

# “Moving Towards Upright”

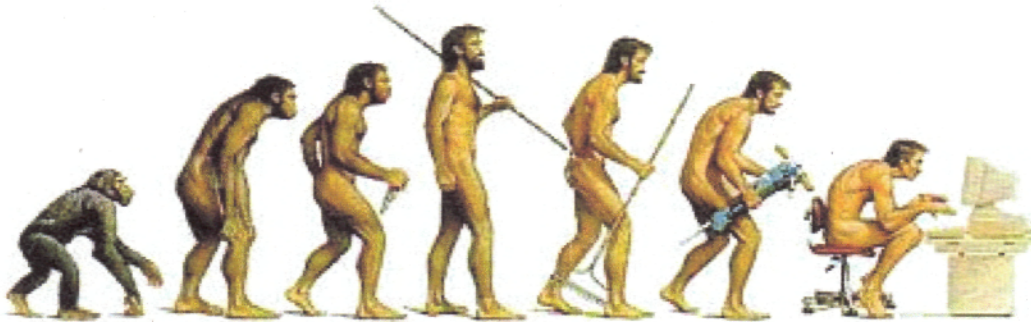
## An Essay on Postural Patterns

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The following essay examines the following questions: What factors in development contribute to a fully "upright" being? What factors interrupt this development, and what patterns do these interruptions produce? Narrow this question down by choosing one or two factors or patterns so that you can be as specific as possible about their anatomical, structural, psychological and functional effects. How could spatial reorganization help resolve these patterns?

“We are not truly upright, we are only on our way to being upright.  
This is a metaphysical consideration.”<sup>1</sup> - Ida Rolf



## I. Introduction

I was waiting in line at Trader Joe's the other day holding my can of sardines in olive oil and I noticed two elderly men in the line to my right. They both demonstrated a common "Western" pattern for men their age of an anteriorly tilted pelvis, strong thoracic kyphosis with the neck and head going forward. I looked over my left shoulder into a mirror and noticing my reflection, immediately straightened my shoulders and lifted my chest upward. I thought to myself how much effort those men must be expending and at the same time overheard the cashier ask the first man in line, "How are you today?", "Old and tired", was his response.

Thomas Hanna asked the question, "Why is it that humans, having learned to walk up-right, may lose this ability and often end up walking with a cane? Clearly, the presumption is that to grow older is to become crippled."<sup>2</sup> This sentiment seems pretty common-place in our society today, as we grow old our posture deteriorates, arteriosclerosis sets in and we wither away. If this is the case then development can be thought of as having a clear beginning, middle and end. I tend to believe that development is an ongoing process of learning, adaptation and revision.

This essay examines two factors in development that contribute to an upright posture: the formation of the arches and the role of the "Extensor Coxae Brevis"<sup>3</sup> in hip extension. The structural and anatomical effects of two recent technologies: the shoe and the chair will be examined. The psychological aspects of posture and the topic of kinetic development will also be addressed. Lastly different treatment approaches (spatial reorganization and movement therapy) will be examined in restoring function.

## II. Evolution: From the Trees to the Ground

To begin to examine man's upright relationship to gravity, we must look in the trees to the early origins of primate life. In arboreal primate life the feet first were used for grasping tightly onto nearby branches. John Pfeiffer points out that, "Baby monkeys wrap themselves around the mother's body with arms and legs and cling to her while she moves through the trees. In a newborn human infant the instinct to grasp and hold on with its hand is present at birth, a carryover from its phylogenetic history."<sup>4</sup>

Dudley Morton, an orthopedic surgeon, in his analysis of the development of the longitudinal arch comments, "The very early forms were not the agile, acrobatic creatures we now see, but

were timid, cautiously moving animals which clung tightly to the supporting branches. Their hind feet were characterized by long digits, short metatarsals, and widely divergent halluces feet that had been developed by and for a secure clutching grasp."<sup>5</sup>

In his paper, he theorizes about the developmental (phylogenic) stages primates went through. From cautiously moving animals, later a sense of equilibrium was developed and early primates ran along the branches of the trees, "Vertical movements in the trees and the improved ability to maintain balance had established squatting as a habitual and frequently used posture."<sup>(ref 5)</sup> He goes on to explain how feet came to be used as a base of support while the arms were used in brachiating movements along with a more upright posture. The legs were then more extended from the body and powerful arms were developed along with more passive short and weak legs. This explains the imperfectly erect posture displayed by primates after adapting to terrestrial life. All of the previously supported mechanical forces of the arms were then thrown upon the feet with the discarded use of the arms.

It is unknown why and how man developed upright terrestrial posture. Sigmund Freud based much of his theory of the origin of civilization on the development of upright posture, contending that "Our assumption of upright posture has reoriented our primary sensation from smell to vision. This devaluation of the olfaction shifted the object of sexual stimulation in males from the cyclic odors of estrus to the continual visibility of female genitalia. Continual desire in males leads to continual receptivity in females. Most mammals copulate only around periods of ovulation; humans are sexually active at all times. Continual sexuality has centered the human family and made civilization possible; animals with strongly cyclic copulation have no impetus for stable family structure. "The fateful process of civilization," Freud concludes, "would have set in with man's adoption of an erect posture."<sup>6</sup>

A new theory of development speculates that persistence hunting lead to the development of upright posture.<sup>7</sup> Hunting and scavenging may have provided the impetus for the structural changes to occur, the arms used for carrying meat long distances.<sup>8</sup>

### **III. Under Standing: The Feet**

Regardless of why or how humans developed upright posture it is generally accepted that the formation of the feet: the arches enabled this change to occur. Moving from phylogeny to ontogeny it is obvious that the arches of the feet are created through development as some people are born with what is known as flat feet. Our four-legged ancestors walk on the balls of their feet with their heels off the ground, two changes occurring to enable upright posture: the loss of opposable digits and the formation of the arches.<sup>9</sup>

The foot actually contains three arches the medial longitudinal arch (running from big toe to heel), the lateral longitudinal arch (running from little toe to heel and the transverse arch which spans the ball of the foot.<sup>(ref 9)</sup> Tom Myers points out that there are three components that hold the arch in place: the shape of the bones, the plantar ligament/muscles and the upward pull from the lower leg myofasciature.<sup>(ref 9)</sup> He goes on to point out that like the secondary curves of the cervical and lumbar spine the arches are pulled into existence: the cervical through looking up, the lumbar through crawling and the arches through walking and running.<sup>(ref 9)</sup>

There are numerous problems that can arise developmentally with the feet. The infant foot is not fully formed, the bones not ossified, which means good as well as bad forces can affect structure. As common as orthotics are there are some who believe that children with the most flexible feet are the ones who go barefoot<sup>10</sup>. They believe shoes should not have rigid arch supports and stiff sides; Vibram a company that previously designed shoe treading for yacht wear has pioneered the new barefoot trend in footwear. On their website, Vibram lists six reasons to wear their “barefoot” shoes: strengthening of intrinsic/extrinsic foot muscles, improved ankle, foot and toe range of motion, stimulation of neural functioning, improved proprioception, natural movement and elimination of heel lift.<sup>11</sup>

#### *Problem: Shoe Technology*

Since the technology of shoes greatly impacts how we interact with the ground. Shoes can best be examined in the context of walking or running since they shape how the foot interacts with the ground through motion. If upright posture was strongly influenced by persistence hunting and running itself, it is interesting that shoes are a considerably recent form of technology, running shoes in particular, invented around the 1970’s.

The technology of shoes has often been looked at as advancement in healthy foot functioning and body movement. A new trend is now emerging in examining the billion dollar technology Nike® has invented for runners and how this very technology may be responsible for injuries, injuries that endurance runners did not have for millions of years and injuries that make running more dangerous than football with seventy-percent of runners getting injured.<sup>12</sup> Barefoot running has recently been chronicled in the book *Born to Run*<sup>13</sup> and Nike® has released its own line of barefoot running shoes the Nike® “Free”.

Studies now show that barefoot runners that fore-foot strike generate less collision forces than rear-foot strikers. Shoes with excessive cushioning in the heel force the heel of the foot to impact the ground first, whereas the more plantar flexed heel lessens the impact of body mass on the ground.<sup>14</sup>

#### *Standing on One’s Own Two Feet*

Alexander Lowen, founder of Bioenergetics, points out that there are metaphors used to describe behavior such as: taking a stand, being in good standing, having one’s feet on the ground, and being rooted or grounded. However when applied to personality, these metaphors have a literal significance, which describe a typical attitude of the body and of the person.<sup>15</sup> He further states, “The opposite of ‘to stand’ as a verb is not to sit ‘A different type of action’, but to slouch, slump or shift.”<sup>(ref 15)</sup> Whereas the quality of footwear can affect a person’s feet and literally affect “how they stand” the chair is used as a metaphor for position, social roles and power and its quality can affect the functioning of the hip.

What the shoe is to running the chair may be to the hip, immobilizing the bones and soft-tissues and significantly affecting how we interact with our environment. But before venturing on to squatting and third world countries let us look at the role the hip plays in upright posture.

#### IV. The Pelvis: Keystone of Human Architecture

“A human being is evolving as an erect animal. How erect he’s going to be as an individual will depend on the degree of balance between his flexors and extensors. We are all looking for a way to evoke human potential. We are looking for a way to establish greater physical and mental vitality. Obviously, we will do well to get strength and life and vital quality into extensors. As he becomes more erect, man moves toward his evolutionary potential.”<sup>(Ref 1)</sup>

Tom Myers has proposed that a major function of the deep lateral rotators of the hip is in approximating the pelvis and femur.<sup>(16, Ref 3)</sup> He lists five myofascial structures (gluteus medius, piriformis, obturator internus/externus, and quadrates femoris) in particular that help maintain hip extension in upright posture along with the erector spinae and soleus of the Superficial Back Line.<sup>17</sup> This implies the deeper single joint muscles of the hip are in a better mechanical and neurological advantage to keep the hip in upright extension than the traditionally discussed hip extensors like the two joint hamstring group. If the rotators play a major role in upright extension, it is interesting to notice the impact of sitting and their tonus and function, as the legs often drift out into external rotation for prolonged periods and the pelvis is often not level or misaligned during sitting.

##### *The Chair*

“Since even somebody condemned to death is granted the dignity of a chair, those who have a right to expect appreciation and respect are understandably miffed when someone fails to offer them one.”<sup>18</sup>

Galen Cranz in her book explains the early origins of the chair and how we take sitting in a chair for granted. We are still aghast at the notion of sitting on the floor squatting as the English colonists were noting workers in India centuries ago.<sup>18</sup> Few people consider the fact that low back pain is so present in Western culture whereas it is almost non-existent in India and many third world countries where squatting is the norm. Gordan Bewes, in studying the anthropology of posture points out that, “Postural variations are culturally, not anatomically determined”<sup>19</sup>, that is to say that there is no difference in human anatomy across cultures that warrants differences in postural norms.

The ideal sitting posture is one in which the pelvis is neutral and the sacrum is neutral or in a slight nutation: tilting anteriorly along with lumbar extension. When someone attempts to conscientiously sit up in a chair, the pelvis goes into an anterior tilt and excessive lumbar lordosis is created. The other more common posture is settling into a posterior pelvic tilt with the back and shoulders rounded, the chest collapsed and the head protruding forward.<sup>20</sup> The superficial front line from the pubis to the neck is dropped and the superficial back line, particularly the erectors are pulled up in tension. This tends to mimic the common slumped standing posture as well.

Lumbar supports in chairs can help to support the low back, but often one leg or both drop out into external rotation. This tension becomes habitual overtime and can contribute to sensory motor amnesia and a general lack of feeling in the low back and hip. New studies are examining the role of proprioception in relation to pain, including low back pain.<sup>21</sup> The implications are

that different treatment methods that address low back pain should focus on bringing kinetic awareness back to strained areas.

### **V: Treatment Approaches**

Tom Myers has pointed out a third type of intelligence that needs to be developed in the 21<sup>st</sup> century.<sup>(22/23)</sup> The first two are well known: IQ or pertaining to the intellect and the second which Daniel Goleman has labeled emotional intelligence.<sup>24</sup> The third is much less known or talked about, especially in a culture that is so lacking in it: kinetic intelligence or the intelligence in our bodies. This growing problem of alienation of our bodies is especially affected by technology like shoes and chairs that affect our posture and alienate us from our natural environment.

Ken Wilber referencing Alexander Lowen nicely describes this very problem, "There are many ways to dissolve the boundary between the mind and body so as to discover again this unity of opposites lying asleep in the depths of our being. 'This split cannot be overcome,'" says Lowen, "By a knowledge of the energetic processes in the body. Knowledge itself is a surface phenomenon and belongs to the realm of the ego. One has to feel the flow and sense the course of the excitation in the body. To do this, however, one must give up the rigidity of one's ego control so that the deep body sensations can reach the surface.' Simple as it sounds, that is the very difficulty almost every person faces as he tries to connect with his body. He won't really feel his legs, stomach, or shoulders, but, out of habit, he thinks about his legs, stomach, and shoulders. He pictures them to himself and thus avoids giving feeling-attention to them directly. This is, of course, one of the very mechanisms responsible for the dissociation of the body in the first place."<sup>25</sup> This statement helps explain why shifts in psychological states can develop through manipulative work and why working only at a psychological level is often insufficient for change to occur. Years of crying on a psychiatrist's couch or an endless perusal of self-help books may fail to reconnect the person to their body.

#### *Structure versus Function*

"This is what Rolfers are doing: we are lifting a body up. We're getting the uppermost pole of the body lifted up. Sometimes you wonder what the relation is, the connection that makes one man a rigid stalk and another man flexible and lifted. It all sounds so much alike: I will lift up my head; I am lifting toward the Lord; I am lifting toward the mountain. All religious thinking has tended to understand that there was a lifting up in terms of growth in the spiritual realm. I hate to use that word-spiritual- because I know I don't know what it means. Nevertheless, I call it to your attention."<sup>(Ref 1)</sup>

Treatment approaches, whether manipulative or movement based, need to take this direct body awareness into consideration. If the treatment is that of spatial reorganization, functional (nervous system) versus structural (tissue) holding patterns need to be considered.<sup>26</sup> This interplay of structure and movement is an excellent way of building kinetic intelligence. Being upright does not just imply a nice straight line but a structure that moves from the core, one that is fully integrated. Judith Ashton considers the dynamic function of the person rather than just a static upright notion of structure, "I wonder if asymmetrical is the way the body is supposed to be? I wonder if asymmetry in the structure might be the source of true perfect function of the body to create movement; and movement is what keeps us dynamic, healthy, rehydrated, and flexible in our thinking and in our emotional expression."<sup>26</sup>

Hubert Godard's observation is in line with Tom Myers's analysis of the intrinsic (core layer) musculature: the "Extensor Coxae Brevis" in maintaining upright posture, "I think it is very helpful: if you can get people, through movement work, out of using extrinsic muscle just to stand up or to cope with gravity, immediately you know where you have to work as a Rolfer-hands on. There is no lie in the body: If someone is moving only from the extrinsic side of the body, structurally they may look well organized, but if you are used to reading movement, there is no motility, by which I mean movement coming from the core, coming from the central line."<sup>27</sup> That is to say that if the intrinsic musculature is balanced and working independently of the extrinsic musculature, movement can originate from the hamstrings and two-joint muscles better suited for movement while the core stabilizes.

Caryn McHose describes the interplay here between structure, gravity orientation and movement, "We consider gravity orientation as a background to perception and to movement. Gravity orientation is integrated into all of the elements of movement. To play with this sense of our orientation, to become aware of possible shifts in orientation, can help us move differently and may even help us find new solutions to relational problems."<sup>28</sup> In addition to hands on bodywork coupled with movement education, yoga is another treatment option that pairs alignment with proper movement. Lastly let us look back in time to an exercise that is literally in our DNA and has the potential to restore hip functioning, kinetic awareness and strength.

#### *A Return to Squatting*

Greg Glassman's concept of fitness consisting of functional movement that start with optimal alignment is based on bodyweight gymnastics (internal object control) and weight-lifting (external object) and has outlined a program that develops general fitness capacity across broad time and modal domains. This seems to be the future of all exercise and fitness moving from repetitive isolation exercises on machines and swiss balls to exercises that build kinetic awareness while perfecting posture and movement from the core. Squatting, pressing, cleans and dead-lifting (as well as gymnastics movements) require good alignment and mechanics to move heavy loads, and are the epitome of all fitness endeavors. Mark Rippetoe explains that these movements are all core to extremity, the pelvis and trunk musculature stabilizing the spine, "Let me ask all you "core stability" people a question: why don't you just squat?"<sup>29</sup>

## **VI. Conclusion**

Upright posture is dependent on a variety of factors, two of which are the formation of the arches and hip extension. The notion of an upright posture operates on many different levels: anatomical, structural, psychological and maybe even the spiritual. There is no set state that is reached in any of these areas; rather the movement towards upright is a process of learning, adaptation and revision. As Hubert Godard points out, "It is easy to draw an equation for structure, not so for movement, because movement implies intention, changing the intention changes the body and its relation to the world."<sup>(Ref 27)</sup> It is easy to make statements about the two men standing in line at Trader Joe's. I can make psychological, physical and structural inferences about them. What is not so obvious is their intent, or as Ida Rolf has said, "Intention for living". Are they lifting up to the heavens, or slowly making their descent into the ground? I can only speculate, as I lift my line and move towards upright.

## EndNotes

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