The Oscillatory Properties of the Structural Body

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"All this metaphysics is fine, but be mighty sure you've got physics under the metaphysics."

Dr. Ida P. Rolf[1]

When we look in awe at the grace of a gazelle in flight, the poise of a hovering eagle, the stupendous leap of a cat, or the accomplished performance of an athlete or dancer, we are witnessing an extraordinary efficiency of movement. When we see the poise of many traditional peoples, perhaps carrying huge loads upon their heads, we are seeing the extraordinary mastery of an everyday movement. When we see the delicate mouldings of a master potter, the deftness of a skilled chef, the command of a skilled artist 'breathing' lines onto paper.... or when we see the focused mastery of an accomplished martial artist totally committing herself to the execution of a technique, we are seeing the kind of efficiency in which there is no unnecessary muscular action - neither too much nor too little energy is spent; nothing detracts from the coordinated action of the whole.

We who work in the somatic field often develop this deep appreciation of the aesthetic in movement and wish this inherent grace and efficiency both for ourselves and for our clients. As Structural Integration (SI) practitioners, we have long noticed that as our work unfolds - as we free up our clients' soft-tissue restrictions and lead them towards more awareness of the quality of their movement - their movements become more fluid and generous; there can be more poise, rhythm and balance in their movement, which inevitably means that there will be less stress upon their bodies. Encouraging this kind of efficiency and harmony in movement is one of the chief aims of many forms of somatic work.

In this article I will outline a theme of personal enquiry that I have been conducting in an ad hoc fashion for many years, and it is around the idea of efficient, elegant movement and all that this entails: how to *see* it in my client's movements and how to *evoke* it within my clients if I find it lacking. For context, it will also be necessary to clarify at length some of the central concepts of SI, including the meaning of *structure, function, tensegrity,* plus some ideas about *hydraulics.* I will also touch upon various approaches to movement, postural and proprioceptive training and other embodiment techniques that traditionally belong to the Structural Integrator's art. All such movement approaches have the essential purpose of helping us to draw out *new movement possibilities* of our clients, which have become *potential* because of our structural interventions. I will suggest that, along with these movement techniques, we can fruitfully draw upon the 'rocking', oscillatory techniques usually associated with the Trager tradition.

I will flesh out a number of important premises:

In studying the many dimensions of the human structure, it is useful for SI practitioners to be able to 'see' what we might call the 'structural body' - an abstract (and relatively low) level in our overall somatic organizational level that is most appropriately described through Newtonian mechanics[2]

The 'structural body' consists of the fascial-skeletal-hydraulic tensegrity complex as a whole.

The 'structural body' is that which we, as Structural Integrators, attempt to integrate.

The 'structural body' has static attributes; it bears within it the basic pattern of tensile fascial constraints that affect the efficiency of our standing posture in gravity.

However, the 'structural body' also has dynamic attributes; it has the potential for certain rhythmic or oscillatory movement patterns that arise from its elastic, hydraulic and tensegrity properties.

These rhythmic movement patterns are independent of muscle activity.

However:

These inherent rhythmic movement patterns may be either reinforced or inhibited by muscle action.

If reinforced, the resulting movement will be efficient and elegant.

If inhibited, the resulting movement will be inefficient, constrained and inelegant.

Therefore, if our clients do not exhibit these rhythmic movement patterns, then they are probably being dampened or suppressed by a form of 'higher order' neuromuscular control perhaps a generalized condition of excessive tonus or through specific, learned forms of co-contraction, conditions which are often referred to as 'holding patterns'.

Before getting overly theoretical, it may be useful to provide a practical illustration of these basic ideas. Let us consider for a moment two styles of dancing, Brazilian and traditional Irish. There is a sensual undulating quality to much Brazilian dance and a certain stately rigidity in Irish dance. I am thinking particularly of *Riverdance*, that wonderful Irish dance spectacular; and as exciting as I found *Riverdance* as a spectacle, I did wonder what damage the dancers were doing to their bodies by leaping around with such rigidly-held trunks. One suspects a lot of unnecessary wear and tear to the body, and of the joints in particular, a kind of wear and tear I do not associate with Brazilian dance. Brazilian dance allows the essential undulations of the hips to emerge easily; in Irish dance *these natural undulations are suppressed,* probably through a major co-contraction of the trunk flexors and extensors along with the hip AB- and ADductors. I strongly suspect that it would take more energy to suppress these natural undulations than to allow them to be freely expressed.

In order to explore these inherent undulatory movement patterns more deeply it will be helpful first to clarify what we mean in SI by *structure* and to examine both its static and oscillatory properties.

What is structure?

This is an absolutely essential question for SI practitioners; exactly what is it that we are attempting to integrate? Ida Rolf herself speaks of *structure* a great deal, sometimes suggesting it is the spatial relationship between the body's major segments as seen in 'the little boy logo' (see figure 1), and sometimes suggesting it is the unified wholeness of the connective tissue network[3], and of course the concept of *structure* is large enough to accommodate both of these attributes, and others besides. She certainly wished to differentiate *structure* from *standing posture,* implying that posture is a functional response of our sensory-motor intelligence as it attempts to stabilize our structure within the field of gravity. In her own words:

> *"It's rare to find a person with structural integrity, a body stacked properly with respect to gravity, free to move ...Mind. I'm not talking about posture. I'm talking about structure. Posture is holding your structure as well as you can. When the structure is properly balanced, good posture is natural. A man slouches not because he has a bad habit but because his structure doesn't make it easy for him not to slouch. Structure implies the relationship of parts and it implies gravity ... We know about gravity in architecture. We know that buildings show strain to the degree that they deviate from an optimal relation to gravitational pulls. In buildings we recognize the origins of these strains but in bodies we don't."*
>
> R. Gustaitis[4]

Here, she also implies that standing posture is a function that can be *more or less efficient* depending on the overall pattern of structural imbalances - imbalances that must be countered through muscular activity at every moment.

In her book, Rolf further offers a 'blocks in a sack' model of structure, which portrays the body as an organization of segments enclosed within an elastic, investing envelope (see figure 2). This model emphasizes the structural importance of the superficial and deep fascial layers, and seems to anticipate the concept of *tensegrity* as an essential aspect of structure - an idea that lately has had growing currency within the SI community, and which recently has been quite extensively explored.[5,6]

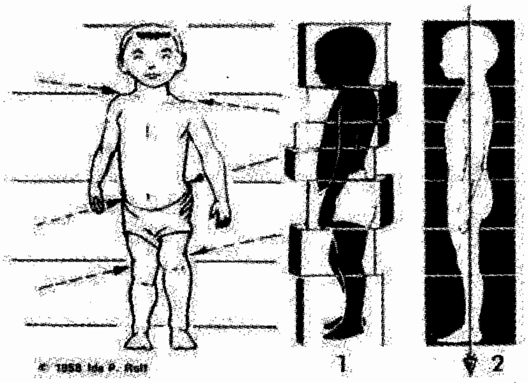


Figure 1: ***The 'little boy' logo showing segmental organization around the 'Line'***

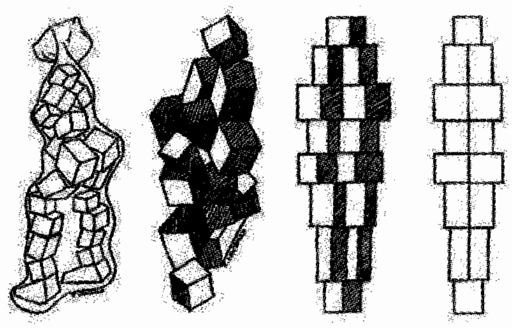


Figure 2:
The 'blocks in a sack' model (from Rolf 1978) [2]

Some thought experiments about structure

Many thinkers in the field of SI have devised thought experiments to help us focus on various aspects of our somatic reality. Tom Myers in his *Anatomy Trains* makes one such thought experiment in which he asks what kinds of everyday materials could be used to create something that behaves like a human body: PVC piping, rubber tubing, cling-wrap, plastic bags and duct tape were some of the materials he suggests as having close similarities to actual materials within the human body.[7] He also suggests servo-motors in place of muscles and an (Apple®!!!) computer to provide the intelligent coordination of the whole (obviously a MS environment would eventually lead to coordination problems!). I would like to play with this thought experiment a little further and suggest that in order to create something that behaves *passively* like a human body you would need only three basic ingredients:

Some strut-like material (that is strong in compression) to model bones,
An elastic membranous material (that is strong in tension) to model fascia, ligaments, capsules, tendons etc, and
A thick gelatinous material to model the semi-liquid contents of cavities and organs (including relaxed muscles).

These three basic materials are all that would be needed to create something that behaves like a body at rest - a body with its neuromuscular system turned off (and, I would also suggest, a body that has many of the attributes of a tensegrity structure). Such a body would have a definite structure but would be inert - unable to move of itself. To move it would need to be animated by the equivalent of a neuromuscular system - various kinds of sensors and computer-controlled servo-motors.

This thought experiment immediately emphasizes two abstract levels within our overall somatic organization: a structural level that has mechanical properties, and a functional level that is needed to animate the more passive structural level of yin and yang of our structural reality.

I will now quote at length another series of thought experiments from my own book.[8] I acknowledge that what follows is not original; many SI practitioners have used similar images to express the unitary nature of the connective tissue network.

"Imagine that by some miraculous intervention we could dissolve away all materials from the human body except the fascia; what would remain would be a perfect representation of the human form with spaces to represent all the muscles, bones, organs and cavities of the body. However, this fascial spectre could not last a moment the relentless force of gravity would instantly act, and like a tent without poles, it would slump to the floor in a random heap. (Here we are using the word fascia in its broadest sense to mean all of the binding connective tissues: myofascia, aponeuroses and tendons, ligaments, synovial capsules and even the periosteum of bones.)

If we could repeat the experiment, but this time dissolving away everything except the bones, then what would momentarily remain would be a skeleton, followed by the clattering of a disarticulated and jumbled heap of bones there being nothing to bind the bones together or maintain their normal spatial configuration.

But if in a third experiment, we could dissolve away all the materials except the fascia AND the bones, then what would remain would still retain a recognizably human form would still remain an integrated and coherent whole and this despite the fact that it would be collapsed and unresponsive. Like the fabric of the tent, it is the fascia, ligaments and other connective tissues that maintain the appropriate relationship between the bones maintaining an appropriate spacing and span. It is fascia that creates the unified skeleton. It takes the integrated properties of the fascial and skeletal systems to create a true tensegrity structure. But like all tensegrity structures it would be relatively inert, relatively static; it would be internally stable but would respond only to externally applied forces, particularly gravity, and would be unable to initiate movement from within itself a body with structural integrity but which cannot move of itself a body with its neuromuscular system turned off."

I wish now to refine the concept of structure by introducing what for me is a much more useful concept the 'structural body' and to examine its static and dynamic properties. I am particularly indebted to the work of Dr Hans Flury in clarifying the concept of structure and its corollary 'the structural body'.[9] Flury has been one of the foremost thinkers in helping to clarify the meaning of many of the central concepts in the field of SI. Of *structure* he says:

"Structure is the spatial arrangement of all the parts of the body, determined primarily by the fascial net, as it manifests in the absence of any muscle activity in the body and with no outside forces acting on the body. This spatial arrangement can be called the "structural body". It is evident that we can never see the structural body directly because there always exists muscle activity in the body, and outside forces are always acting on the body."

H. Flury[2]

He is suggesting that in order to 'see' the structural body we would need to abstract away the two chief forces that act upon human structure: gravity and muscular tonus. However I would suggest that, even with this definition of structure, we *could* see the structural body quite clearly provided we could somehow remove these two forces, i.e., remove all muscular tension and the influence of gravity but it would be under the rather rare set of conditions of floating around in outer space under general anesthesia! This is not in fact a fanciful suggestion: a human body under such conditions would surely 'give in' to all its internal structural tensions and would assume a form that reflected its true structure (see figure 3).

Would a body tend to flex as a whole, or extend as a whole under these conditions? In any case, such conditions would surely reveal the internal 'pulls' within the structure *that would need to be balanced by muscular tension* when in gravity and in full function.

However, Flury's definition of structure could be expanded to include two other important aspects of structure: tensegrity dynamics and fluid mechanics (or hydraulics).

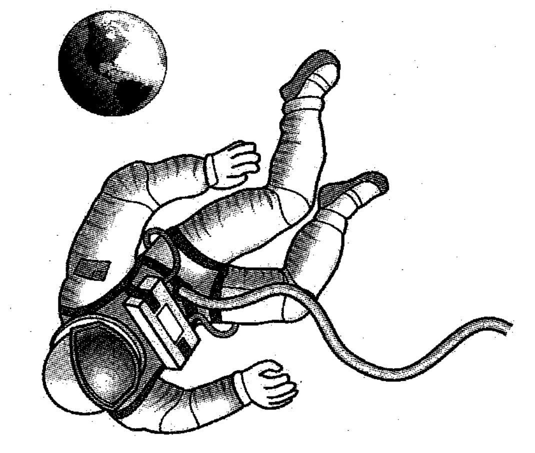


Figure 3:
An anaesthetized spaceman (from Smith 2005) [8]

Tensegrity: continuous tension and local compression

Buckminster Fuller is said to have first coined the word tensegrity (from tensional integrity) to describe a design principle for creating integrated lightweight structures of great stability. Tensegrity structures are different in principle from the traditional columnar structures that employ a 'ground up' stacking of compressive elements; instead they rely on strategically spaced struts suspended within a web of tensile cables or sheets- islands of compression within an ocean of tension. Tensegrity structures combine these two kinds of structural element such that they mutually balance their tensile and compressive forces, thereby producing a highly stable structure (see figure 4). One remarkable property of a tensegrity system is that if an external force disturbs its internal equilibrium, it will yield by distributing the stresses evenly throughout the whole system the workload is spread among all the elements. This could be a great design advantage for an organism - a system that by its very nature tends to avoid over-stressing any one part.

Some aspects of the human structure can perhaps be best understood as conforming to the tensegrity dynamic. Our bones can act as compressional elements, while the fascial sheaths, tendons and ligaments can act as the tensional elements. Together they ensure the structural integrity of the whole. Taut fascia serves to maintain appropriate spatial relationships between the skeletal elements. If we could turn off the tonus of the muscle fibres entirely we would be left with a true tensegrity structure - bones organized into a skeleton by the spanning fascia.

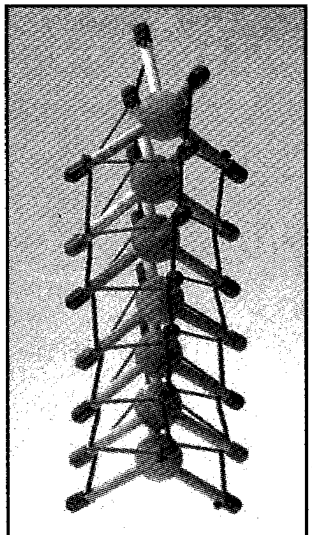


Figure 4:
A tensegrity structure 'Tetrahedral Vertebral Mast' (Tom Flemons) [10]

The tensegrity principle is thus vital to our understanding of structure; however we still need to account for the hydraulic aspects of our material reality.

Fluid mechanics

We are composed mostly of water, and much of our structure consists of *fluid-filled balloons (or hydraulic bags)*. Our bodies contain many balloons - fascial bags filled with gels: our muscles within their endomyseal sheaths (an 'electrogel' according to Deanne Juhan[12]), the abdominal viscera within the peritoneum, the liver and kidneys within their fibrous capsules and the heart within its fibrous pericardium. Indeed, our entire organism is enclosed within the embrace of the superficial and deep fasciae. We are indeed 'bags inside bags inside bags'.

The structural integrity of a hydraulic bag arises from the interaction between the compressive tendency of the surrounding sheath and the tendency for the fluid contents to resist compression. It may seem as if a hydraulic bag is just another kind of tensegrity structure, after all it does have both tensile and compressive elements - the elastic skin under tension compressing the fluid contents which with equal force resist that compression; indeed Buckminster Fuller himself regarded the balloon as the mathematical limit of a tensegrity structure. However a hydraulic bag does not behave like a true tensegrity structure, particularly in how it responds to externally applied pressure.[11] Such pressure will cause a displacement of the fluid contents away from where the pressure is applied. If we take for instance the abdominal cavity; the viscera are contained within a fascial bag, the peritoneum. A contraction of the transversus abdominis (a valsalva manoeuvre) will both reshape and firm up the peritoneal bag in a way that can actually lift the thorax above, and stiffen the spine - an action which nowadays is usually called 'core support'. Some tonus in the abdominals is also necessary under certain circumstances to prevent the semi-liquid viscera from 'sloshing around' too much during strong activity.

It should be stressed that the fascia that creates a tensegrity structure with the skeleton is *the selfsame fascia* that also encases the hydraulic balloons within the body; it is all 'the one fascia'.

The structural body the functional body

Extending Flury's definition, we

can now summarize what we mean by the *structural body*:

The structural body is the spatial arrangement of all the parts of the body, determined by:

the 'tensegritous' relationship between the fascial net and the skeleton, and
the hydraulic behaviour of its component fascial balloons as it manifests in the absence of muscle activity in the body and with no outside forces acting on the body.

The structural body is just one aspect of our material reality and relatively low level in our overall somatic organization. Yet it is a level that has its own set of laws - it being responsive in a mechanical and elastic sense. Of course the structural body works in conjunction with the neuromuscular system, or it would be more accurate to say that it is worked by the neuromuscular system. It is the yin of our structural reality; the neuromuscular system is its yang.

Thus, within the context of gravity:

Functional body = Structural body + neuromuscular coordination

This formula defines the central focus for the work of Structural Integrators; we work on the structural body to improve function, (and, as an interesting parallel, functional integrators such as Feldenkrais practitioners take neuromuscular coordination as their central focus.)

All of our movements are ultimately initiated and ruled by the central nervous system (CNS), but our somatic organization has many levels, and although the higher organizing functions of cortical processes are at the top, the movement patterns they initiate are necessarily conditioned by what the structural body will allow in real time. Our structural body is highly innervated and densely populated with many kinds of mechanoreceptors, and this provides the CNS with a great deal of information about its current state. Through this, our sensory-motor intelligence is constantly making choices about what is economical in movement, what is pleasurable, what will not cause pain, and will usually take the path of least resistance. And the path of least resistance is defined to a great extent by our structural body; it has a major influence on what is economical in movement and will condition and temper greatly how we move; it is a constant, underlying, unconscious determinant of our movement patterns.

Seeing the structural body

As SI practitioners we traditionally assess our clients by looking at:

how they stand (the 'Line')
how they walk (the 'Line' in motion)
how they feel when we palpate them

We observe their standing posture to get some idea of the tensile structure of structural body which areas are short and need to be opened. In the Rolfing community we have the brilliant work of Jan Sultan and Hans Flury to assist us in gaining a perspective on the static organization around the 'Line', the internal/external model.

We also observe how our clients walk, again to gain insight into which areas of the structure do not move or do not transmit movement well. I believe that part of what we do when we assess our clients' gait patterns is to note the presence or absence of key oscillatory patterns within the structural body. As was said earlier, the structural body has both static and dynamic qualities. In a stationary body we look for the pattern of fascial tensions which determine the efficiency of our standing posture. But a body in movement has an inherent tendency to move in an oscillatory manner. It embodies rhythm. We will now look more closely at the inherent rhythmic qualities of the structural body.

Fascia as an antagonist

Early biomechanical research tended to view movement purely in terms of the coordinated action of antagonistic or synergistic muscle groups. The elastic behaviour of its component fascia was ignored (just as earlier anatomists tended to ignore fascia in their dissections). But fascia now is seen as an antagonist to muscular action, and movement is seen less as the coordinated action of antagonistic muscles and more in terms of the elastic and oscillatory properties of the myofascial network as a whole. In this view of rhythmic movement, muscular action works primarily to maintain oscillatory patterns with an occasional and timely input of energy each movement cycle.[13,14]

Vertebrate biomechanics has demonstrated the many ways in which animals employ the springiness of their connective tissues in hopping, walking, running and swimming. Animals have found some very efficient ways of recycling some of the energy of movement through their connective tissues in a cyclic dance of exchanging potential and kinetic energies.[15,16]

All elastic structures have their own resonant frequencies - even such complex entities as the human structural body. Recall the anaesthetized spaceman (figure 3); this is the pure structural body, a body with no muscular activity and with no external forces acting on it. A body in this unusual condition could be induced to undulate in various ways: flexion/extension, lateral flexion and transverse undulation around the long axis of the body, and the actual frequency of these undulations would be quite specific to the mass and proportions of the body as well as the tensile structure of the fasciae of that body. Of course this would change in gravity and would be quite variable depending on the added tensions of muscle activity, however it may be surmised that being able to 'tune in' to the inherent rhythmic qualities of one's body would greatly assist in movement efficiency. This may be seen in efficient distance runners for example: once they have accelerated to cruising speed, many of their muscles merely flicker each gait cycle. The whole fascial tensegrity complex has its own natural frequency of oscillation and once the rhythm is established it only takes a little input of energy each cycle to keep it going.

This view has been supported by some interesting research into Kenyan female porters[17] which demonstrated their extraordinary efficiency in carrying weight on their heads, while barely increasing their oxygen uptake. Samuel concludes that this ability arises not through muscular strength but through the women's use of the inherent periodicity of walking, the pendular motion of their hips in the frontal plane. Interestingly Samuel describes the energy-saving principle of this kind of gait in terms of the old-fashioned pendulum clock - once the initial momentum is given to the pendulum, it only takes a tiny tweak each swing cycle (supplied by a pre-wound spring) to maintain the motion and to overcome the slight loss of energy through friction.

These undulatory movement patterns are independent of muscular activity

Let us now look at some of the different kinds of oscillatory movement that are inherent in the structural body movement that requires no muscle contraction in order to operate once an initial impulse of energy has been supplied to the system. Figure 5 shows just a few oscillatory systems that have very close parallels to the behavior of the structural body. It can be seen that during gait our arms and legs behave as compound pendulums. The counter-rotation of the shoulder girdle against the pelvic girdle during gait is a kind of torsional pendulum. In each case the momentum of one phase of the movement is conserved as potential or elastic energy, then recycled into the following movement. Very little muscle energy is needed each cycle to maintain the rhythm.

The spinal engine

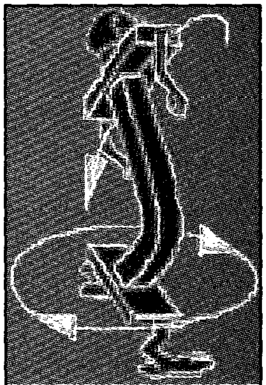


Figure 6:
'Lovett's Law' in action (from Templier)[18]

Gracovetsky, in his book *The Spinal Engine,* suggests that the spine, not the legs, is the major motivating force for powering our gait. The spine coupled with the pelvis has a complex motion that has elements of flexion/extension, side flexion/extension and rotation; these motions combine into a complex motion that actually forms the basis of efficient walking - even the motion of legs is partly driven by this complex motion,[12] a motion that is sometimes described as a 'Moebius motion' in SI movement classes. Gracovetsky cites the earlier work of Lovett who discovered that a spine has the same mechanical properties of any other kind of flexible rod studied in physics (even after the vertebral arch with the facets were removed). Three kinds of distorting forces can be applied to a rod: front/back flexion, left/right flexion and torsion (twisting through the length of the rod). Any two of these forces applied simultaneously to a rod will automatically induce the third kind of distortion to the rod. So our lumbar spine, through its lordosis, is pre-curved in the sagittal plane. If side flexion is added to this (as occurs naturally when our weight shifts from leg to leg each gait cycle), then a rotational tendency will be induced in the pelvis automatically (see figure 6). This is an example of an undulatory movement pattern that is inherent in our structure, and if it is absent then it is being suppressed muscularly.

Instead of trying to give a comprehensive

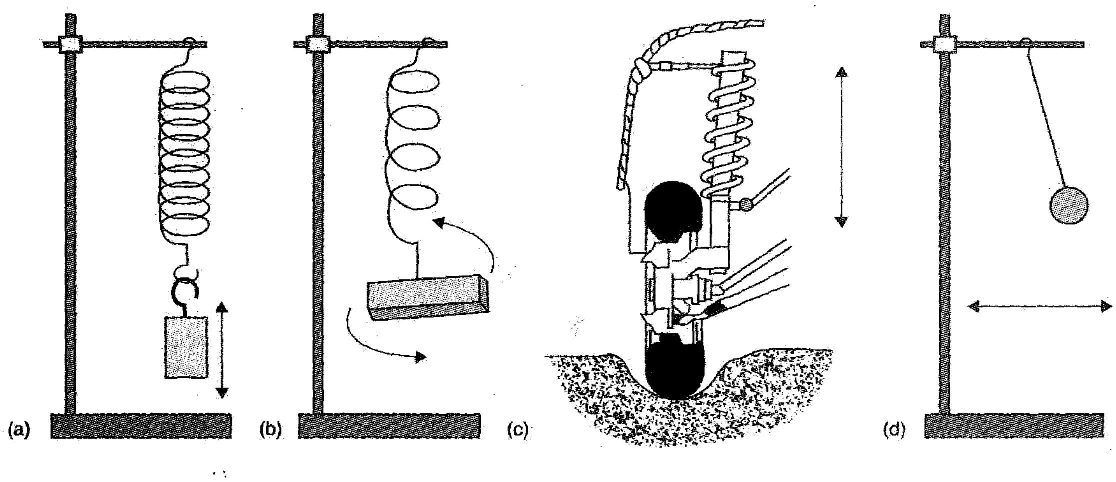


Figure 5:
The oscillatory properties of elastic structures that have close parallels with the human structural body: a) a spring in tension, b)a torsional pendulum, c) a spring in compression, and d) a pendulum (from Smith 2005)[8]

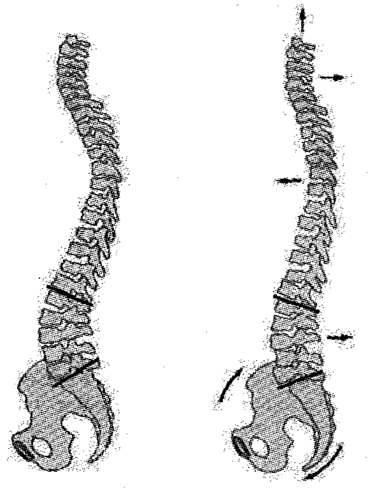


Figure 7: ***Sagittal undulation (from Smith 2005)*[8]**

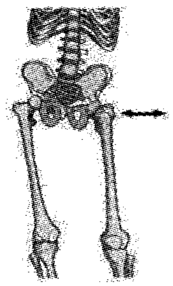


Figure 8a: ***Lateral sway of the pelvis in gait in the frontal plane (from Smith 2005)*[8]**

Figure 8b: ***Lateral undulation in the frontal plane (from Smith 2005)*[8]**

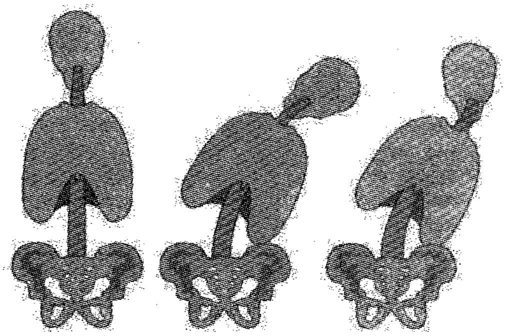
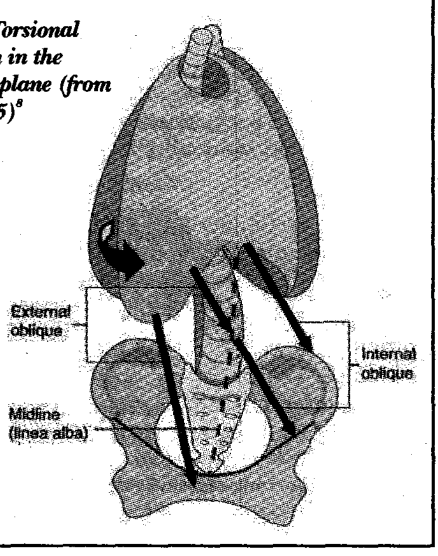


Figure 9: ***Torsional undulation in the transverse plane (from Smith 2005)*[8]**



description of all the kinds of oscillatory patterns available to our structural body, I will limit the discussion to a few patterns associated with gait. There are three main kinds of pelvic undulation that are inherent in efficient walking:

a rocking in the sagittal plane (see figure 7)

the lateral sway of the pelvis in the frontal plane (see figures 8a and 8b)

the counter-rotation of the shoulder and pelvic girdles in the transverse plane - a slight twisting and untwisting through the longitudinal axis of the body (see figure 9),

and they blend together into a complex motion that is unique for different individuals.

Different individuals (and indeed different cultures) exhibit a different 'mix' of these three basic undulations. So the presence or absence of any of these motions can be somewhat of a 'diagnostic', and can suggest where structural restrictions may be found. From my own experience, the lack of any of these undulations correlate well with fibrotic restrictions in specific fascial 'lines' or 'planes'; thus by noting which movements are absent in my clients' gaits I have some idea of which fascial lines are likely to be compromised.

I will make use of some of Myers' lines to illustrate this point. If we find the absence of a lateral sway of the pelvis in gait (see figure 8a), *then it is being suppressed somewhere within the lateral line* (see figure 10). It is highly likely in this case that the iliotibial tract will be quite fibrotic, and it might be further surmised that any increased fibrosis here may be due to the increased strain through the lateral line that arises from the hip abductors as they *oppose* the lateral sway of the pelvis during gait.

Similarly, if we were to find an absence of a sagittal rocking of the pelvis in gait then we would look to restrictions in the superficial front and back lines (see figures 11 and 12), and probably also the deep front line.

And if torsional undulation was lacking in gait, then it would be sensible to look for restrictions in the spiral lines and functional lines (see figures 13 and 14). I would also expect that if the habit or suppressing of the counter-rotation of the girdles had been long-standing then restrictions would also be found at a deeper, perhaps even ligamentous level, in the thoracic spine.

Practical implications

If these inherent rhythmic movement patterns are lacking then it is because they are being dampened or suppressed by a form of 'higher order' neuromuscular control. The pedagogical implication of this is obvious: regaining these movement possibilities is a process of *allowing*, of giving up the tendency to over-control; it is *not* through the targeted learning of a new pattern of coordination. Ideokinetic

Figure 10: ***Lateral line (from Myers 2001)***[7]

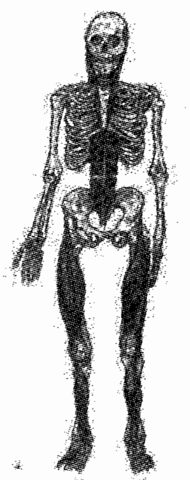


Figure 11: ***Superficial front line (from Myers 2001)***[7]

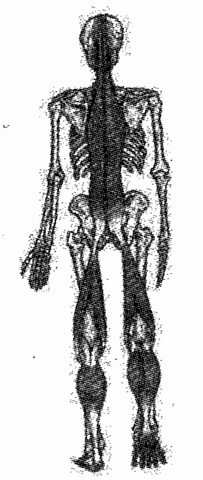


Figure 12: ***Superficial back line (from Myers 2001)***[7]

Figure 13: ***Spiral line (from Myers 2001)***[7]

Figure 14: ***Functional line (from Myers 2001)***[7]

suggestions will help; repatterning approaches probably will not. We need to help our clients to listen more carefully to the inherent rhythmicity of their structure and to discover the minimum input from the muscular system necessary to maintain the movement.

The SI community has developed various forms of movement work to help clients make that vital transition from structural change to a higher order of functionality. To this technical repertoire may be added certain techniques from the Trager tradition that feed directly into the inherent oscillatory properties of the 'structural body' that sensitize it and assist in allowing new, more efficient undulatory movement to emerge.

As in all SI work, progress is made first by freeing up fascial restrictions and then performing some kind of movement integration work; working to enhance these inherent undulatory patterns is no different. First the associated fascial restrictions need to be eased and then it is highly likely that some form of movement education needs to be performed (unless your client is one of those rare individuals that 'get it' straight away, just from your structural interventions alone.)

Personally, I have found my cross-training in the Trager work invaluable in this regard. Trager work has a huge stock of techniques in which the client's body is rocked or oscillated in specific ways, while the client is reminded to 'allow' and not control the movement. These techniques I weave into the normal course of my SI sessions. This work is a form of kinesthetic feeding - giving a homeopathic dose of this movement you wish to evoke, which clients can later sense and explore in standing and walking.

So if we take the traditional 10-series, then it is quite natural to explore different kinds of undulation at different stages of the work. I often explore lateral undulation in the 3^{rd} hour and sagittal undulation in the 5^{th} and 6^{th} hours, while sessions 8 and 9 are ideal for exploring torsional undulation.

Conclusion

In this paper I have explored and expanded the concept of *structure* in a way that I believe has very practical applications. As SI practitioners we have all undertaken a form of perceptual training - of discerning patterns of restriction hidden within the flesh. Some have also undertaken various movement trainings and have similarly learned new ways of looking at bodies in motion in order to uncover the same soft tissue restrictions. I am suggesting that one way of looking at bodies in motion is to note the presence or absence of specific undulatory patterns that are inherent in our structure. A lack of specific kinds of undulation can then be addressed myofascially and then evoked by proprioceptive techniques such as those from the Trager tradition.

Endnotes

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