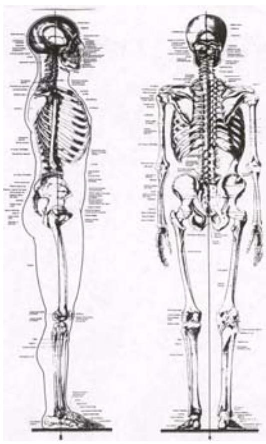
Committing Body Weight — A Profound Influence On Use

A Workshop Presented by Michael Protzel

Mainz, November 2007

Introduction



Our falling down to earth is continuous. This falling generates tremendous force (as does the falling down to earth of any object weighing 50-75 kgs). Gravity would have us fall straight down toward the center of the earth. But we override this tendency. We interfere. We unknowingly mis-direct our falling. And we have been doing so repetitively from a very young age. Our lack of awareness of our falling and its ongoing impact on us, falls into the category of what F.M. Alexander referred to as "faulty sensory appreciation." That we as Alexander Technique teachers are not attuned to this important influence, not only limits our ability to understand and change our own use, but also limits our ability to teach others to understand and change their use.

Uprighting is a fundamental human act that has evolved over millions of years. Essentially, uprighting is the act of lifting ourselves into verticality while maintaining a relatively level head. We upright ourselves almost all day long, in all sitting, standing and walking activities. We upright atop tiny balance points — the taluses in standing, the sit bones in sitting. Falling directly into these balance points allows us to fully capture the force of our falling, and to convert it into the muscular activity that uprights us with minimal effort. When we mis-direct our falling, however, away from our balance points, not only do we *not* use the force of our falling to our *advantage,* it instead works to our decided *disadvantage.* Our mis-directed falling drives us off balance, causing us to momentarily topple. If we want to continue to sustain uprightness, we must stop this topple — either by leaning against a secure object (a wall or a chair-back, for example) or by muscularly bracing. We must also muscularly *right* ourselves to maintain relative centeredness as we topple.

Purpose of the Workshop

My intention for this workshop is to teach how we can regain our innate ability to upright optimally by re-establishing a kinesthetic connection with the force of our falling. This requires a two-pronged approach:

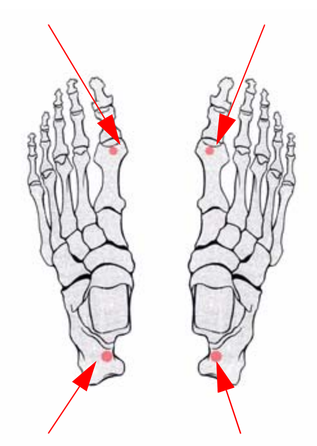
(1) ***We need to expose our habitual ways of mis-committing weight.*** I cannot over-state the importance of this. We have been mis-committing weight our entire lives. But we have not been aware of doing it and we have not been aware of how it has been affecting us. We need to become aware. We need to allow ourselves to do this 'wrong thing' while observing ourselves doing it. We cannot command a *new* falling trajectory without becoming aware of the trajectory we are *now* commanding.

(2) ***We need to learn how our innate uprighting system works.*** Isn't it interesting that in this modern era of scientific advancement, science has been unable to clearly describe how our own innate uprighting system works, and how we interfere. Why? I believe it is because we have all become profoundly, but unknowingly, disoriented by habitually falling backwards in sitting — scientists included. In my view, it is this disorientation that has rendered us kinesthetically unaware of our falling and unable to understand the ABCs of uprighting.

When we fall straight down through our balance points, we naturally tip *forwards* (simply because we have more weight in front of our central line than behind it). There are skeletal structures on the ground waiting for us as we tip forwards (the balls of the feet in standing, the whole feet in sitting). Our sensitivity to the pressure that our weight creates upon these ‘front support structures’, triggers an innate uprighting response, activating our deepest extensor musculature. Beginning with the plantar muscles on the bottom of the feet, this response rapidly ‘moves up’ the body segment-by-segment, uprighting us with minimal effort.

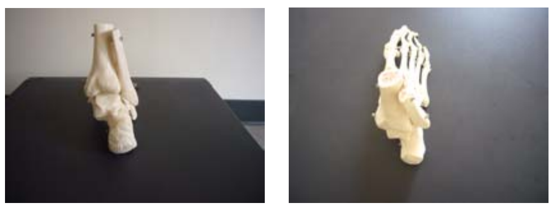
In sitting *back*, however, we send our weight in the exact opposite direction it needs to go. We send it *away from* our essential ground-contact in front. This kills innate uprighting. By sitting back habitually, we lose the vital connection between how we fall and how we lift. This negatively affects *everything* we do — our standing and walking activities as well as sitting.

Standing

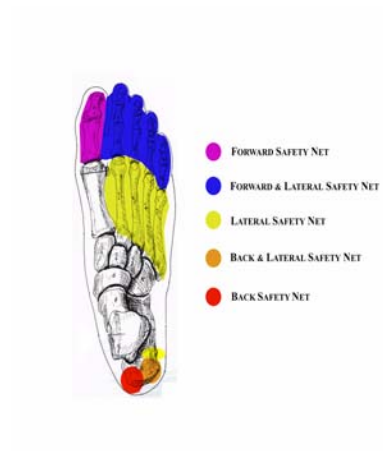


Four Ground Contact Points

Longitudinal Arch End Points



Talus Location & Optimal Heel Contact on Medial Edge



Safety Nets

We will begin the workshop by focusing on standing. We will think about and experience:

(1) that our balance point (the talus) is far to the medial side of the foot;

(2) how easy it is to direct our weight away from our taluses;

(3) what happens to our support structure, the foot, in the midst of a variety of different weight mis-commitments.

(4) that the medial side of the foot is the strong side;

(5) how ‘four points’ (two on each foot — the two points on either end of the longitudinal arch) are all we need for stable support in optimized, simple standing;

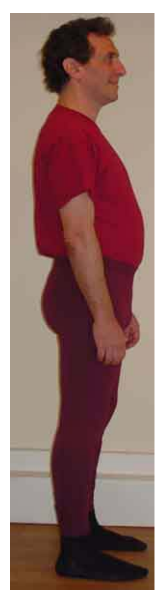
(6) that our ground contact *outside* these four points represents a ‘safety net’ that enables us to preserve uprightness should we hit an unexpected ‘bump’ on the ground that throws us off balance momentarily (of course, on modern floors and pavement, there are very few unexpected bumps); this safety net also enables us to expand our range of movement in standing without needing to move our feet;

(7) that when we *habitually* fall forwards or backwards or off to the side, we are in fact *mis*-committing our weight; we then need to brace large leg muscles to lock the knees, which stops our self-induced topple and keeps us relatively centered;

(8) that the heel is not flat but rocks side-to-side; and that we are designed to stand ‘on edge’ — on the medial edge of the heel;

(9) that when we commit our weight laterally, we *descend* onto the outside of the heel — requiring muscular ‘righting’ reactions from the hip joints up to the neck, producing a ‘zig-zag’ look, as illustrated in the image of models on the next page;

(10) that when we fall straight down to the talus, the force of our weight plants the foot on the ground optimally; this creates the solid frame that allows us to get the most out of our powerful plantar muscles; when we fall away from the center of the talus, we distort this frame and weaken our foot response, which is essential for innate uprighting;



Our habit of falling backwards repetitively in sitting spills over into how we stand. People commonly fall backwards at shoulder blade level, and stand with their weight way back on the heels — locking the knees and pulling the hips forward. Often this forward compensation will result in our weight being pulled onto the balls of the feet.

(11) that when we fall straight down, we tip forwards; that our sensitivity to the pressure of our weight hitting the ball of the big toe as we tip forwards is what activates our deepest plantar muscles that ignite our extension upwards; that the sooner we sense this pressure, the sooner we stop our fall and the less muscular effort it takes to upright;

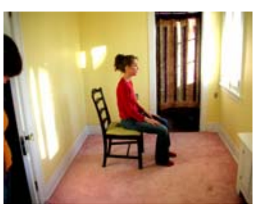
(12) to the extent that this vital activity in the feet is missing, we must make up for it with muscular activity in the legs, pelvis, torso and neck; uprighting in this manner strains knee, hip and spinal joints, where we would most like to be free and mobile.

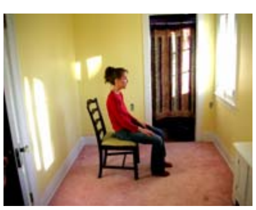
Sitting

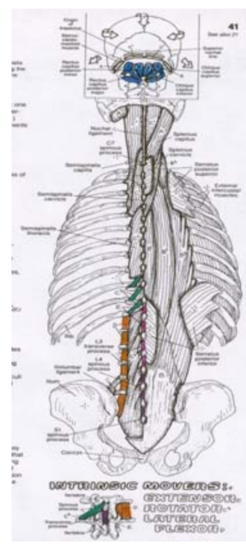
As far as I am concerned, falling backwards in the common act of sitting against a chair support is the *mother of all bad motor habits*. The seeds of this habit are planted in our brains as tiny infants, well before we ever *do* the act. We first learn simply by watching all those around us sitting back. These images carry a strong subliminal message — that falling backwards in sitting is a perfectly appropriate thing for human beings to be doing. We adopt this incorrect 'belief' subconsciously, without knowing that we have adopted it. As children, we never question the act of sitting back. We never consider that it may be harmful. We simply do it — again and again and again — at home, at school, everywhere.

In looking at the image of the sitting skeleton (on page 1 of this document), it is obvious that there is absolutely no anatomical structure behind the sit bones to receive the force of our falling. Our support structure is underneath and in front of us — from the sit bones to the feet. We need to have our weight fall into this structure — *it is all that we have*! And an amazing structure it is — having evolved over millions of years for the very purpose of uprighting us easily.

By repetitively falling backwards in sitting, however, we have lost our kinesthetic compass and, with it, our innate uprighting capacity. Instead of using the force of our falling to power optimal uprighting, we use it to create instability and strain. Sitting back creates a set of inter-related problems:







Falling back habitually weakens deep muscles along the spine, forcing us to 'sit up straight' using larger muscles, which quickly tire.

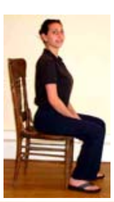
(1) To function normally requires a relatively level head. We seriously compromise this by tilting backwards the 'pole' upon which the head rests. When we fall backwards, immediate head/neck adjustment — tensing the neck — is needed to maintain level-headedness.

(2) There is no way to fall backwards and simultaneously maintain an upright head and neck without shortening the stature (according to Alexander's own definition of "shortening" as written in CCCI, Part II, Sensory Appreciation in its Relation to Learning and Learning to Do, Illustration). When we move backwards from the hip joints, somewhere between hips and head, the spine is flexing. The farther back we fall, the more we flex.

(3) Falling backwards in sitting produces the common 'C-curve' slump, which is most noticeable when we sit without a back-support. Actually, we create *two* slumps to make the "C": a backward lower slump; and a forward upper slump. In order to 'sit up straight,' we need to pull ourselves out of both of these slumps. This requires rigorous muscular activity.

(a) To lift our forward-slumping upper spine, we must tense large erector spinae muscles. This muscular effort cannot be sustained for very long. We soon are slumping again, or falling back against the chair (which can mask this slump).

(b) To lift our backward-slumping pelvis and lower spine, we must tense the powerful ilio psoas muscles, narrowing the lower torso as we pull it forwards. Moreover, so long as we want to remain vertical, this tensing must continue. This is because we are still directing our falling backwards, even though we are not aware of it. As with the tensing of the large erector spinae muscles, our psoas tensing cannot be sustained for very long. When we soon tire, back to the chair-support we go.



(4) By using the chair-back to support the spine, our deep, intrinsic spinal muscles (interspinalis, intertransversarii, etc.) are denied the opportunity to do their job.

(5) As we fall into the chair-back, the spinous processes of our thoracic vertebrae are forced to become weight bearing bones, a role for which they are clearly not designed.

<u>Changing the Way We Sit</u>

Observing Habit

First and foremost, we need to watch ourselves falling backwards. We have done it so many times, it is now on 'automatic pilot.' It has become our 'default setting.' Without changing this default setting, we are stuck with it — meaning, when we sit down, we give the command to fall backwards. We may not actually move backwards. This is because we can over-ride our default backwards weight commitment by commanding ourselves to remain in a vertical position. But this requires substantial muscular effort. The moment we let go of this effort, we will start to actually move backwards. This is because we had been vertical despite never having changed our default weight commitment; we had simply over-powered it.

During the workshop, we will think about and experience:

(1) how, in order to preserve level-headedness, the shape of our spine and the head-neck relationship changes as we move backwards;

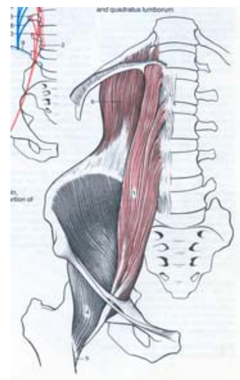
(2) how we are able to stop ourselves instantly, at any point in our journey backwards, simply by having the intention; this stopping is actually accomplished by tensing the ilio psoas muscles but it is difficult to feel (because we are so accustomed to over-working these muscles);

(3) once we have anchored ourselves against the chair-back, the only way to get off of it is by rigorously tensing the psoas muscles;

(4) when we pull our pelvis and lower torso forwards off of the chair-back by tensing the psoas muscles, we also lift our upper torso, neck and head by tensing the large erector spinae muscles;

(5) when we use such muscular efforts to pull ourselves off a chair-back, we must keep these efforts going to maintain independent, upright sitting; when we let go of these efforts, we will fall backwards again;

(6) as we move backwards, we lose kinesthetic connection with our feet on the ground.

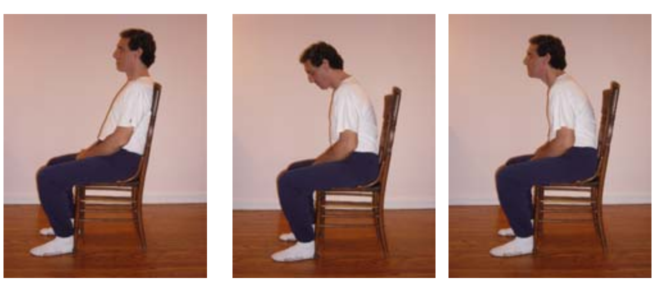


Right Ilio Psoas Muscle

Discovering How the Innate Uprighting System Works

Although persistently observing our sitting-back habit is essential to breaking the habit, there is a way to begin to experience how the innate upright system works without having to break years of habit.

To do this, we must give up the *end* of being fully upright as we know it. Because of our falling-back habit, we have come to gain verticality by over-tensing the psoas muscles and the large erector spinae muscles. We need these tensings because of the two slumps we create when we fall backwards. We need to accept that we have created these slumps. We need to understand them so that we can learn to escape them constructively. Let me explain how we will explore this in the workshop:



Left photo: pelvis and lower torso are falling backwards, while head, neck and upper torso are relatively straight.

Center photo: backwards fall of pelvis and lower torso is corrected, exposing the forward flexing of upper torso that was present even in the left photo. <u>This forward flexing is not a "pull down."</u>

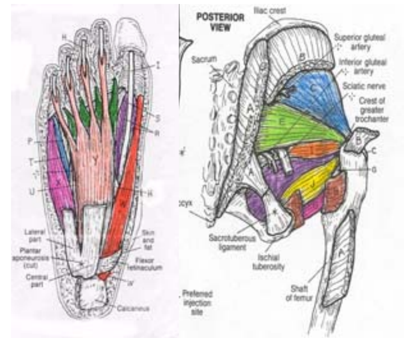
Right photo: same as center photo except the head is tilted back and up to allow for normal sight-line. <u>It is not the tilting back of head that creates the forward flexing of upper torso</u>.

(1) When we lean back against a chair-support, although our upper torso, neck and head are vertical, or close to it, there is a bend in the spine because our pelvis and lower torso are falling backwards. If we maintained this same relationship of upper-torso to lower-torso but 'corrected' our backwards fall so that the pelvis and lower torso were upright, then the upper torso would be slumped forward. I call this a 'hang-over' ..... from a few too many trips to the back of the chair.

We make a mistake by judging this slumping as bad ("pulling-down"), rather than as the inevitable by-product of repetitively falling backwards. This puts us in a bind. We decide that we should be **not doing** this slump. But to 'not do' this slump, we **end-gain**. We **hold** ourselves up using large erector spinae muscles. But these muscles soon tire,

> forcing us to literally fall back into habit (into the chair-back). And because falling backwards kills innate uprighting, any time we want to 'sit up straight', we must summon this rigorous muscle activity — which, of course, we cannot feel because it is habit. It is a vicious cycle.

(2) By accepting this hang-over, we can begin to experience what happens when we tip forwards. We find that our weight creates pressure in our feet and lower legs. The further forward we go, the more pressure builds up. This pressure is the 'priming' of our innate uprighting system which, at a moment's notice, can stop our tipping/flexing and start our lifting/extending. All we need do is recognize the pressure. Such kinesthetic awareness will activate deep plantar muscles in the feet, and deep muscles around the hip joints that connect femur and pelvis. They produce the extension power that rocks the pelvis and lower torso back-and-up to a 90 degree angle to the chair seat.



Plantar & Deep Hip Muscles, Both Sides Working Together, Upright the Pelvis

(3) When the pelvis reaches its peak, it will tip forwards again — provided it has not rocked back so far that it ends up falling backwards. To avoid this *over*-extension, I recommend at first rocking back to only 80 degrees.

(4) We now turn our attention to uprighting our upper torso — the hang-over — which has been over-flexed from years of repetitively falling backwards. We lift the upper torso in the same way that we lifted the pelvis and lower torso — *by kinesthetically connecting its forward falling with the pressure it creates in the feet*.

To do this, we locate the place in the spine where our forward flexing starts. We then lift the spine from this place, but only a small amount. We then let it fall forward again while observing the extra pressure that its falling creates in the feet. Noticing the pressure activates our innate uprighting system, stopping our upper torso flexing, and lifting/extending it a little bit. This lifting is done optimally, using our deepest, highly evolved musculature. We then let the upper spine fall/flex again. The goal is to be able to feel in the feet the pressure of its falling a little bit sooner each time. Doing so successfully means that we are flexing the spine from a higher vertebral joint. Bit by bit, we can 'jack up' the entire spine in this manner. Eventually, our sensitivity to the pressure created in the feet by the forward tipping of just our head activates our innate uprighting system.

> Be Alert to this Obstacle. As already mentioned, to straighten the two curves caused by habitually sitting back, we need to tense both large erector spinae and ilio-psoas muscles. These two tensings go together. So do the releasing of these tensings. Thus, when we let the upper torso fall forwards, we are likely to also fall backwards from the pelvis. This has been our sitting habit since early childhood. It is important that we notice when this happens — because when our fundamental falling direction is backwards, the weight of our upper torso will not go into the feet, even though the upper torso is flexing forward.
>
> To avoid this problem, before attempting to lift the hang-over, make sure to first establish the forward-tipping and rocking-back of the pelvis. Ideally, it should be a smooth, natural, pendulum-like movement. When you have it going good, then *lift* the upper torso a little bit *as the pelvis is on its return trip up to vertical* after having tipped forward; and let it fall as the pelvis tips forward again. When you do this, you are sure to get the weight of your forward-flexing-upper-torso into the feet. You will then be able to 'work with' this weight.

Be advised that experimenting in this fashion with your 'hang-over' will likely cause temporary strain in neck and upper back muscles that have to hold it up. We are accustomed to lifting this hang-over either by leaning back against a chair-support, or by using large erector spinae muscles lower down the back.

Summing-Up Standing and Sitting

The force of our well-directed falling hitting our ground contact points generates enough energy to activate our deepest musculature running the entire length of the body. This powerful chain reaction lifts our skeleton with optimal efficiency. I call it 'innate uprighting' — a uniquely human capability that has evolved over millions of years.

There is a vital work/rest cycle at play in innate uprighting. The active part of this cycle begins with the tensing of our muscles on the bottom of the feet; in standing, the force generated by this tensing passes to deep, posterior lower leg muscles that lift the lower legs, and to deep, anterior thigh muscles that lift the upper legs; (in sitting, since neither the lower nor upper legs need lifting, these two links in the chain are by-passed); then the deep muscles around the hip-joints, connecting pelvis and thigh bone, lift the pelvis; then the deep muscles connecting each vertebra, lift the spine bit by bit; then, finally, the sub-occipital muscles lift the head; when the head reaches its peak, it descends again; the force of its falling goes through the talus or sit bones; we tip forward slightly, creating pressure on our 'forward support points' (the balls of the feet in standing, the whole feet in chair sitting); this activates our ready, willing, able and well-rested plantar muscles.

I liken this chain reaction to a 'relay race' at a track meet. When one runner passes the baton to a teammate, his or her job is over. Likewise, at each stage in this rapidly moving uprighting cycle, the muscles 'below', once they have completed their work, gain important rest until the cycle renews.

Innate uprighting is contingent on our capturing the *full* force of our falling. To the extent that we mis-direct this force, our uprighting response degrades. By falling backwards habitually, we have concocted inferior means of uprighting, causing significant muscular strain and skeletal distortion.

Left: committing weight straight down, using the heel to slow forward momentum. Right: committing weight forward of the heel, making leg and torso muscles do extra slow-down work.

Up to the Talus

Walking

Walking poses challenges not found in sitting or standing: (1) we are moving rather than stationary; and (2) we must upright atop one foot at a time, rather than having both a left-side and right-side. In the workshop, we will consider, and kinesthetically explore, the following:

Slowing Forward Momentum

Unlike in sitting and standing, where our weight commitment habit is to direct our falling backwards, in walking, since we have a forward destination, we tend to commit our weight too far forwards. (This is so even though the upper torso may be leaning backwards, a remnant of our sitting-back habit.)

To walk, we *need* forward momentum. Without it, we could not move forward at all. But too much forward momentum causes problems. We cannot simply build up momentum and keep building it, like when a ball rolls down a hill. *At each moment in the walking cycle, we are also acting to maintain uprightness.* In other words, we are lifting ourselves vertically, while simultaneously moving horizontally. To lift ourselves effectively, this forward momentum we build up has to be slowed. To slow it optimally, we need to commit our weight straight down into the ground-contact-point that is directly underneath us at any particular moment. When our 'swinging foot' first makes ground contact, this point is the medial side of the heel. Committing weight forward of initial heel contact makes slowing down a lot more strenuous. Large leg, torso and neck muscles must be recruited to do the work.

Making solid heel contact sends us *up* to the talus. This upward movement is another of nature's devices to slow us down effectively, reducing the need for compensatory muscling. But to use it, we must commit our weight directly into the heel, not in front of it.

Powerful plantar muscles on the bottom of the foot, between the foot and the ground

Slowing Lateral Momentum

(1) When the heel first touches down, we have to deal with lateral momentum. Lateral momentum exists because we make initial heel contact having come from the big toe of the opposite foot. In other words, we approach heel contact on a diagonal. Recognizing this, and being able to commit our weight squarely into this contact, enables us to use the heel as a rudder to keep us atop the strong, medial edge of the foot. Doing so will lead us toward the spot of the ground where the heel of the other foot will be touching down in a moment.

As we learned in standing, the heel is not a flat surface. It has a pivot point on the medial side which allows for side-to-side rocking. This is for emergency use — for example, when the unevenness of the ground cause us to unexpectedly fall off to the side. In this situation we literally *descend* onto the lateral side of the heel and toes. This descent signals the brain to recruit leg muscles to stop our lateral topple. We do not want to be doing this *habitually.* We want to rely upon the much stronger, medial side of the foot.

Diagonal plantar muscles provide solidity where there is no ground contact underneath. They also help direct us back to center. But only when we fall straight down.

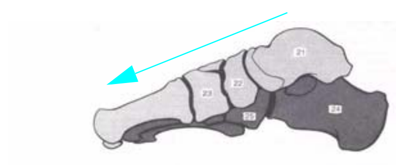
(2) To do this, it is important that we develop a clear visual image of the foot, as well as an understanding of how it is meant to work in walking. As we move up to the talus after initial heel contact, we start to make contact with the balls of the foot. As we do, we want to see in our mind's eye, and to sense kinesthetically, both the medial and lateral length-wise edges of the foot.

Noticing pressure start to build on the ball of the big toe helps to define the strong part of the foot, along the longitudinal arch. We want to fall into this part of the foot as much as we can.

Noticing a light contact on the ball of the little toes enables us to activate deep plantar muscles that run close to the outside edge of the foot. Their tensing gives us a little 'push' back towards center. When too much of our weight falls upon this outside edge, however, these muscles cannot handle the load. We have already fallen too far laterally. Thus, we need to use large leg muscles to stop our lateral topple and to pull us back towards center, and pelvic muscles to 'right' our torso. We would like to avoid this. It seriously limits our freedom of movement.

Contacting the Important 'Middle' of the Foot

When our weight is accurately committed, soon after making heel contact to slow both forward and lateral momentum, our weight will pressure the small foot bones located just in front of the talus (the navicular, and the 3 cunieforms). Getting weight into these bones activates the deep and powerful muscles that run diagonally on the central part of the bottom of the foot (flexor hallucis brevis and adductor hallucis). When fully activated, their tensing creates the skeletal solidity needed to support us as we are moving over this central part of the foot — a part that has *no ground contact underneath*; their tensing also lifts the second and third metatarsals a little bit, creating a little 'speed bump' that further slows lateral momentum and steers us back to the strong, medial side of the foot. Our habitual ways of mis-committing weight, however, has resulted in these muscles being drastically under-used.



Down the Slide

Going Down the Slide

As we move forward of the talus, we are at a crucial juncture. Our falling straight down has enabled us to use heel contact and the trip *up* to the talus to slow forward momentum effectively. But we are now about to head 'down hill' toward the tips of the toes. We will pick up speed on this descent. To regulate this speed optimally, we need to allow our body mass to fall squarely into the ball of the big toe. This will make our deepest foot and lower leg muscles do the job for which they were designed, minimizing the need to over-tense large leg, pelvic, torso and neck muscles. But because falling straight down is contrary to our habit, allowing the ball of the big toe to bear our weight is difficult to do. Our under-used plantar muscles are weak and will resist our weight. But we must persist in committing our weight straight down, thereby insisting that these muscles do their job.

Heel Touch Down on Opposite Foot

We then make initial heel contact with the other foot, and the cycle renews.

__Michael Protzel__ was certified to teach the Alexander Technique in 1986, is a member of both STAT and AmSAT, and maintains a private practice in New York City and New Jersey, USA. Michael was NASTAT News Editor 1989-1995, and has been Chair of AmSAT's Professional Conduct Committee since 2001. His work is explained in words and animated illustrations at www.uprighting.com.