

Self-Motion Mechanism (Products)

The invention: The invention of the **Natural Motion** mechanism (**patent pending**) by **Ali F. AbuTaha** will revolutionize the way we move products and ourselves. **Natural motion, or self-motion**, mechanism will lead to prolific products and systems. Combining man's greatest invention, **the wheel**, with nature's **self-motion mechanism** will open up possibilities never imagined before.

Key words: Natural motion, self-motion, wave-induced-motion, natural-mechanical-quantum-motion.

In simple terms: **Controllable, repeatable, linear and diverse forms of motion of bodies or their parts is induced by applying two or more trains of pulses on the surface, or inside, of the body. Applying the pulses directly to the body, or indirectly on a harness, belt, etc induces motion.** A simple method of pulse production is to use small dc motor(s) with rotating unbalanced masses.

The most dramatic experiment conducted by AbuTaha was to mount two small dc motors on a belt, wearing the belt below his waist so that the motors were directly above the hip joints, and applying the trains of pulses (from rotating elements of less than 1 ounce each) which induced his 165 lb body to move forward mechanically. The nervous feedback system worked fine in the tests; i.e., while his mind was aware that motion was **not** ordered by the brain, the nervous feedback system recognized the motion and issued appropriate commands to control balance, etc. In essence, the two dc motors emulated the workings of two giant neuromuscular junctions, which innervated the musculoskeletal system.

Placing such small belts on the waist of toys that stand on one, two or more legs can induce the toy to move forward or in any of diverse ways. Placing two such motors directly on the surface of a body, inside of the body, or on an independent structure, such as a belt or a harness, can also induce the natural motions. Tuning the frequency, amplitude or other parameters can easily produce smooth motions. The mechanism was successfully tested to transport fragile payload, such as crystal, without any damage.

AbuTaha has tested the motion mechanism on bodies made of metals, alloys, wood, composites, plastic, styrofoam, rubber, ceramics and combinations thereof. He also tested the response of diverse geometric shapes, including, square, rectangular, triangular and spherical solid and hollow and odd shapes. The motion mechanism was also tested with countless orientations and locations of the pulsing sources. Speed of up to 1 meter per second has been achieved and bodies of 25 kg (more than 50 lbs) weight have been easily moved with the mechanism.

AbuTaha has developed extensive database, unavailable anywhere else, which shows the behavior and the characteristics of the motion mechanism in terms of velocity, acceleration, force, momentum, energy and other basic dynamic parameters.

Unique Features of the Natural Motion Mechanism

1. Energy is converted into motion in one step: No gears, wheels, pulleys, shafts, linkages, etc.
2. Power plant is a small fraction of the total weight: How many bushels does a horse need to go from Washington to New York? How many calories does your car need to go the same distance? Superior energy advantage.
3. Payload contributes to motion: You don't need a separate engine to move your body. Your body is itself the motion-engine. A body moving with the self-motion mechanism is its own engine.
4. Diverse maneuverability: Turning on a dime or even moving sideways.

Medical

Human-Motion-Belts

These are self-contained belts with two small motors, a battery pack, and a switch. Mechanical pulses innervate the muscles to induce forward motion of the human body. The motors placed over the hip joints act as giant neuromuscular junctions. The mechanical pulses generated by the motors bypass the nervous system to activate the muscles. **(Tested by the Inventor)**.

Limb Activators

Artificial limbs and deadened limbs can be activated directly with mechanical pulses generated by two, or more, small dc motors. No gears, shafts, pulleys, linkages or other mechanical devices are required to activate the limbs. Just as in nature, the pulses are directly converted into motion in one step. **(Tested by the Inventor)**.

Moving Mechanical-Muscle-Models

We know that muscles produce motion, but no one knows exactly how. Every biology classroom can use a mechanical-muscle-model that moves. The muscles' contraction in length and expansion in diameter coupled with the periodic pulses generated by the nervous system are combined in a simple mechanical model to emulate the mind-body system. **(Tested by the Inventor)**.

Wheel-Chairs

See our plain chair models (metal, wood, ceramics) move smoothly directly on floors without wheels, giving disabled people undreamed of possibilities for moving around. **(Models available for demonstration)**.

Transportation

Drive Assist Modules (DAMs)

Combining man's great invention, the wheel, with nature's self-motion mechanism will open up possibilities never imagined before. How efficient will the Drive Assist Modules be? Consider this. The most sophisticated engineering attempts to emulate the performance of a whale, a dolphin, a bee, or a bird have failed. The self-motion mechanism opens up the doors for greater safety, reliability and energy efficiency. Here, changing frequency, phase, polarity, or location of the center of gravity can instantly turn a moving body to any desired direction. The **DAMs** could simply be black boxes fixed in the trunk or on the chassis of a car and connected to the battery, hardly consuming energy, but giving the car an extra push. **(Tested by the Inventor)**.

Aeronautics

Modified Propellers for STOL operation

See how the self-motion mechanism can induce controlled motion at much lower RPM than with standard propellers. **(Models available for demonstration)**.

Robotics

Robots

To date, no robots move naturally. Legged robots are clumsy and robots-on-wheels are not true robots. Even using the most advanced computers and electronics, robots continue to be awkward. The problem is not in the brain of the robots, but in the mechanism responsible for motion. Self-motion mechanism is the ideal solution to robotic activation. (**Models available for demonstration**).

Industrial Mass Movers

Container Movers

The power plant in self-motion is a small fraction of the total weight. Structures and payloads can be made to contribute to momentum than to merely retard the motion. A self contained self-motion belt, or two motors attached separately to the sides of a container, chassis, or structure can move the masses. The self-motion drives can move inordinately heavier masses. The self-motion drives are ideal for use in warehouses, ships, airports, and manufacturing facilities. (**Models available for demonstration**).

Toys

Move old and new toys with belts or with built-in drives

Children and adults will want to own, see and feel toys that move with the self-motion mechanism. Here, you will see how nature converts energy to motion in one step. Put life in old and frozen toys with our **PowerBelts** for Toys and watch the toys move directly on their bare feet, shoes, boots, skis, or skates. Place an interchangeable **PowerBelt** around the waist of an old Barbie, GI Joe, Wrestler, and watch the toys sprint, scurry, dash, scoot, ski, skate, slide, glide, slither, and undulate. Use several PowerBelts and have contests, competitions and marathons between your and your friends' favorite toys. Some toys can be set to emulate walking, stepping, striding, strolling, meandering, and roaming around the kitchen, hallway, walkway, or backyard just like humans or pets. And better yet, see the toys dash forward with our motion mechanism hidden inside the body. (**Models available for demonstration**).

Working Models or Engineering Prototypes are available for immediate demonstration.

Ali F. AbuTaha is recognized for identifying and analyzing the critical liftoff transient conditions for the Space Shuttle and other launch vehicles and for his independent investigation of the Challenger accident. He identified the heat mechanism in the cold fusion phenomenon, which can be found in two papers published in the MIT Journal of Fusion Energy, 1990. He published works on his scientific study of the unidentified flying objects, the possible development and evolution of life in extreme conditions, and he gave invited talks on these and other subjects at home and abroad. He is the lecturer of the advanced engineering course, "**Anatomy of Failure Mechanisms in Modern Defense and Aerospace Systems**," which was highly praised by experts who attended the courses at the **George Washington University** and at numerous public, private and military centers.