

Seeing the Human Body and its Biomechanics in a Four Element Way

The names that the Holistic Biomechanics Model gives to its set of biomechanical forces harkens back to the origins of our sciences. Whether as professionals in the healing sciences, as yoga practitioners, martial artists or just as someone wanting to up their game while exercising or walking, there is reason to believe that by using their terminology, you'll be able to understand and identify the biomechanical principles at work in yourself.

If you are a doctor, you may notice that patients quickly understand the concepts of this model's elemental terms and find ways to relate these concepts to both their posture and improving their musculoskeletal issues.

The model begins with the "lowest" of the elemental components of the body and in a connected way, to the lowest of the foursome of biomechanical forces. Simply put, a region's *bones* embody that lowest and most foundational principle of the four, earth. Higher level body functions depend upon this earth element part of us – our bones – being there. As a biomechanical force working in the vectors of space, the earth force works in the negative y-axis; we are forced to engage the solid earth below ourselves.

This earth force speaks to the power that comes as solidity, or granularity, is engaged. It allows for a substrate, which permits something solidly physical to push against. Without this force, this principle, this type of energetics, life would not have been able to have the trajectory it has taken. While this earth force operates in our human life as we engage a solid ground through our feet, it came earlier as protein strands of earth conveyed the needed solid particle-ness for a watery life to pull itself onto. Earth as a principle pushes toward sturdiness, stability, hardness.

If the electromagnetic force of the fire principle works through the photons and electrons of chemistry, the earth force works through the nuts and bolts of physical shapes. Interacting with this force, the body will use some of its resources to be as well-aligned from top to bottom as possible. This model helps us to see reasons why skeletal alignment plays an important role in one's well-being. Good posture and good biomechanics allow that earth force to operate efficiently within our bodies. We are made more resilient and sturdier as individuals when we engage this force properly.

This model makes the case that this alignment process is not just downward, it occurs on every transverse level of the body. Within each horizontal plane of the body, this biomechanical alignment force pulls "the forward" to the backside. This model calls this negative z-axis side of each transverse level of the body, its "earth side". Our earth-flat *posteriorly* positioned spinal vertebrae and the heels at the posterior of our feet and are important earth element parts of our body.

More poignantly as far as the influence of this biomechanical force working in the negative z-axis in our day-to-day moments: we have our "earth muscles" including those of the rotator

cuff, the multifidi, erector spinae, glutei and hamstrings to bring forward tissues of a body level towards those bones on its backside. As a biomechanical force, then, earth operates in both the negative y-axis and negative z-axis.

It's worth mentioning, too, that forces – each drawing the ideal of a principle forward – are meant to induce body physiologies as they are engaged by life. Along these lines, it should be noted that heel strikes in that negative y-axis generate piezo-electric currents which physiologically induce osteoblasts to produce more bone, more of the body's earth element.

The next biomechanical force as we move up elementally relates to the water principle. We'll be seeing that it operates in the x-axis. While earth is the force that generates hardness and influences the body so as to keep its tissues sturdy and well aligned, water is the force that generates motion in general by having a substance that is fluid and interconnective.

For a circular and spherical life form, no single axis can be delineated as an x, y or z-axis; all three dimensions of space are undifferentiated from each other. In science it is generally recognized that undifferentiated is a primitive state of affairs. A watery medium tends to allow for such a state.

Imagine this: if you asked 100 people and 100 amoebae to draw a line from side-to-side the amoebae's lines would be going in all directions, whereas the humans would be all drawn in the x-axis. The point to be had is this: because the x-axis is the primitive-most axis of space, and that water would be the next biomechanical force (and elemental principle) up above earth, it is logical that water relates to this x-axis. Our right and left sides are the remnants of this undifferentiated sidedness of primitive life; the top and bottom sides as well as our front and back sides are much more differentiated than our right and left sides.

Water's force initiates movement – a counter to the static, inert, solid state of earth. A slow river's sinuous side-to-side motions convey this x-axis power of water. This force pushes from side-to-side in our body. In some way or another it seeks balance and interconnectedness between opposites, beginning with our right and left sides. This productive way of generating balance plays out as we walk. We don't hop forward; we move in a side-to-side way as we shift our weight from one forward foot to the other.

This side-to-side motion generates local cellular vitality through its tides of x-axis motions. Connective tissue like ligaments and discs – noted as water element tissues – are especially dependent on this principle in operation. This model helps us to recognize the value of both good nutrition and our body's x-axis side-to-side motions for our connective tissue. There are a host of innovative ways to induce horizontal motions to draw nutrients into distressed regional tissues, where all our cells live and where blood pressure is known to be very low.

The air principle relates to the bodily need for empowerment and “elbowroom”, which is what muscles give us. The y-axis' life-positive nature opens up to us as we see it being the axis in which muscles especially empower us. A weak region can be helped when this air force is

drawn upon therapeutically; local muscle vigor is so induced. With that said, , even as our muscles embody this air principle that requires all existent things to have elbowroom, in the universe's holistic way, each principle has set of muscles that work in its resonant axis. The well-being of the body's air system – its muscles – depends on each principle doing their job in the body's overall musculoskeletal schematics.

Because each principle's muscles translate its abstract ideal into a life-positive force, weak areas of a patient can be strengthened by turning on these muscles. As patients come in with their specific joint or regional problems, exercises can quickly be tuned to turn on a weak principle's muscles; channeling their associated life-positive force there.

The fire principle brings to our attention the model's fourth construct, which speaks to the forward focus of nature and our life. The unity of our body is oriented forwardly. Nerves are seen as the fire tissue of our body. Fire (as in the sun) is the highest element of nature and is the organizing, ordering force within nature; our nerves are the most refined tissue of the four, creating much of our body's order and unifying organization. Awareness of the positive z-axis dimension of our nerve's functionality promotes innovative ways to treat nerve energy breakdowns. The hips and shoulders are especially vulnerable extremity-wise.

Together these life-positive principles are meant to operate in us. Ultimately, and toward practical gain, through this model chiropractors can improve their skeletal aligning treatments and activate a set of life-positive natural forces that are tied to muscle-driven, axis-framed kinetic chains, which move through their patients' bodies.

As far as therapeutic intervention, this model suggests that vector-driven (vs. rotational) x, y, or z-axis muscularly-generated motions within a troublesome local bodily region – working in tandem with its particular biomechanics and skeletal anatomy – are especially useful.

Through this type of intervention – by purposely having our musculoskeletal system engage these principles – we can overcome our body's inherent postural-biomechanical imbalances, renew injured tissues and increase local tissue resiliency. In the process we make the body more healthy and whole.

The following speaks to the relationship of the Fire-Air-Water-Earth foursome to a variety of body-centric realms.

**The relationship between *principle, force,*
bodily tissue, anatomical structure,
*x, y, or z-axis motion, and physiological function***

1. The **Earth** force operates in the **negative y-axis and negative z-axis**. Each of our bipedal body's transverse levels are ***aligned toward the ground*** (-y-axis), and optimally ***rooted toward its backside*** (-z-axis). **Bones** embody the Earth principle. The bones of our skeletal system provide structural **sturdiness** – foundational to healthy body function. Bones are strengthened

by piezo-electrical currents induced by compressive forces occurring at the body's most -y axis structure's most -z axis part, its heel.

Significantly, muscle-driven motions in Earth's -z axis and -y axis stimulate the **alignment** of our skeletal system's parts, which allow for Earth's principle of sturdiness to express itself in us. Isometric pull-backs help the tissues within a transverse body level to function in higher ways because of the positive postural changes they induce. Spinal adjustments do much of their work in repositioning bones relative to those axes of Earth.

2. **Water** is the force that allows for side-to-side motion. In the context of the body, **x-axis** muscle-driven motions stimulate the flow of essential nutrients into every local biotic space. The **side-to-side motions** of our bipedal walking works well for this purpose, which is why walking is known to be very health promoting. Different manual therapies can help a region to regain its right:left balances of motion.

Water's principle of interconnectedness comes through its **soft fluid interconnectedness**, and is biologically expressed as **connective tissue** – organ stroma, muscle fascia and ligaments, brain dura. On a more primitive body level, this principle plays out in our blood and the need we have for biochemical nourishment, or food. The CSF of our nervous system, the ventricles of the brain, the blood and lymph system of the body's whole are all tied into our body's Water circuitry.

3. The **Air** force is what allows for **lift and verticality**; it works within the **y-axis**. The **long bones of our legs, and the verticality focus of the lumbar spine** embody this force and principle.

The body tissue that embodies Air is **muscle**. Muscles allow for **movement through space**, which after nature vitalizes it, is called by humankind, *air*. Air's muscles have their actin and myosin pair that move them beyond just being connective tissue. With their ability to contract, muscles embody the principle of **empowerment** in each of us.

Air is the principle which requires everything existing to have its elbowroom space, its separateness from other existent entities. For animals, it is our muscles that give us our elbowroom and allow for self-empowerment as they move us through space. The model suggests that because positive y-axis motions are especially muscle-driven, they do much to stimulate the local tissue vigor and regional resiliency that Air as a principle brings forward. Positive y-axis motions are posited to release strain in the strands of protein that build our body's tissues. The model has a set of prescriptive exercises to strengthen this important half of our musculoskeletal self.

4. The highest of the four, **Fire**, acts within the **z-axis**, generating **forwardly-moving motions**. It is the force behind **back-to-front curving anatomical structures** like the ilium of the pelvis, our ribs and our skull; it is responsible for the back-to-front lordosis of the neck and low back.

The body's (muscle-driven) positive z-axis motions stimulate **higher level organization**. Most of our most organized body movements (like walking) are made in this forward vector of our lives. **Nerves**, the highest most refined body tissue, is the expression of this Fire principle in life; nerves **organize** bodily movement and generalized body order. Slow lunge-like exercises focused within a weak region are used to stimulate healthy musculoskeletal order within it.

The author welcomes comments and questions. He is seeking others in the health field to partner with toward developing this model further. You can contact him at drwalsdorf@gmail.com