

Ask the Movement Faculty

The Feet in a Functional View of the Body

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Q *I've noticed that many clients lack a sense of presence in their feet. Their tissue is hard and unresponsive, there is little differentiation of the bones in the midtarsal region, and they either feel pain or don't feel anything when I work on their feet. Often when I am working, they tend to space out. Are there any movement exercises that you can suggest to help this?*

A When the client has difficulty being present in his feet, working with his awareness is often a necessary component of the Rolfing series. First, I'll give a few words about the feet in a functional view of the body. Practical suggestions are offered in the latter part of the column.

The Feet and the Body Map

When the client's feet have hard, slick plantar fascia and little movement between the bones of the midtarsal and subtalar regions, often what we are seeing, at a functional level, is a lack of differentiation



in the client's body map – the way that he senses and conceives of his own feet. Recent studies with the brain have shown that the sensory homunculus in the parietal lobe, the place where the primary sensory map of the body resides, is so plastic that it can modify the way that it maps any part of the body in less than a week's time.¹

What does this mean for our purposes? When we, in our movement, stop feeling and moving each of those little bones in the feet as separate entities, they can very quickly become fused into one structure in the way that our nervous system represents them to our body. This, in turn, will lead to less differentiated information to draw upon when we move, and thus to less capability to feel and move each bone individually. This is the functional component of those tough hard-to-work-on feet.

This lack of movement and perception of movement can come from many sources: from injury, from emotional trauma, from shoes with soles that don't allow the foot to move, from cultural images of what is beautiful and acceptable, to name only a few. Rolfing is most effective if the structural work to mobilize the bones is combined with some kind of perceptual work that helps the

client to feel and consciously use the new mobility (see below – Protocol to Change the Body Map of The Feet).

The Feet and the “Triangle of Balance”

The feet are an important part of the “triangle of balance,” the three functions that work together to help orient us to where we are in gravity: the eyes, the feet, and the vestibular system.² Our vestibular system tells us where the plumb line of gravity falls and where our head is in relationship to this plumb line. Our eyes supply us with visual information, and the baroreceptors (pressure receptors) on the soles of our feet give us information about where the ground is in relationship to the vestibular and visual information.

In experiments done with stimulation of the soles of the feet,³ it was found that when the pressure receptors on the front of the feet were stimulated, a posterior postural displacement resulted; likewise, when pressure receptors on the back of the foot were stimulated, the experimental subject adjusted his posture towards the front. When the lateral arch of the right foot was stimulated, a postural shift towards the left occurred and vice versa. Not only do the pressure receptors of our feet register and send information to our brain about where our weight is – they also set off an automatic adjustment in our posture. This further underlines the importance of proprioception in the feet as a component of good balance.

Ideally, these three functions of the “triangle” – the foot, the eyes and the vestibular system – work together smoothly and in harmony. No one of the three overpowers the other two. However, in real life, this is often not the case. In a culture where most of our time is spent in sedentary pursuits, walking on artificially flat hard surfaces, and wearing shoes that do not allow for adequate adjustment of our feet, the information from the feet often gets overlooked and deleted. Likewise, overuse of the focal function of our eyes inhibits the vestibular system.⁴ When the vestibular system is not working as well as it could, the body readies itself to fall. The body’s way of preparing itself for a fall is to tighten and brace in the hip and ankle joints. Diminished circulation through the ankle joints, because of vestibular-generated patterns of bracing, results in diminished function of the baroreceptors of the feet. If

we do not trust our feet, we will overuse our eyes to orient to where we are in gravity, again setting off a vicious cycle of imbalance through all three systems.

The feet are often the first to get lost when the “triangle of balance” becomes imbalanced. However, since compensation frequently occurs in the eyes, working with the soles of the feet often requires some work with the eyes as well. When feet and eyes find their balance, the vestibular system comes back on line (see below – Awareness Exercise: How Focus in the Eyes Affects the Feet and Balance).

The Well-functioning Foot and the Interosseous Membrane of the Lower Leg

When Ida Rolf talked about the “core” of the arms and legs, she was talking about a series of structures in the arms and legs that had a direct and profound effect on the sleeve structures and the visceral space. These structures are (among others) the intrinsic musculature of the hands and feet and the interosseous membranes of the forearm and the lower leg. As all of us have seen, again and again, that when the intrinsic musculature of hands and feet and the interosseous membranes open, the core opens also. Once again, there is an important functional component to this that helps our clients to maintain this opening and take it further in their daily lives.

When we use the intrinsic musculature of the soles of our feet, the interosseous membrane stays flexible and soft and allows differentiated movement between the fibula and the tibia (“breathing”) with each step we take. The intrinsic musculature of the foot is made up of all the muscles that have both origin and insertion in the foot. They are responsible for the tiny adjustments that our feet make to the ground, for movement between the bones of the foot. It is in the functioning of the intrinsic musculature of the foot that we have the experience of feeling the ground, touching and being touched by the ground. It is here that we experience the subtleties and nuances of how our weight transfers into the ground and how support and impulse transfer from the ground up into the body.

The extrinsic musculature of the foot originates in the lower leg. A quick look in an anatomy book will verify that all of the extrinsic muscles have some part of their origin on the interosseous membrane. The long flexor and extensor muscles of

the toes move and stabilize the toes. The “stirrup” muscles – the peroneals and the tibials – stabilize the arches. All of the long extrinsic muscles are also responsible for transmitting information from the foot, across the ankle, and up through the rest of the body.

Overuse of the extrinsic muscles of the foot and lower leg locks up the interosseous membrane. If the sole of the foot stops feeling the ground and stops making its thousands of tiny, subtle movements per day, the long muscles take over, and when they do, our interosseous membrane stops “breathing.” When the interosseous membrane stops breathing, our “core,” our visceral space, loses dimension, mobility and motility. (see below – Exploration to Differentiate Foot Intrinsic and Extrinsic in Movement).

Practical Suggestions and Exercises

Protocol to Change the Body Map of the Feet

When working with the foot, notice where movement doesn’t happen. As you work to mobilize the joints, call the client’s awareness to where you are working. As movement is restored, have the client move his foot, while you hold the bone that you mobilized and help him to feel how this bone articulates with, and moves differently from, the bones around it. The client’s awareness of, and presence with, the new quality of differentiation in movement is an essential element of this work.

There are several stages of this process.

- 1) With the client out of gravity (lying down): Once the bone is mobilized, have the client play with all four movements of the foot – dorsiflexion, plantar flexion, inversion and eversion – while you hold the bone and help him to feel how it moves in coordination and in differentiation from its neighbors.
- 2) With the client seated on the edge of the table: Have the client’s feet in contact with and sensing the floor and the joints of his legs comfortably aligned. Then ask him to lean forward and backward with his back straight, bending at the hip hinge. As he bends forward, the weight of his upper body should come down into his feet. As he returns to the vertical, the support of the floor will transmit through his feet and up into the lumbar. Here again, you work with the bones

that you mobilized with the client on the table, gently pressing each one to help him feel how it articulates with its neighbors as he moves. The touch here is more about educating and inviting awareness than it is about moving something. You are helping the client to own and begin to utilize the new differentiation and movement that he found.

- 3) Standing and doing shallow knee bends: You again return to the same theme. If he rocks back and forth across his ankles or does a shallow knee bend, how does each bone of his foot respond to the transfer of weight? Use your hands again, as necessary, to help the client really make this new sense of articulation his own.

**Awareness Exercise:
How the Focus in the Eyes
Affects the Feet and Balance**

With the client standing in a place where he has a wide field of vision and a big horizon, have him practice this contrast.

- Have him fix his eyes on a point in front of him with a hard, narrow focus. Ask him what happens to the distribution of the weight on his feet. If he is like most people, his weight will move more towards the medial arches.
- While the client holds this hard, narrow focus, push gently on his shoulder to help him feel how his balance is. Usually, when the gaze is narrow and tight, balance becomes rigid and easily disturbed.
- Now, invite the client to relax his eyes and allow his field of vision to become very wide and peripheral. How far to his sides can he see while still looking straight ahead? Can he allow the image to come to his eyes, instead of using his eyes to reach out for the image?
- Once the client has softened his gaze to access a more peripheral vision, have him notice if the weight on his feet shifted at all. Usually, it will shift towards the lateral arches.
- While the client maintains this softer, more peripheral vision, push gently on his shoulder to help him sense stability. Most frequently, what you and the client will discover is that

when his vision is peripheral, his balance is much more stable.

**Exploration to
Differentiate Foot Intrinsic
and Extrinsic in Movement**

Have the client lay supine (on a surface that allows slide) with the hips and knees flexed at 90 degrees and the soles of the feet on the wall. As with any movement exploration, it is more important to do it in a way that accesses new coordination patterns than it is to “perform” the movement described. This means taking time, going slowly and being curious enough to allow something new to happen.

The contact of the feet on the wall is an essential element. When we explore movement in the feet, we are presupposing a surface of contact, since the feet, when they are working, are in direct relationship to the ground. In this position, the wall is a substitute for the ground. It allows the client to play with new possibilities of how his foot contacts the surface of support in a position where the demands of gravity are not so immediate. Later, once he has had the experience of a different way for his foot to function, this can be integrated back into gravity.

Step 1: Help the client to experience how his foot contacts the wall. In the best of all possible worlds, the client will be present with his whole foot on the wall. The pads of each toe will be engaged, as will the heel; the lateral arch will be in full contact; and the medial arch will be engaged and actively participating, although not necessarily in full contact. Since few of us are fully present in our feet, you will generally find that when the client uses his feet to push away from the wall, some parts will work and some will not. Spend time helping him to become aware of and engage the parts that are not working as much. An essential part of this exploration is the client’s reawakening to sensation in

the soles of his feet and their contact with the wall. You want to help him to feel every millimeter of the skin of his feet and every millimeter of the meeting of his feet with the wall. *This quality of sensing presence in the feet is what wakes up the intrinsic function of the feet and allows the interosseous membrane to stay flexible and open.*

As a general rule you can think this way:

- The heel supports the back line of the body and the capacity for flexion of the spine.
- The toes support the front line of the body and the capacity for extension of the spine.
- The lateral arch is the support for the movement of abduction and for the Third-Hour line.
- The medial arch is the support for the movement of adduction and the Fourth-Hour line.

Knowing this, you may already have an idea of what aspects of the foot you may find less active in your client.

Step 2: Once the client has found and come home to some of the places in his feet that he tends to use less often, the next step will be to help him find the movement of pressing with his feet into the wall in such a way that his legs begin to extend and his body slides away from the wall (see Figure 1). Naturally, you want him to use the full foot in this movement, especially the parts that he recently found and re-owned.

Now your attention comes to the lower leg. Remember, when the intrinsic function of the foot is on line, the interosseous membrane will be soft and flexible. You can verify this by applying a gentle squeeze between the tibia and fibula. When the client pushes away from the wall, if the space between the two bones hardens and pushes your fingers out, the client is using the long extrinsic muscles of the foot and

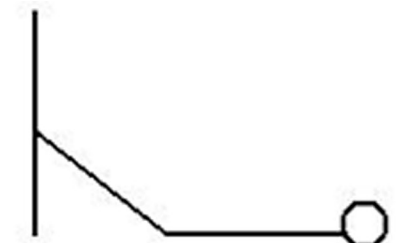
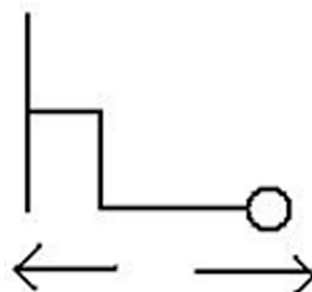


Figure 1

lower leg instead of the intrinsic muscles of the feet.

To help the intrinsic muscles of the feet become the primary actors, come back again to sensation. You can invite the client to feel his feet sinking into the wall, as if the wall was made of soft mud, or soft sand. Conversely, you can invite him to allow the wall to come into his feet, so that he feels the wall moving up into his feet, his ankles, his lower legs, etc. Depending on the client's primary orientation preference, one of these cues will tend to work better than the other. Sometimes it helps to move away from the idea of pushing, as many people, when they push, harden their feet. This may be why Mary Bond calls this exploration "Footprints on the Wall" in her excellent book *The New Rules of Posture*. "Footprints on the wall" conveys the sense of contact and pressure that is necessary to create a slide away from the wall, without the pattern of coordination that many of us call into action when we hear the word "push."

The more present, alive, and sensing the client is able to be in the soles of his feet as

he steps into the wall, the softer you will feel the interosseous membrane in your hands.

When the client has found a new quality of movement lying down, next help him to bring this discovery into the vertical. You can do this in the seated position, having him lean slightly forward and then come back to the vertical, in a way where he is truly feeling the contact of his whole foot on the floor, then in the standing position with a shallow knee bend. As always, the emphasis is on a new quality of presence, sensing and coordination, more than being able to perform a specific movement.

This movement exploration has effects throughout the whole body. Describing them all goes beyond the scope of this article. Anyone wishing to learn more can request a (free) two-page handout from lael@fastlane.com.br.

Conclusion

The foot is truly a marvel of nature, with twenty-six bones, thirty synovial joints, and more than 100 ligaments. When we are present in our feet, feeling and being

informed by the ground, with the multiple movement possibilities represented by those joints all functional, we experience many benefits that reverberate not only through our physical structure but through our whole being.

Our balance is enhanced, our interosseous membranes function, our core spaces breathe and have dimension, and we have a living, embodied experience of support.

Endnotes

- 1 Godard, Hubert. Author's notes from a class.
- 2 Ibid.
- 3 Kavounoudias, A., J. Roll, R. Roll, J.C. Gillhodes, A. Bouquerel, "Réponses Posturales Orientées Induites par Stimulations," *UMR 6562*. CNRS, Université de Provence, Marseille.
- 4 Brandt, Thomas and Marianne Dieterich, *The Vestibular Cortex, Its Location, Functions and Disorders*. Munich: Department of Neurology Klinikum Grosshadern, Ludwig Maximillians University.