It's such a cocktail of it all. In the weeks leading up to these big competitions, I had actually started running into some back issues. And so, a big part of getting ready for the championship was just making sure that my body was pieced together and I wasn't doing anything in training that was going to dismantle my progress. It was a lot of what we've been talking about, going to my practitioners. In the two weeks between one meet and the trials, I had an appointment each week with you, making sure everything was lined up and ready to go. I was really utilizing the physical therapists at the championship as well. That was my 15th championship, and so it's been a lot of trial and error in that time. I've gotten pretty close a couple of times in the past; I've been one spot out of making the team a couple of times. And, other times, I fell way short. So it was a lot of experience at play as well in getting myself ready.

I knew I didn't need to do or be anything special on the day. I just needed to be the best version of what I've done so far. And I had a pretty good season leading up to that point, and so I didn't need to do anything that I've never done before. I just needed to do all the things I've been doing, a little bit better, and then the odds are, I would probably have a really good day. And it's that kind of energy that I took to Tokyo as well, into the world championship. It's about giving it the respect that it deserves, it's a world championship. I didn't write it off as, "I'm just happy to be here, and I'm so grateful for this opportunity." Of course, I am, and I've also harnessed that energy in the past. But I think sometimes I've almost written myself out of the competition before it's even started. It's a big competition, there are big names there, and I was focused on being cognizant of the job that I needed to do, and performing at the level that I need to perform at. In my own psychology, I've noticed if I'm kind of airy-fairy in my grateful approach, without having the focus on the job that needs to be done, then I'm kind of shortchanging myself in the process of it.

Embodied Mindset

Mandy: I noticed in the last few months, since the last Olympics where we were watching you on television, you had more of the gratitude type of mindset. But something has taken you even further past that. You're a showman; we could see that your focus and mentality had sharpened even further. It's almost like you realized, "I'm supposed to be here."

Austin: Yes, absolutely.

Mandy: Would you say that Rolfing work changes the way you think about your body, how you talk, and how you interact with your physicality?

Austin: I would say mentally, my approach is to focus on training – how I try to build my body and its capabilities. In that sense, adding a fascial lens and understanding how important it is to be considerate of my fascia when building my body during training is where I've had

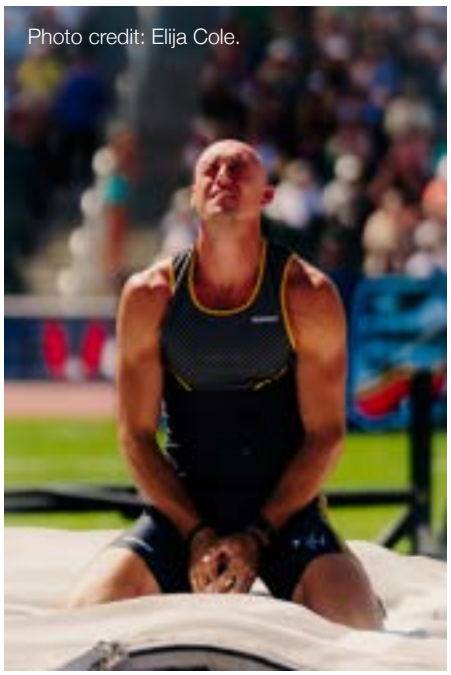


Photo credit: Elija Cole.

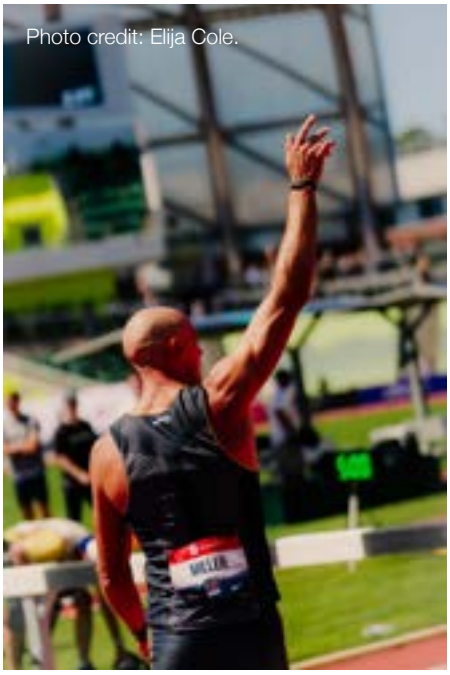


Photo credit: Elija Cole.

the biggest turn in my thinking. This year, I've been the most fascially connected that I've ever been.

My fascia has gotten such consistent treatment over the years. I've changed how I think about it, and I've reformatted what I do in the weight room and things like that. That's where Rolfing [Structural Integration] has switched my focus in my training.

From a competitive standpoint, there has been clarity that I am very capable and ready to accomplish the job – to go out there and execute. When I get close to attaining these big goals that I have set out for myself, I have to watch out for habits of trying to skip steps to try to get to the end. It's like carefully building the house and now you're just trying to plop any old roof on it, rather than taking the time to lay down each part of a good roof. You get so close to the thing you've been working for. You have to ask yourself, "What is the thing that separates people from getting all the way there and those who try but don't make it?" The difference is being able to stay the course, being able to stay within yourself, stay controlled, and not deviating from the plan. Having the discipline not to deviate from what you've been doing for years, all the work that has been put into it, to quiet down everything inside of you, and almost be a robot.

In track and field, the people who are most successful throughout the course of their careers, are the ones that can be this focused that they perform like robots. That has been hard for me to do because I'm not a robotic person. I'm a person that flows, things change at the drop of the hat, and I would rather go with the flow than perform like a robot. But for the sake of trying to have the most successful pole-vaulting career possible, I've had to learn how to kind of detach myself from the emotion of the end result without detaching myself from the end result.

It's a refinement that I didn't do last year at the Olympic trials. I detached myself from the emotion of it and I also detached myself from the end result. "Whatever's going to happen is going to happen. I'm just going to go out there and try my best." That is very different from detaching myself from the emotion of the whole event, but staying attached to the job I have to do. That's probably been the biggest competitive mental shift I've noticed about myself this year.

Patrick: Austin, sounds like you're equating trusting your commitment and discipline, and allowing yourself to be detached by being a robot. My notions of "robot" are contrary to my experience of your dynamism. As a Rolfer observing an athlete in motion, I see the 'Line' as a dynamic vector much beyond the vertical line when a person is simply standing in gravity. We work to get the fascial blocks in the tissue removed, so that everything is balanced and smooth, and there is an energy that's emanating from the top of the head and also through the soles of the feet.

For Austin, our role as his Rolfers is to get anything out of the way from him staying focused on his goal. If you have the chance to observe Austin doing a pole vault, you can see the dynamics of the 'Line' that we worked with in the Rolfing Ten Series as he sprints, then goes up and over that bar. His body has an inner propulsion where he has optimized the forces. That comes from ensuring that a coherent energy is emanating all the way through the body, through the top of the head, all the way to the feet. That experience alters the way we think about ourselves, alters our relationship with all of reality. It gives us a connection with the universe that is suppressed when the body is compressed. Austin, in his performance, is showing what that coherence and hard work can accomplish. That's my esoteric two cents.

Mandy: That lands on our theme for this issue, this is about embodied performance, and you are talking about some of the keys to support top-level athletes like Austin. These qualities give a person more confidence, more freedom

of movement, and they have less pain in their body when we help them in this way.

Patrick: Yes, there's more dynamism, there's flow. And when you feel that in yourself, there's a peace of mind and it alters the way we think about things.

Mandy: Yes, I totally agree. And Austin, you went to Tokyo. What are your goals now?

Austin: I had to be at my best for Tokyo because there are a number of people who are jumping at the top of their game, and it was a dog fight to get on the podium. I was 14th in my group in Tokyo; it's a very competitive field on the world stage. The goal I set for myself was to go out and execute at the highest level.

Any field event is interesting in the sense that there's not any tactics that you can use that's going to alter somebody else's performance; compared to the track events for example, the competitors are side by side during their events. We go one by one. The only thing you can do is affect your own performance. Knowing that it takes my best execution to be able to get on the podium means that's where all my focus is, staying within myself and making sure that I can go and execute every time down the runway – not be this unrefined ball of energy, but this laser-focused arrow that's just going right to its bullseye.

From Austin Miller's Instagram, May 21, 2025.

Looking to 2028 in Los Angeles, California

Mandy: Is there another Olympics trial on the horizon?

Austin: Oh, yes; for sure. Long-term, definitely shooting for the 2028 Olympics in Los Angeles, California. I think making a home Olympics would be huge.

Mandy: Incredible.

Austin: That would be so much fun. But now that I've made my first world team, it feels like the monkey is off my back, a little bit. I know I've done it once, and I know I can do it again. And honestly, even when I was jumping at the championship this year, at no point leading up to it did I feel like the best I had ever felt, but I felt good enough on the day. And I know that as long as I feel good enough, then I have it in me to have a really good day. That's how it was showing up in Tokyo. I took advantage of all the things that are accessible to me from a physical perspective, and from an experience perspective. I enjoyed Tokyo, made sure I was in a good headspace, and I had a good physical space to go execute at my best.

Mandy: Awesome. One last thing I want to ask you. If you talk to someone about Rolfing sessions that has never experienced it, and has no idea what it is, how do you explain it to them?

Austin: Okay, that's a great question. So, a lot of times, that starts off by asking them how much they know about fascia. And if they don't really know a lot about fascia, then I try to distill it down and say something quick. I like to ask them to visualize a picture looking at a big ham, cut right through. You got the bone, and you got all the meat, and then there's the skin on the outside of it. But right in between the skin and meat, there's that little tiny white layer in there. That's the fascia. And what happens is it gets stuck to our meat and our tendons. And when it gets stuck, it can start pulling on things in ways that we don't want them to be pulled on. And so, a Rolfer basically goes

in and manipulates that and breaks apart that fascia, and that work stimulates the body to replace those spaces with what should be there.

And when they still have this quizzical look on their face, I'll say, "Do you ever put on your pants and you wonder why it feels so weird? And the problem is you've put on your underwear twisted like ninety degrees and it feels wrong?" Then I'll say, "When you reposition that fabric back home, then it's cool, now everything feels great." People get that right away. And I tell them; it's just like that ham.

Mandy: Cool way to talk about inside the body versus outside the body.

Austin: Exactly. You tell me, did I get it right?

Mandy: You did; you got that right.

Patrick: Outstanding.

Mandy: People are starting to get an appreciation for what fascia is and its role in health. Patrick and I were talking about this; it's become the new buzzword. Dr. Rolf (1896-1979) was one of the first people to really connect fascia and structural wellness, the efficient body movement we've been talking about. People are beginning to understand fascia is a structural organ, some say fascia system, and how it can change with input. We can all feel for ourselves that how we hold our body and how we move our body, those habits make a difference in how we feel and can move. And if you've had some sort of injury that's disrupted it, there is good reason to be concerned for loss of support and function.

Anything to add, Patrick, as we finish our interview with Austin?

Patrick: It should be clear to anyone who's reading this article that it takes a lot of energy to work on an athlete at this world-class level. That fascia is tough.

Mandy: Good point. And there's a difference between muscular strength and fascial restriction. I think people confuse that sometimes. Having tight fascia is different than a short muscle, like a short hamstring, for example.

Hopefully, people realize after reading what Austin's had to say, that this work makes such a difference in the athlete's performance. It's not stretching. Rolfers are not doing the same thing as stretching at all. We help the body move the way it was intended to move.

Patrick: Frequently, it's just the chemical dynamics of building up muscle strength that result in building up the thickness and toughness of the fascia surrounding it. It's just the way that it works. When the Rolfer works on that fascia, it's a thicker layer of fascia than in more sedentary clients.

Mandy: Thank you again, Austin, for talking with us. How can people follow you?

Austin: They can find me on Instagram at @a_milli29. https://www.instagram.com/a_milli29/

I'm on Facebook as Austin Miller https://www.facebook.com/p/Austin-Miller-100063941834206/}.

I'm the same on TikTok, a_milli29. https://www.tiktok.com/@a_milli29?lang=en

I'm the bald pole-vaulting guy. There's also Army General Austin Miller, who's not me.

Mandy: And thank you for allowing us to share some of your photos along with this article. I'm sure people will be interested in everything you shared. Thank you, Patrick, for joining as well and sharing your wisdom.

As someone who studied and worked directly with Dr. Rolf, I always value your perspective.

Austin: You are welcome.

Patrick: Take care, all.

Austin Miller, American pole vaulter, from Herndon, Virginia. He's been competing nationally in pole vault since 2018. He recently finished in 1st place at the United States Outdoor Track and Field Championships, which were held in Eugene, Oregon. Miller is also a pole-vault and lacrosse coach at his alma mater, High Point University. He has an interest in music, writes for This Song Is Sick, a music publication, and says he will pursue a career in the music industry after he retires from pole vaulting.

Mandy Cheek is a Certified Rolfer® practicing in Kernersville, North Carolina. She has a background as a physical therapist assistant, and after searching for her own answers to persistent health concerns, she found Rolfing® Structural Integration to address her persistent pains the best. She enjoys many kinds of outdoor activities and sports, including softball, volleyball, swimming, and recently, yoga. She is also a singer and a music aficionado.

Patrick Clough is a Senior Rolfer who first started his Rolfing training with Dr. Ida Rolf and Emmett Hutchins in September 1972. He completed his Rolfing certification in 1973 and his Advanced Training in 1974. He started his first Rolfing practice in Aspen, Colorado. Then he relocated to New York City, where he practiced in Manhattan for over forty years. These days, he is semi-retired and enjoying life in North Carolina.

References

Cheek, Mandy, and Clough, Patrick. 2024. Meet my Rolfer: Patrick Clough. *Structure, Function, Integration* 52(2):6-12.

Keywords

athlete; sports; performance; Rolfing Ten Series; fascia; multi-planar sports; activation lifting; pole vaulting; robot; the Line; embodied performance; structural integration. ■

Structure, Movement, Proprioception

A New Paradigm for Structural Integration

By Szaja Gottlieb, Certified Advanced Rolfer®

Szaja Gottlieb

ABSTRACT *The discovery of Piezo channels, mechanosensitive proteins that transduce physical pressure into cellular signals, formally validated the relationship between touch and proprioception. It is now clear that the manual therapist's touch directly engages the same mechanosensitive pathways that mediate spatial awareness. For structural integration, this finding holds special significance, as it establishes proprioception as equal in importance to structure and movement. This new scientific understanding reveals how proprioception in structural integration through touch, combined with body-wide spatial awareness, forms a powerful combination. Given the complexity of spatial processing in relation to balance, systematic spatial awareness training may help optimize balance. To that end, the novel concept of* propriosphere *is introduced as a three-dimensional visual model around a client to establish spatial reference points for sensing balance. The author also develops the concept of* propriosomatics*, exercises and movements specifically aimed at improving proprioception. Using balance as the fundamental organizing principle, the Rolfing® Ten Series thus becomes a progression of spatial and neurological information that transforms postural organization, movement patterns, and sensory awareness.*

Buoyancy and balance, thus relating optimum adaptation to gravity on both land and sea. (Photo by Nurture on istockphoto.com.)

To help our clients become aware and achieve optimal balance, the approach of structural integration practitioners needs to incorporate proprioception. While structural and movement aspects are emphasized within Rolf's ten-session series process, proprioception has not been explicitly positioned as a co-equal foundational element alongside structure and movement – a theoretical gap that this paper aims to address.

Section 1: Balance

Why Are Bodies Out of Balance?

Structural integration practitioners are peacemakers, seeking out restrictions and resolving conflicts so that the body moves more freely. Often, clients are introduced to new spatial awareness of the physical world: discoveries about living in 1 g gravity on planet Earth that are so basic, they are in disbelief that these fundamental capacities have been missed. In structural integration, balance – what may be termed neutrality or equilibrium in the gravitational field – is the pivot of this new awareness. The goal of structural integration is to create balance, because when a body is in structural equilibrium, there is an even distribution of weight and stress, allowing ease and efficiency.

The difficulty most people experience in achieving balance deserves careful investigation. Balance itself is not the problem; optimal balance is. Like oxygen, gravity is another constant of everyday life, and it is rarely considered unless there is a dysfunction. The idea that there might be a better way to stand upright, or walk, is almost completely foreign to the average citizen. Moreover, the popular conception of balance is that of an innate sense, rather than a skill that can be, or needs to be, developed. A sense that structural integration practitioners are in a perfect position to augment. There is also the hidden obstruction to balance, rarely considered, of functional imbalances in the human sensorium that make attaining optimal balance more difficult than expected.

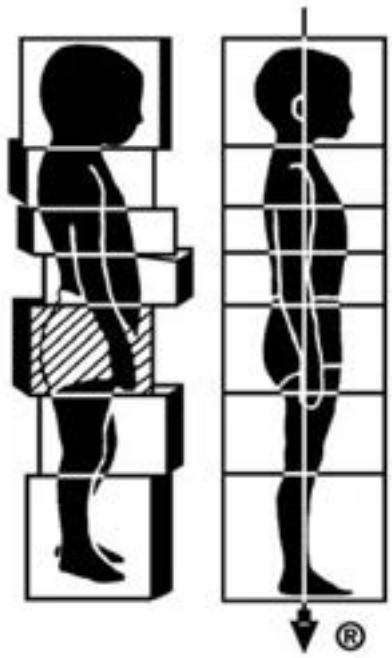
To help our clients become aware and achieve optimal balance, the approach of structural integration practitioners needs to incorporate proprioception. While structural and movement aspects are emphasized within Rolf's ten-session series process, proprioception has not been explicitly positioned as a co-equal foundational element alongside structure and movement – a theoretical gap that this paper aims to address. But before proceeding to a discussion of how proprioception and structural integration intersect, the importance of balance and the role it played in Dr. Rolf's conceptual framework needs to be investigated.

Random versus Organized

Due to the work of Ida P. Rolf, PhD (1896-1979) fifty years ago in the development of the profession of structural integration and the Rolfing Ten Series, there is now welcome acceptance of the role of the fascial system in human health – including seven iterations of the International Fascia Research Congress, a steady stream of peer-reviewed research by such luminaries as Dr. Robert Schleip, Dr. Carla Stecco, and Dr. Antonio Stecco, and even two films [*The Secret Life of Fascia: Part 1* (Schonfeld 2019) and *Ida Rolf – Mother of Fascia* (Urbanczik 2024)] – fascia was not Rolf's first love. In her book, *Rolfing: The Integration of Human Structures* (1977a), the subject of fascia is not taken up until page 37 in Chapter 3. What dominates the first 37 pages and the first two chapters is a focus on gravity and structure, and the healthy response to that challenge: balance.

"Balance," Rolf writes, "reveals the flow of gravitational energy through the body. Asymmetry and randomness betray lack of support by the gravitational field. All these considerations are inherent in the word structure as it is applied to any three-dimensional system, be it human, vegetable, or inorganic" (1977a, 30). The primacy of the physical world was undoubtedly the driver of her vision often encapsulated in such aphoristic statements as, "All this metaphysics is fine but be mighty sure that you got physics under the metaphysics" (Rolf 1978, 206) or, "The aim of Rolfing is to integrate the small gravitational field that is man [sic] with the larger gravitational field that is the earth [sic]" (Rolf 1977a, 30).

Undoubtedly, fascia was, for Rolf, a critical and dynamic factor in the reshaping and remodeling the physical reality of the body. However, in the early days of Rolfing Structural Integration, her vision rested on the clear distinction she made between what she referred to as "random" and "organized" bodies, a distinction embodied in the Little Boy Logo drawn



Little boy logo® based on a child client Rolf treated; a demonstration of Rolf's block model of alignment.

by Rolfer, artist, and actor, John Lodge (1922-2008). Lodge illustrated Rolf's seminal textbook, *Rolfing: Reestablishing the Natural Alignment and Structural Integration of the Human Body for Vitality and Well-Being* (1977b). Lodge, in fact, did many drawings of random and organized bodies, many of which have been recently published (European Guild for Structural Integration 2021).

In simple terms, Rolf referred to the client's relationship to gravity before receiving a series of structural integration sessions as 'random', and the relationship to gravity during and after structural integration sessions as 'organized'. In other words, before structural integration, the choices made by the client in response to gravity were arbitrary, based on personal preferences or habits, while choices after being 'processed' (i.e., experiencing Rolf's ten-session series) involved a change in the relationships between segments so that the body exemplified an integrated structure aligned with the field of gravity. Importantly, this change involved a shift in awareness, which might be deemed proprioception, but also could be so transformative that it suggested to Rolf a potentially evolutionary jump in human consciousness and potential.

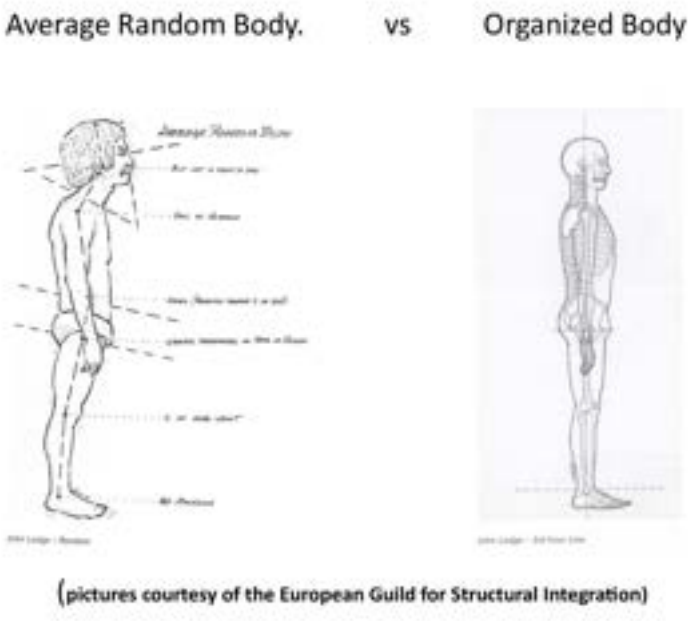
Balance Is a Skill and Not a Sense

Quintessentially, balance is the body's homeostatic response to challenges posed by gravitational forces to maintain physical stability. In the case of gravity, awareness of balance results from a trip or fall. Unless a human is trained to develop this awareness, the complexity of the balance function is, as time passes, neglected and forgotten. By middle age, this natural gift of childhood degrades with physical maturity and ageing.

What is especially problematic is that, although balance often is termed a sense, it would be more accurate to describe it as a skill. Unlike the eyes that see or ears that hear or nose that smells, there is no singular sensory apparatus that maintains balance. Rather, balance relies on three different systems: vision for orientation, the vestibular system for detecting motion, and proprioceptive sensors for body position (Freidhoff and Paganini 2019). An important distinction to be made is that the vestibular system in the inner ear helps maintain balance by detecting head motion, while the proprioceptive system gathers spatial information from the joints and limbs, regardless of movement. In short, balance is a multi-faceted process involving various and different information systems.

While the delineations of interoception, exteroception, and proprioception are an intellectually handy way to discuss the systems informing balance, recent scientific discoveries of a new class of proteins, Piezo1 and Piezo2, challenge these neat categorizations. These mechanically sensitive proteins are integral not only for interoceptive functions including heart and bladder responses (Hamed, Ghosh, and Marshall 2024), but also for proprioceptive functions, particularly through Piezo2 ion channels that mediate touch sensations (Brazil 2017). *Piezo* in Greek means pressure.

While balance is a key ingredient in everyday existence, it is one of those concepts that has many definitions and applications, such as the metaphorical "being balanced in life." Even within the Rolfing® Structural Integration universe, the word balance contains ambiguity. For many Rolfers®, balance, as represented by the Little Boy Logo, is identified with the internal organization of the segments of the body by a vertical line. Dissatisfaction with the static aspect of the vertical line epitomized by the logo has historically been a source of consternation (Maupin 2014). Though balance can be described as having a variety of qualities – such as external/ internal or static/dynamic – concepts useful in educating a client, the logo communicates an internal balance model. This may serve to accentuate



Average random body (L) vs organized body (R) showing Third-Hour line. Images by John Lodge courtesy of the European Guild for Structural Integration (2021, 80 and 63).

Hundreds of millions of years ago, life moved from sea to land, one might say from buoyancy in water to balance on land. This development led to new adaptations to gravity within the same species.

the structural goals of the structural integration ten-session series, but it neglects the sensory awareness aspects.

This paper focuses on proprioception because the question proprioception addresses is identical to the question that is posed in structural integration: "Where is my body in space?" The word 'proprioception' derives from the Latin words *proprius*, meaning "one's own" or "individual," and *capere*, "to take or grasp." Without proprioception, the somatic improvements of a Rolfing Ten Series would be suspect, and maintenance of skills such as balance beyond the series and beyond our offices would be unthinkable. The researcher who first published about the Piezo ion channels and Nobel Prize winner Ardem Patapoutian argued that, "At the most basic level, a physical aspect of consciousness requires proprioception" (Resnick 2021, online). His comment reinforces Rolf's insight that moving a body from a random to an organized state involves a change in consciousness.

Historically, the movement aspects of Rolfing Structural Integration, known as Rolf Movement® Integration, were developed subsequent to structural work to create a more dynamic approach to the human body in motion. Deepening somatic changes by incorporating the proprioceptive dimension can further enhance the transformation that Rolfing Structural Integration promises. But before taking up the topic of proprioception directly, there is one more obstacle to the 'organized' body to consider: how the human body's shape and neurological organization can themselves obstruct optimal balance.

Section 2: Gravity, Evolution, and Shape

Mechanotransduction

Life in 1 g gravity is our evolutionary heritage, and like all Earth organisms, the human body's primary response to gravity is shape. "Gravity," write the authors of "Gravity Sensing in Plant and Animal Cells" (Takahashi et al. 2021, online), "defines the morphology of life on Earth." At the microcosmic scale, this occurs at the cellular level as mechanotransduction, the conversion of mechanical force to electrochemical activity. In a research paper entitled "Appreciating Force and Shape—the Rise of Mechanotransduction in Cell Biology," the abstract reads, "Although the shapes of organisms are encoded in their genome, the developmental processes that lead to the final form of vertebrates involve constant feedback between dynamic mechanical forces, and cell growth and motility" (Iskratsch et al. 2014, 825). Current research confirms the intuitions of earlier physicalist theorists, such as D'Arcy Thompson (1860-1948), who wrote *On Growth and Form* (1917), and validates the physicalist premise underlying structural integration: that shape emerges from the body's mechanical relationship with gravity.

Hundreds of millions of years ago, life moved from sea to land, one might say from buoyancy in water to balance on land. This development led to new adaptations to gravity within the same species. Land snakes, for example, that live on the horizontal axis, are gravity-tolerant compared to their seagoing relatives, who faint with increased gravitational pressure of being out of water. Evolution affected the internal organs as well. The tree snake's heart, for example, is closer to its brain, for blood transfer to the brain, compared to that of a sea snake (Lillywhite et al. 2012). Though a different geometry, a similar coherence of shape and function for survival becomes even clearer when considering the spatial organization of another sea creature, the octopus. Its eight tentacles form a sensory circle of space to detect any threats, even while asleep (Sima 2021).

When considering human shape, the emphasis is on an evolutionary bipedal vertical structure organized around centralized sensing. According to scientific thought, the general principle of organizing shape in 1 g gravity is polarity, but particularly so in relation to the vertical structure of human beings. The Russian authors of a paper called *The Evolutionary Role of Gravity* write, "The major feature of organism structure determined by gravitation is the polarity of organisms. It is expressed in morphology, embryology, development, and growth. The basis of the polarizing role of gravity is the gravitational dependence of physical and chemical processes on the earth [sic]. All earth organisms from unicellular organisms to man [sic] have upper, lower, front, back, and lateral sides" (Dubinin and Vaulina 1976, 47). Thus, to achieve balance, the shape of every earthly organism is organized by directionality – up/down, north pole/south pole – seeking equilibrium in the gravitational field, an integral principle of structural integration.

Spatial Biases

Though gravitational response is primary for every organism, neurology is also shaped by the struggle for survival. This includes not only spotting predators and prey but also critical social interactions, such as recognizing a member of the same tribe and more complex social relationships. When examining how sensory awareness is organized, the observer might be struck by what ostensibly seem like spatial biases, omissions and accentuations in the sensory field result in a favoritism towards the upper pole and the frontal plane, neglecting the lower pole and the

Photo by PicturePartners on istockphoto.com.

back plane. These spatial biases reflect functional priorities – the body's sensory system emphasizes areas critical for threat detection and social interaction (the upper pole and frontal plane), while areas less critical for immediate survival receive less neural representation. While adaptive, this organization can compromise optimal gravitational balance – a key goal of structural integration.

This threat-response pattern is so fundamental that even the threat of gravitational perturbation – the risk of falling – triggers the same defensive response as the danger of a predator. Research shows that subjects standing at an elevated height exhibited significantly increased postural stiffness, a defensive response that deteriorated their balance control (Carpenter et al. 2001). The eyes are a case in point: eye positioning alone – without any visual input – influences postural sway, demonstrating how these threat-oriented sensory systems fundamentally affect balance control (Tamaru and Matsugi 2022).

Studies confirm that the human neurological system is organized to meet threats even at unconscious levels. In a 2023 study, "Attentional Bias to Threat Is Modulated by Stimulus Content: An fNIRS Study" (Liu et al. 2024), subjects with brain-imaging sensors were shown a series of pictures of animals like spiders and snakes, and pictures of humans depicting violence and injury, as potential threats. Consistently the response to humans was the strongest, even greater than dangerous animals. Sensory cues were then introduced to see whether these neural responses could be modified. The results showed that neutral cues aided in response to possibly violent animals but were less effective against human threat. In other words, at a deep unconscious level, the central nervous system is geared to protect against threat, especially a human one.

These threat-oriented priorities are reflected in the brain's sensory mapping itself. The image of the sensory homunculus figure, though not a precise rendering of sensory distribution and function according to its authors, Wilder Penfield and Edwin Boldrey, is instructive simply as a representation of human sensory schema, showing the concentration of sensors in certain locations and the lack of sensors in other areas. The homunculus, based on their 1937 article, "Somatic Motor and Sensory Representation in the Cerebral Cortex of Man as Studied by Electrical Stimulation" (Penfield and Boldrey 1937), has been a fixture in neuroscience. It is noteworthy that the homunculus was updated by a team of scientists at Washington University School of Medicine in 2023, who identified three new areas that they theorize integrate networks linking motor control with cognitive planning and autonomic regulation (Gordon et al. 2023). However, the concentration of sensory awareness in various parts of the body mapped by Penfield and Boldrey remains unchanged. What is striking is the amount of neural space taken up by the face, hands, and lips – what might be called the upper pole – and the surprisingly small amount of neural activation in the lower legs and feet – the lower pole.

Visual dominance, while advantageous for survival, creates challenges for optimal balance function. Several studies have demonstrated this visual dominance over proprioception. In a 2021 study called "Visuo-Postural Dependency Index (VPDI) in Human Postural Control" (Danna-Dos-Santos et al. 2021), researchers found that though there were individual differences in using visual versus proprioception for balance, eyesight was increasingly chosen despite the degeneration of proprioceptive capacity with age and the superiority of proprioceptive function for balance. In another study, "The Contribution of Upper Body Movements to Dynamic Balance Regulation During Challenged Locomotion," subjects recruited the upper pole when balance

Sensory homunculus figure.

When examining how sensory awareness is organized, the observer might be struck by what ostensibly seem like spatial biases, omissions and accentuations in the sensory field result in a favoritism towards the upper pole and the frontal plane, neglecting the lower pole and the back plane. These spatial biases reflect functional priorities – the body's sensory system emphasizes areas critical for threat detection and social interaction (the upper pole and frontal plane), while areas less critical for immediate survival receive less neural representation. While adaptive, this organization can compromise optimal gravitational balance – a key goal of structural integration.

Szaja Gottlieb

Rolf's genius lay in recognizing the primacy of gravity and balance. Working decades before mechanotransduction research and neuroplasticity studies, she intuitively understood that manual contact and movement education needed to be integral to create lasting change. What she couldn't have known was the precise neurological mechanisms underlying structural integration transformation.

was challenged. As the researchers note, "When humans try to maintain their equilibrium in a challenging balancing task, they unwittingly engage upper body parts including their trunk, arms, and head" (Boström, et al. 2018, 1). Significantly, when balance challenges were increased, there was even greater dependency on these same elements, which are inefficient for maintaining equilibrium in gravity.

The north pole sensory concentration of the homunculus is not the only noteworthy imbalance. There is the front/back plane imbalance as well. Bipedal survival demands vigilance for prey, predator, and social interactions, all oriented in the frontal plane. Researchers have noted that the concentration of sensors in the tongue, lips, and fingertips far outweighs those found in the trunk. Each fingertip has more than 3,000 touch receptors, many of which respond primarily to pressure. In comparison, the entire trunk of the human body has as many receptors as one hand (Hancock 1995). These 3,000 sensors are not for prehensile function; they are for spatial awareness.

Neuroplasticity

Fortunately, these functional biases are not fixed constraints. Recent research has demonstrated that systematic proprioceptive training can lead to measurable changes in how the central nervous system processes spatial information. Why is the issue of spatial imbalances important for our work? Spatial biases create blind spots that affect how clients organize themselves in gravity, and by using proprioception, our work can shift, reorganize, and transform their patterns.

The ankle joint is a case in point. Study after study agree that if a body is attempting to find optimal balance, the ankle joint is critical, whether attempting to improve athletic performance or rehabilitation from a medical condition. As the authors of "The Role of Ankle Proprioception for Balance Control in Relation to Sports Performance and Injury" write (Han et al. 2015, online), "Balance control improvement is one of the most important goals in sports and exercise. Better balance is strongly positively associated with enhanced athletic performance and negatively associated with lower limb sports injuries. Proprioception plays an essential role in balance control and ankle proprioception is arguably the most important". When there is an injury to an ankle joint, the recommendations are usually soft-tissue mobilization and joint mobility, but most importantly proprioceptive engagement. The greater the proprioceptive aspect, the better the outcome. Significantly for this discussion of functional imbalances, proprioception has been linked to neural modification in the central nervous system. The authors of the same study write, "Central processing of ankle proprioceptive information with other sensory information, enables integration for postural and balance controls" (Han et al. 2015, online).

Perhaps the strongest evidence for the capacity of proprioception to create central nervous system changes comes from studies discussing medical conditions. A stroke rehabilitation study demonstrates that systematic proprioceptive training can restore motor function through neuroplastic reorganization (Kiper et al. 2015). Studies of aging populations reveal that balance training incorporating proprioceptive elements leads to structural brain changes (Rogge et al. 2018). Dystonia research provides particularly compelling evidence that systematic proprioceptive training protocols can create neurophysiological changes (Rosenkranz et al. 2008). The conclusion here is simply that proprioceptive engagement is not limited to local tissue but creates change in the central nervous system, which is usually referred to as neuroplasticity. This finding echoes an essential concept in structural integration: that local issues are often global in impact.

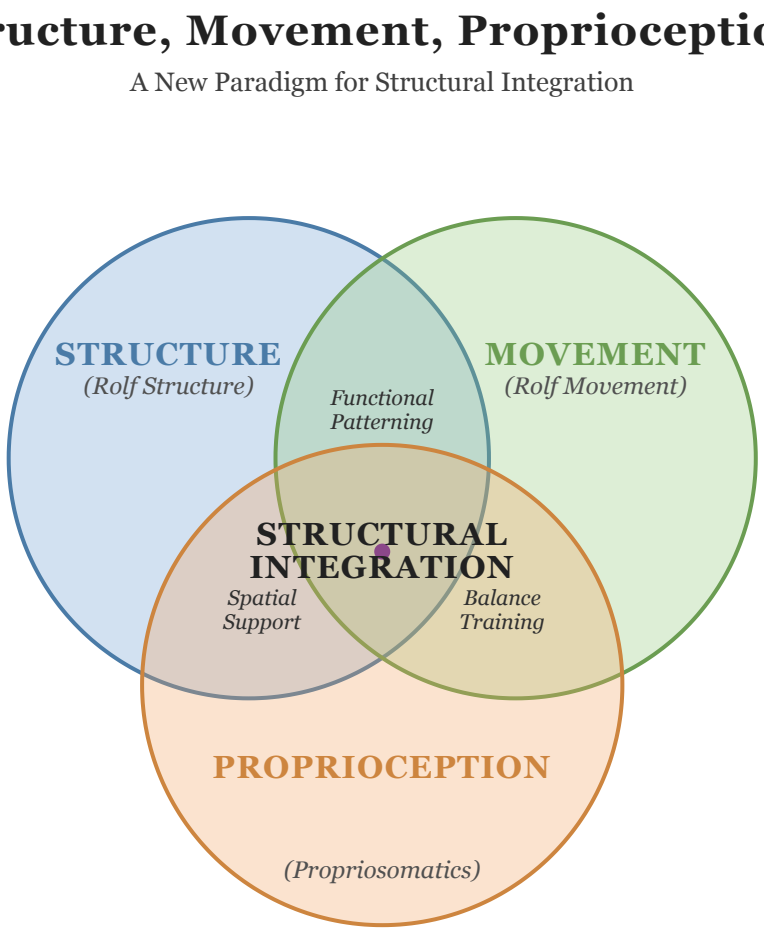
Rolf's genius lay in recognizing the primacy of gravity and balance. Working decades before mechanotransduction research and neuroplasticity studies, she intuitively understood that manual contact and movement education needed to be integral to create lasting change. What she couldn't have known was the precise neurological mechanisms underlying structural integration transformation. Or that, as Nobel Prize winner Patapoutian discovered, touch and proprioception use the same molecular sensor (Woo et al. 2015). Ironically, manual practitioners

have, to various degrees, been practicing proprioceptive approaches for the past fifty years. However, within the Rolfing universe of structure and movement, proprioception has been implicit. My contention is that it is time to make proprioception explicit and establish it as a third element equal to structure and movement.

Section 3: Enter the Propriosphere

Proprioception is integral to structural integration. As my three-circle Venn diagram illustrates, proprioception forms a third domain alongside Rolfing Structural Integration and Rolf Movement Integration work, each informing the others. The three domains can be considered this way: structure reveals organization in space. Movement reveals organization in motion and in time. Proprioception reveals organizational integration on a sensory level.

Researchers Helene Langevin, PhD and Robert Schleip, PhD, who is also a Rolfing Instructor, have both published articles linking proprioception to fascia, the staple of structural integration. Specifically, Schleip (2015) relates fascia to proprioceptive communication, while Langevin (2021) researched the effect of shortened and painful fascia tissue as related to diminished proprioception. Proprioception is ever-present in structural integration. When a client after a first session says, "I feel different, but I am not sure how," what he or she is communicating is not only a structural change resulting from soft-tissue manipulation, but a change in how she or he senses space. Within the universe of Rolfing Structural Integration, proprioception is usually embodied as movement. However, recent discoveries related to Piezo channels imply that manual therapy used by the practitioner to initiate structural change is proprioception beginning at the point of touch. The claim, in fact, could be made that all the work done in a structural integration session is proprioceptive – and that would be hard to refute. Consider this syllogism: if structural integration is essentially about balance, and balance is essentially about



Relationship of proprioception to structure and movement. Image created by Szaja Gottlieb.

[I]t is time to make proprioception explicit and establish it as a third element equal to structure and movement . . . structure reveals organization in space. Movement reveals organization in motion and in time. Proprioception reveals organizational integration on a sensory level.

proprioception, then structural integration is essentially about proprioception. However, there is an intrinsic problem with this position: there is no agreement on exactly what proprioception is.

Proprioception, as a term, is especially fraught with issues. In Rolfing training, the space around the individual in motion is often described as the "kinesphere," a concept derived from Rudolph Laban, a dance teacher, who introduced it in 1926. Unfortunately, this movement-based definition runs into a methodological challenge that proprioceptive researchers have long grappled with: *movement simultaneously activates visual and vestibular systems, making it difficult to isolate and study proprioceptive contributions.* Researchers address this by studying proprioception in stillness, where visual and vestibular 'noise' can be minimized (Han et al. 2016). Though proprioception is often associated with body position during movement, proprioception, sensory awareness of the body in space, remains operational even when the body is still and the posture static. The good news for structural integration practitioners is that balance – practically synonymous with proprioception and a keystone of our work – applies equally well to both static and dynamic posture. Moreover, when proprioceptive strategies are considered, balance training appears to be the most effective (Winter et al. 2022). What stands in the way is a reconsideration of balance as a formal category within the structural integration hierarchy.

Kinesphere.
Image by master1305 on istockphoto.com.

In this newly defined approach, the Rolfing Ten Series serves as a neurological scaffolding of spatial awareness, based on the proprioception of balance.

Propriosphere

Following the same methodological logic that researchers use, "propriosphere" establishes proprioceptive awareness in stillness before introducing the complexity of movement. The limitations of the concept of kinesphere have already been noted. Laban defined kinesphere as, "the sphere around the body whose periphery can be reached by easily extended limbs without stepping away from that place, which is the point of *support* when standing on one foot" (Space and Relationship undated, online). Laban's definition can be modified to apply to a stationary position as well: the sphere of space around the body with limbs extended which can be felt without stepping away from that place, which is the point of *balance* when standing on one or both feet. This concept can be referred to as the "propriosphere," a term also derived from the dance world.

Balance requires spatial reference points. Without a clear orientation – a felt sense of north, south, east, west, up, down – proprioception lacks the coordinates needed to locate one's body in space. The propriosphere provides these landmarks as an imagined spatial framework that clients can reference proprioceptively, facilitating sensory reweighting from visual-vestibular dominance toward proprioceptively-grounded balance. It is a simple tool, but effective. The argument here is that propriosphere should be incorporated as a formal element for

Propriosphere.
Image by igorshi on istockphoto.com.

Our work is thus not only structural, nor just movement, but also propriosomatic, amplifying the goal of somatic spatial awareness.

structural integrators in Rolf's ten-session series, to establish these spatial reference points for clients. Indeed, the static position that propriosphere presents may be an advantage in the very first hour when balance is introduced, involving movement that requires dynamic visual and vestibular information. The proprioception of balance is not simply an aspect of structural integration; it is essential to how the work functions. In this newly defined approach, the Rolfing Ten Series serves as a neurological scaffolding of spatial awareness, based on the proprioception of balance.

In truth, this paper builds upon Rolf Movement Instructor Monica Caspari's (1953-2019) brilliant essay, "The Functional Rationale of the Recipe" (2005), in which she describes how structure and movement need to be integrated to get improved functional results. Recognizing proprioception as an essential aspect of structural integration similarly serves to accentuate and amplify function. Our work is thus not only structural, nor just movement, but also propriosomatic, amplifying the goal of somatic spatial awareness.

If the structural integration ten-session series were reimagined through a proprioceptive lens, balance would be the ongoing dynamic, and the propriosphere would be the spatial reference points for that dynamic. Using polarity as our mainstay, the series is a progression of stages of balance and spatial awareness on the pathway to higher levels of structural integration. In a sense, the series becomes like a remodeling job, where the crew comes in to make space for structural changes, but also to alter how the space itself is perceived.

The first stage of the Rolfing Ten Series, usually referred to as the sleeve sessions (Sessions 1 to 3), represents what might be called the 'external model of balance'. In this first stage, the client begins a reorganization of spatial awareness of the first north pole, then the south pole, and finally the circumference and volume the body occupies.

The second stage of the Rolfing Ten Series, usually referred to as the core sessions (Sessions 4 to 7), is what might be referred to as the 'internal model of balance'. This stage reorganizes the relationships between segments from the ground up, beginning with the insertion of a central gravity line, epitomized by the Little Boy Logo. These core sessions often are embodied as movement. In movement, propriosphere translates to kinesphere.

The last stage of the Rolfing Ten Series, Sessions 8 to 10, is the culmination of the series, climaxing in what practitioner Ed Maupin (2014) refers to as *expansional balance* or *dynamic polarity*.

A poetic way to think of the ten-session series is as a symphony in three parts, with the theme of polarity and integration being introduced and reintroduced in each of the three stages – sleeve, core, and integration – each time at a higher level of organization in Sessions 3, 7, and 10. The focus here, however, is not just structure but systematically developing and scaffolding new areas of spatial awareness using balance as the organizing principle and the practitioner's intent as creative fulcrum.

Propriosomatics

Though the drama and the climax of the structural aspect of a structural integration ten-session series is often related to the later sessions, particularly the Seventh Hour, the head session. The very first session, the First Hour, can be both groundbreaking and transformative proprioceptively. Experienced proprioceptively, a client may discover polarity along with gravity and support, resulting in an inversion of previously felt spatial values such as 'up' and 'down'. Such interruptions to the accepted spatial order initiate a complete reconstruction of structural, spatial, and sensory relationships of the body, within and without.

If the structural integration ten-session series is approached proprioceptively, then the subject of balance and spatial awareness can be presented by the practitioner in the First Hour, even before the client lies horizontally on the table. With the client standing, the Rolfer can engage them in an exercise I call *the seesaw* or *the sway* (described in the next session). As you will read, the client goes from a rocking back to a point of rest that is in alignment with gravity. What is accomplished immediately is critical: the client now knows what balance feels like. Most importantly, she or he is invited to participate in their own spatial awareness.

This introduction and engagement with balance will sustain thematically throughout the Rolfing Ten Series. Though complex, balance is not unknown or forgotten. Like a buried childhood memory, it can be reawakened, and balance can be reintroduced as a delight rather than a chore. The confidence of the client can be reassured: "You are out of balance, and it's not your fault. You knew balance as a child, and it's something that you can easily relearn, and that's why I'm here." The concept of propriosphere, in fact, may translate for many clients as ownership of their own space, with potentially profound psychological benefits.

The educational aspect of structural integration is ever-present. As the client undergoes a structural change each session, he or she also undergoes a proprioceptive change. The question for the practitioner then becomes not only, "How can I improve the client's structural support?" But also, "How do I simultaneously affect their spatial sense to enable self-correction during and after the series?" Using weight and direction, both in our touch on the table and patterning off the table, there may be opportunities to fill in holes or gaps in their propriosphere. As I stated previously, considerable movement education suggests that proprioception already exists in Rolfing Structural Integration. This paper attempts to move proprioception from implicit to explicit.

Exercises

The following exercises or movements are specifically aimed at proprioceptive education, which can be categorized as propriosomatics.

The Seesaw or The Sway

The seesaw or *the sway* is a propriosomatic exercise with the intention of teaching our client while standing, simple balance, we encourage weight shifting in the feet. The practitioner stands to the side of the client with one hand on his or her upper back and the other on the upper chest. The client is then asked to rock their weight from heel to toe in progressively smaller oscillations. Under the guidance of the practitioner, subtly providing support and at the same time affecting the client's weight back and forth between the frontal and back planes, the client is then asked to find and feel the point of neutrality – that spot midfoot where she or he feels completely supported by their feet. (It is important that the client keep their eyes horizontal rather than downward during

Practitioners should use everything in their arsenal to help clients embody the work, especially after completing Rolf's ten-session series. This requires educating clients to the message of structural integration: balance accessed through proprioception.

this process.) This is the balance point. At this time, the practitioner removes his or her hands, and the client will feel a new sense of support, freedom, and connection to the ground. This sense of self-support and independence is often accompanied by a deep, relaxed breath. Other spatial cues, such as addressing head position or the back plane, can then follow.

Locked On Neutral

Locked on neutral is a propriosomatic exercise meant to teach the client to connect the head to the support of the back plane, particularly the heel. With the client standing, the practitioner places his or her right elbow between the shoulder blades and holds the back of the client's head with their right hand. Simultaneously, the practitioner places his or her left hand on the client's forehead, helping them position their head in alignment with the spine. The goal is to have the client feel their head supported as part of the continuity of the back plane. The client can then be asked to take a few slow steps while the practitioner maintains these positions with light, supportive contact. This exercise can be combined with the seesaw.

Taking the Wall with You

Taking the wall with you is a propriosomatic exercise with the intention of helping the client sense the back plane necessary to achieve balance with the frontal plane. The client stands with his or her back to a wall and presses the back of their body and the palms of their hands against the wall (to take advantage of spatial sensory input of the hands). The head should not be tilted back, but rather have the chin tucked. If the head does not touch the wall, that is not a problem; the key is to keep the eyes horizontal. The client is then asked to walk away as if taking the wall with them. Clients report that this exercise serves them well as a proprioceptive reminder during the day of their back plane.

Conclusion

It is in the structural integration oral tradition that Rolf, in her teaching, often quoted Robert Frost's words from a 1954 news conference. Asked what freedom was, he replied, "being easy in your harness" (Quote Investigator 2015). For Rolf, the metaphor certainly speaks of the harness of gravity. Recent scientific research suggests that the deep evolutionary imprint of threat on the neurological system makes maintaining balance in the gravity field problematic. The sensory homunculus reveals our spatial biases: upper pole dominance, visual system primacy, neglect of lower limbs, and the back plane. These functional imbalances create obstacles that require more than structural change.

Current neuroscience reveals something remarkable about Rolf's work: she was engaging both structural and neurological systems simultaneously, though only the structural aspect was explicitly recognized and taught. Since touch inherently activates proprioception, as we know from Patapoutian's work, and proprioceptive engagement creates neuroplastic changes in the central nervous system, every manual intervention in structural integration has always worked on two levels: tissue reorganization and neurological reorganization. The profound, lasting transformations Rolf observed resulted from this dual engagement, not from structural changes alone. This doesn't diminish the importance of structural work – it explains why it's so effective and why the changes persist.

Practitioners should use everything in their arsenal to help clients embody the work, especially after completing Rolf's ten-session series. This requires educating clients to the message of structural integration: balance accessed through proprioception. Since educating our clients is central to structural integration for lasting transformation, this paper argues that proprioception should be considered equally essential with structure and movement as tools of structural integration practice. The framework introduced here – the propriosphere as a spatial reference system, the three balance models (external, internal, expansional) as a systematic progression, and propriosomatic as the term for integrated spatial awareness work – intends to make proprioception explicit rather than implicit.

Many practitioners have undoubtedly incorporated proprioceptive approaches intuitively. Making proprioception explicit doesn't add something new to structural integration – it names and leverages what has been happening all along. When clients internalize these proprioceptive lessons, they become, in a sense, their own continuing practitioners, maintaining and extending transformation beyond their Rolfing Ten Series and outside the confines of our offices. A proprioceptive approach also opens new vistas to the potential of structural integration, particularly in regard to therapies addressing balance issues in senior adult populations, but also the general population in regard to everyday and athletic performance.

Szaja Gottlieb first received Rolfing sessions in 1978, which resulted in him becoming a stone sculptor, which, in turn, led to his becoming a Rolfer in 2001. He lives with his wife, Ko, and practices in San Luis Obispo, California.

He believes in the transformational potency of structural integration.

Author's Note, Dedication, and Acknowledgments

This article is the third in a series, which includes my 2017 article, "The Art of Rolfing and the Art of Sculpture," and my 2018 article, "The Earthbound Metaphysic," both explorations of spatial concepts derived from my experience as a sculptor and a structural integration practitioner.

This article is dedicated to my brother, Dr. Philip Gottlieb (1953-2023), a well-known biophysicist and researcher, who passed away in 2023. His field of interest was proprioception, and he was the editor of a book titled *Piezo Channels* (Gottlieb 2017). It remains ironic that, although we took very different paths – his in science and mine in art – we both arrived at this common interest of proprioception.

I would also like to thank Mary Bond, Mark Donahue, and Kevin Frank for their support, as well as Michael and Georgette Salveson for their valuable input. I especially want to thank my wife, Myung-Bun (Ko) Gottlieb, for her reading and feedback during this more than yearlong effort. Special thanks to Anne Hoff for editing the final draft and to John Schewe for the initial edit. I acknowledge the use of Claude AI during research, discussion, and writing of this paper.

References

Boström, Kim J., Tim Dirksen, Karen Zentgraf, and Heiko Wagner. 2018. The contribution of upper body movements to dynamic balance regulation during challenged locomotion. *Frontiers in Human Neuroscience* 12:8.

Brazil, Rachel. 2017. Proteins get touchy under pressure. *Chemistry World*. London, UK: Royal Society of Chemistry. Available from https://www.chemistryworld.com/features/the-proteins-of-touch/3007645.article.

Carpenter, Mark G., James S. Frank, Cathy P. Silcher, and Gary W. Peysar. 2001. The influence of postural threat on the control of upright stance. *Experimental Brain Research* 138:210-218.

Caspari, Monica. 2005. The functional rationale of the recipe. *Structural Integration* 33(1):4-24.

Danna-Dos-Santos, Alessander, Maria M. Ribeiro Dos Santos, Alessandra T. Magalhaes, Vinicius S. Cardoso, Patricia Driusso, Luis Mochizuki, and Adriana M. Degani. 2021. Visuo-postural dependency index (VPDI) in human postural control. *BMC Sports Science, Medicine and Rehabilitation* 13, 7.

Dubinin, N.P. and E.N. Vaulina. 1976. The evolutionary role of gravity. *Life Sciences and Space Research* 14:47-55.

European Guild for Structural Integration. 2021. *Structural integration, the basic series in all its abundance: An homage to Dr. Ida Rolf's work inspired by John Lodge*. Self-published. Poland.

Freidhoff, Laura and Anthony Paganini. 2019. PLM: The proprioceptive, visual, and vestibular systems are mainstays for balance and equilibrium. Michigan State University. Available from https://www.justintimemedicine.com/curriculum/2318.

Gordon, Evan M., Roselyne J. Chauvin, Andrew N. Van, Aishwaraya Rajest, Ashley Nielsen, Dillan J. Newbold, Charles J. Lynch, Nicole A. Seider, Samuel R. Krimmel, Kristen M. Scheidter, Julia Monk, Ryland L. Miller, Athanasia Metoki, David F. Montez, Annie Zheng, Immanuel Elbau, Thomas Madison, Tomoyuki Nishino, Michael J. Myers, Sydney Kaplan, Carolina Badke D'Andrea, Damion V. Demeter, Matthew Feigelis, Julian S. B. Ramirez, Ting Xu, Deanna M. Barch, Christopher D. Smyser, Cynthia E. Rogers, Jan Zimmermann, Kelly N. Botteron, John R. Pruett, Jon T. Willie, Peter Brunner, Joshua S. Shimony, Benjamin P. Kay, Scott Marek, Scott A. Norris, Caterina Gratton, Chad M. Sylvester, Jonathan D. Power, Connor Liston, Deanna J. Greene, Jarod L. Roland, Steven E. Petersen, Marcus E. Raichle, Timothy O. Laumann, Damien A. Fair, and Nico U. F. Dosenback. 2023. A somato-cognitive action network alternates with effector regions in motor cortex. *Nature* 617, 351-359.

Gottlieb, Philip A. 2017. *Piezo Channels* (editor). Cambridge: Academic Press.

Gottlieb, Szaja. 2017. The art of Rolfing SI and the art of sculpture, Part 1. *Structural Integration* 45(1):28-31.

___. 2018. The earthbound metaphysic: The art of Rolfing SI and the art of sculpture, Part 2. *Structural Integration* 46(2):10-15.

Hamed, Yasmeen M. F., Britya Ghosh, and Kara L. Marshall. 2024. PIEZO ion channels: Force sensors of the interoceptive nervous system. *The Journal of Physiology* 602(19):4777-4778.

Han, Jia, Judith Anson, Gordon Waddington, and Roger Adams. 2015. The role of ankle proprioception for balance control in relation to sports performance and injury. *BioMed Research International 1:842804.*

Han, Jia, Gordon Waddington, Roger Adams, Judith Anson, and Yu Liu. 2016. Assessing proprioception: A critical review of methods. *Journal of Sport and Health Science* 5(1):80-90.

Hancock, Elise. 1995. The handy guide to touch. *John Hopkins Magazine.* Available from https://pages.jh.edu/jhumag/495web/touch.html.

Iskratsch, Thomas, Haguy Wolfensen, and Michael P. Sheetz. 2014. Appreciating force and shape – the rise of mechanotransduction in biology. *National Review of Molecular Cell Biology* 15(12):825-33.

Kiper, Pawel, Alfonc Baba, Michela Agostini, and Andera Turolla. 2015. Proprioceptive based training for stroke recovery. Proposal of new treatment modality for rehabilitation of upper limb in neurological diseases. *Archives of Physiotherapy* 5(1).

Langevin, Helen M. 2021. Fascia mobility, proprioception, and myofascial pain. *Life (Basel, Switzerland)* 11(7):668.

Lillywhite, Harvey B., James S. Albert, Coleman M. Sheehy III, and Roger S. Seymour. 2012. Gravity and the evolution of cardiopulmonary morphology in snakes. *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology* 161(2):230-242.

Liu, Hejun, Qihan Zhang, Jon D. Elhai, Christian Montag, and Haibo Yang. 2024. Attentional bias to threat is modulated by stimulus content: An fNIRS study. *Frontiers in Human Neuroscience* 17:1308457.

Maupin, Edward W. 2014. Expansional balance and the 'Line'." *Structural Integration: The Journal of the Rolf Institute* 42(1): 19-21.

Penfield, Wilder and Edwin Boldrey. 1937. Somatic motor and sensory representation in the cerebral cortex of man as studied by electrical stimulation. *Brain* 60(4): 389-443.

Quote Investigator. 2015. Quote origin: Definition of freedom: It's being easy in your harness. Available from https://

quoteinvestigator.com/2015/04/11/harness/.

Resnick, Brian. 2021. Our amazing sense of touch, explained by a Nobel laureate." Vox. Available from https://www.vox.com/science-and-health/22710533/nobel-prize-2021-ardem-patapoutian-touch.

Rogge, Ann-Kathrin, Brigitte Röder, Astrid Zech, and Kirsten Hotting. 2018. Exercise-induced neuroplasticity: Balance training increases cortical thickness in visual and vestibular cortical regions. *NeuroImage* 179:471-479.

Rolf, Ida P. 1977a. *Rolfing: The integration of human structures.* Santa Monica, CA: Dennis-Landman.

___. 1977b. *Rolfing: Reestablishing the Natural Alignment and Structural Integration of the Human Body for Vitality and Well-being.* Rochester, VT: Healing Arts Press.

___. 1978. *Ida Rolf talks about Rolfing and physical reality*. (R. Feitis, ed.) New York: Harper and Row.

Rosenkranz, K., K. Butler, A. Williamon, C. Cordivari, A. J. Lees, and J. C. Rothwell. 2008. Sensorimotor reorganization by proprioceptive training in musician's dystonia and writer's cramp." *Neurology* 70(4):304-315.

Schleip, Robert. 2015. Fascia as an organ of communication. *Fascia and Fitness. Available from* http://www.fascialfitness.net.au/articles/fascia-as-an-organ-of-communication/.

Schonfeld, Bruce. 2019. *The secret life of fascia: Part 1*. Available from https://vimeo.com/ondemand/secretlifeoffascia.

Sima, Richard. 2021. Octopuses have a secret sense to keep their 8 arms out of trouble. *The New York Times*. Available from https://www.nytimes.com/2021/02/20/science/octopus-arms-light.html.

Space and Relationship. undated. *Kinesphere*. Available from https://thespaceintherelationship.wordpress.com/kinesphere/.

Takahashi, Ken, Hideyuki Takahashi, Takuya Furuichi, Masatsugu Toyota, Makoto Furutani-Seiki, Takeshi Kobayashi, Haruko Watanabe-Takano, Masahiro Shinohara, Takuro Numaga-Tomia, Asako Sakaue-Sawano, Atsushi Miyawaki, and Keiji Naruse. 2021. Gravity sensing in plant and animal cells". *npj Microgravity* 7,2. Available from https://www.nature.com/articles/s41526-020-00130-8.

Tamaru, Yoshiki and Akiyoshi Matsugi. 2022. Eye position shifts body sway under foot dominance bias in the absence of visual feedback. *Frontiers in Neurology,* 13:835450.

Thompson, D'Arcy. 1917. *On growth and form.* UK: Cambridge University Press.

Urbanczik, Ales. 2024. *Ida Rolf – Mother of fascia*. Available from https://motheroffascia.com/.

Winter, Leoni, Qiyin Huang, Jackquelyn V. L. Sertic, and Jurgen Konczak. 2022. "The effectiveness of proprioceptive training for improving motor performance and motor dysfunction: A systematic review. *Frontiers in Rehabilitation Sciences* 3:830166.

Woo, Seung-Hyn, Viktor Lukacs, Joriene C. de Nooij, Dasha Zaytseva, Connor R. Criddle, Allain Francisco, Thomas M. Jessell, Katherine A. Wilkinson, and Ardem Patapoutian. 2015. Piezo2 is the principal mechanotransduction channel for proprioception. *Nature Neuroscience*, 18(12):1756-1762.

Keywords

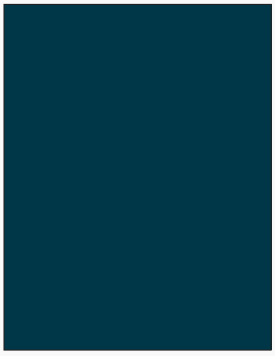
proprioSphere; proprioSomatic; mechanotransduction; Piezo2; random; organized; balance; expansion; north pole; south pole; kinesphere; spatial bias. ■

Dr. Ida Rolf Institute®

Journal Ad Rate Card

Structure, Function, Integration: The Journal of the Dr. Ida Rolf Institute® is the leading professional journal of structural and movement integration. It has been in continuous publication for over fifty years, and features articles on fascia research, Rolfing® SI theory, manual techniques, Rolf Movement® insights, practice building, faculty perspectives, and reviews of resources.

AD SPECS



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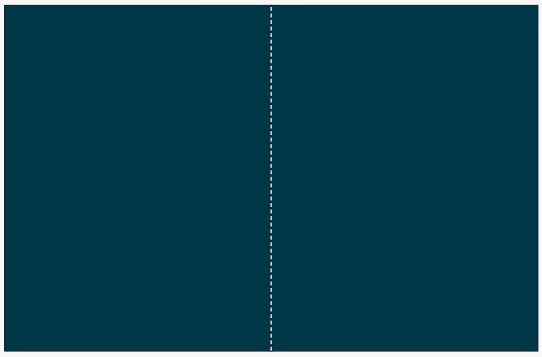

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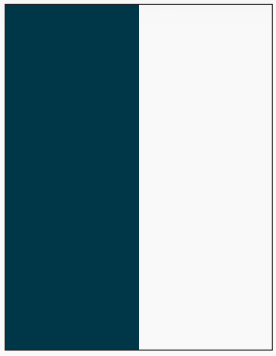

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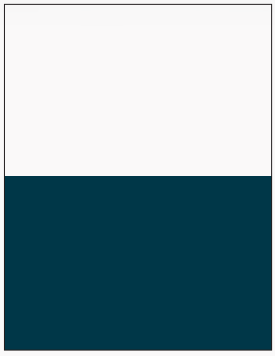

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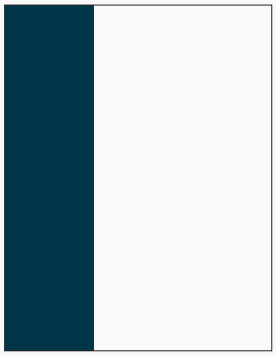

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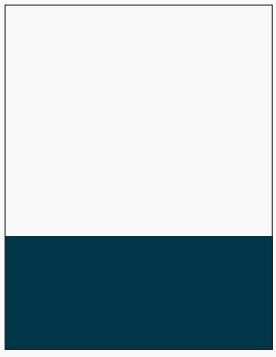

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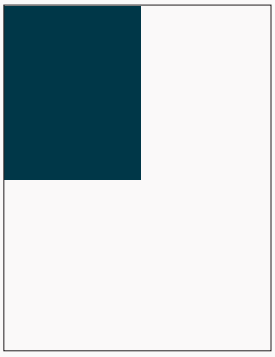

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Reimagining the Body: Somatic Practice, Embodiment, and the Science of Movement

by Aline Newton with Rebecca Carli-Mills (2025, Handspring Publishing)

Reviewed by Tristan Koepke, MFA, Certified Rolfer®

Aline Newton, in her expansive new book *Reimagining the Body: Somatic Practice, Embodiment, and the Science of Movement* (2025), writes that, "the body is not an object; it is an activity" (136). Newton, a Rolfer®, Rolf Movement® practitioner, and educator, applies this thinking beyond the body, inviting her readers to consider for themselves what the body might be *as* an activity – mobilizing the many ways that bodies move, sense, and stabilize. Through this insightful book, which includes generous contributions from her collaborator, Rolf Movement Instructor Rebecca Carli-Mills, Newton crafts new possibilities for understanding the body through imagery, imagination, and embodied inquiry.

As with many texts on embodiment written by somatics practitioners, the book begins with Newton's personal exposition, situating her initial encounters with Rolfing® Structural Integration and her ongoing studies with French dancer, Rolfer, and Rolf Movement Practitioner Hubert Godard. The book draws heavily from Newton's three decades of collaboration with Godard, whose influence threads through every chapter. Organized into five sections – *Moving*, *Expressing*, *Perceiving*, *Imagining*, and *Becoming* – the book mirrors the living dynamism it describes. Throughout, Newton offers alternatives to long-standing models that treat the body as an object or machine, presenting surprising and often delightful examples from her research and practice.

The 'Moving' section is a real standout in comparison to many writings about embodiment and somatics. It begins with an unexpected paradox: to understand human movement, Newton turns toward robotics and artificial intelligence, reflecting on her early 2000s experiments at MIT with gymnastics coach Noah Riskin and engineering students. These experiments sought to bridge conventional notions of movement such as muscular contraction and joint action with Rolfing-based understandings of embodied perception. Newton describes the limitations of robotic movement [within the context of the early aughts (the 2000s)] and uses these limitations to uplift the complex sensory experience of the human body as relational and perceptual. Her discussion extends somatic and Rolfing frameworks while touching on ideas surrounding ecological psychology, dynamic systems theory, and effortless action. Her personal, humorous accounts of robots failing and falling highlight what robots lack – premovement, orientation, and tonic function, all topics central to Godard's teachings.

Newton's research is quite thorough, both drawing connections and noting frictions between disciplines, as with her describing the difference between her understanding of embodied experience and roboticists' concept of "embodied intelligence" (34). While she acknowledges that some examples of early robotics research are dated due to the accelerated rate of the robotics field at large, her reflections remain conceptually relevant and reveal the complexity of human movement.

In later sections, Newton turns to case studies that demonstrate wide-ranging views of embodiment, notably the story of Ian Waterman, a man who lost kinesthetic and proprioceptive nerve function. Through this case, she examines body schema, visual compensation, and perception scientist David Lee's concept of "ex-proprioception" – perception through external reference points (180). This discussion exemplifies Newton's expansive research style and gift for weaving science, philosophy, and narrative, reminding readers how deeply intertwined sensory systems are in shaping our sense of self and world.

Each chapter includes boxed sections titled *embodiments* – simple, practice-based invitations for readers to synthesize and experience the chapter's ideas. These subtle, inquiry-based movement prompts are characteristic of Rolf Movement: not prescriptive exercises but questions posed through the body. For somatics practitioners, they offer both new and familiar territory while elegantly connecting sensory experience to theory.

The breadth of this book is stimulating but occasionally unwieldy – a nomadic exploration through varied and overlapping subjects. It's a book to wander through rather than master. Readers must release expectations of a singular takeaway and instead engage with its swirl of interconnected ideas. Readers outside the somatic disciplines might experience it differently, but for bodyworkers and educators, the cross-disciplinary scope is invigorating and much-needed.

Reimagining the Body (2025) offers a vast, imaginative field of inquiry that refuses reduction. Newton's research is particularly exciting and resonant for me, an educator at a small liberal arts college, for its exquisite demonstration of interdisciplinarity and nomadic thinking. It is anecdotal, personal, and expansive – a book to sit with, to wander through, and to be changed by. Newton's personal anecdotes – especially those describing her own transformation through Godard's exercises – underscore her belief that change is always possible. As she writes, somatic work invites us to "renew rather than repeat" (201). For a related interview with Aline Newton and Rebecca Carli-Mills, see page 29.

References

Newton, Aline with Carli Mills, Rebecca. 2025. *Reimagining the Body: Somatic Practice, Embodiment, and the Science of Movement.* Great Britain: Handspring Publishing. ■

Institute News

Dr. Ida Rolf Institute® USA Unlocks *New Space, New Possibilities*

At 450 Courtney Way, in Lafayette, Colorado

After years of building community in our beloved city of Boulder, Colorado, the Dr. Ida Rolf Institute is thrilled to announce we have successfully relocated our operations to a brand-new facility at 450 Courtney Way. This move marks the start of an exciting new chapter, opening up *New Space, New Possibilities* for our team and the community we serve.

The relocation, a strategic step to accommodate our growth and expand our offerings, provides us with a more modern and accessible hub. This new facility will allow us to host larger workshops and it fully equipped, ready to inspire our continued mission.

- To provide more classroom space for our students.
- To be in an area with affordable housing and amenities for our community.
- To optimize our facility and administrative space.

While we cherish the memories made in Boulder, we are eager to root ourselves in this new location and continue fostering our mission.

For further updates on our programs and progress, please visit https://www.rolf.org/450_courtney_way.php.

European Rolfing® Association e.V. (ERA) News

The ERA has welcomed a new *Executive Director*. In September 2025, Sylvia Schleghuber joined the organisation to lead the Dr. Ida Rolf Institute® Europe. With her background in international marketing and a strong interest in health and fascia, she brings fresh strategic focus to the association's educational and community-oriented work.
Her appointment has been warmly received across Europe, and the ERA looks forward to advancing its mission under her leadership.

Rolfers® across Europe are preparing for the *Explore Rolfing® Days*, taking place from May 16th to May 21st, 2026. This Europe-wide initiative invites practitioners to open their practices, collaborate with colleagues in their region, and offer a variety of in-person or online activities to introduce Rolfing® Structural Integration to their local communities. The week aims to strengthen visibility, foster connection, and honor the legacy of Dr. Ida P. Rolf (1896-1979) through accessible, community-centered events. This initiative offers practitioners across Europe a meaningful opportunity to share the method we all cherish – and to strengthen the sense of connection that unites our worldwise community.

Course Listings

2026 & 2027 USA Rolfing® SI Certification Training Programs

Start Date	Location
March 16th, 2026	Lafayette, CO
April 9th, 2026	Atlanta, GA
August 10th, 2026	Lafayette, CO
March 5th, 2027	Lafayette, CO
August 9th, 2027	Lafayette, CO

2026 USA Advanced Rolfing Certification Training*

Start Date	Location	Instructors
June 8th, 2026	Lafayette, CO	Russell Stolzoff and Kevin McCoy

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2026 USA Continuing Education Classes*

March 5, 2026 to March 11, 2026
Lafayette, Colorado
Structure, Function, Energetic Taxonomy:Integration Beyond Anatomy
Instructors: Ray McCall and Hiroyoshi Tahata

March 21, 2026 to March 23, 2026
Lafayette, Colorado
The Mediastinum, Respiratory System, and Hands/Arms: A Visceral and Deep Fascial Approach to an Upper Girdle Session
Instructor: Kevin McCoy

May 1, 2026 to May 3, 2026
Lafayette, Colorado
Spinal Biomechanics: Scoliosis
Instructor: Russell Stolzoff

June 27, 2026 to July 9, 2026
Lafayette, Colorado
Rolf Movement Integration: The Ten Series as Skills of Perception and Coordination
Instructors: Kevin Frank and Caryn McHose

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* All USA classes can be found at https://rolf.org/courses

The Dr. Ida Rolf Institute® is committed to cultivating academic growth and therapeutic skills in all of its graduates. Continuing education studies can cover a broad range of relevant subjects. Certified Rolfers® may take workshops in specific manipulative techniques or may explore other related subjects such as craniosacral therapy or visceral manipulation. Classes are continually being added – please visit www.rolf.org/courses for the most recent updates or to register.

2026 & 2027 ERA Rolfing® SI Certification Training

For more information about ERA Courses, including ERA Level 2, Level 3, and supervision courses, see https://rolfing.org/find-a-course.

ERA Level 1 Trainings

Start Date	Language	Location	Instructors
January 16, 2026	Italian	Bologna, Italy	Nicola Carofiglio, Pierpaola Volpones, Rita Geirola
March 12, 2026	English	Munich, Germany	Nicola Carofiglio, Konrad Obermeier, Rita Geirola, Andrea Clusen, Pierpaola Volpones
September 10, 2026	English	Stockholm, Sweden	Rita Geirola, Thomas Sonnleitner, Andrea Clusen, Pierpaola Volpones, Konrad Obermeier
October 23, 2026	German	Munich, Germany	Nicola Carofiglio, Andrea Clusen, Thomas Sonnleitner

ERA Advanced Rolfing Training

Start Date	Location	Instructors
August 5, 2026 (English)	Munich, Germany	Pierpaola Volpones, France Hatt-Arnold

ERA Rolf Movement® Training

Start Date	Language	Location	Instructors
February 11, 2026	English	Munich, Germany	Rita Geirola
October 14, 2026	English	Munich, Germany	Rita Geirola
March 3, 2027	English	Munich, Germany	France Hatt-Arnold
July 28, 2027	English	Munich, Germany	Pierpaola Volpones

ERA Continuing Education

Start Date	Language	Location	Instructors
May 2, 2026	English	Munich, Germany	Hubert Ritter
Navigating the structural puzzle: A roadmap to integration			
June 5, 2026	English	Munich, Germany	Rita Geirola
Closing the session: "Integrating into Gravity"			
September 23, 2026	English	Innsbruck, Austria	Pierpaola Volpones
Pelvis, thorax, and the art of balance the breath that supports, the foundation that moves			
September 23, 2026	English	Innsbruck, Austria	Dr. Phil. Peter Schwind
The inner shape of the cranium: Its relations to the cavities of the trunk and its dynamic interaction with the dura mater spinalis and the spinal cord.			
September 27, 2026	English	Innsbruck, Austria	Russell Stolzoff
Advanced Rolfing strategies for working with athletes			

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