

## **History and Benefits of Inverted Decompression, Mobilization and Oscillation**

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### **History**

The origins of inverted decompression, mobilization and oscillation for the correction and prevention of numerous physical ailments are lost to antiquity. Ancient practitioners of yoga and martial arts were inverting themselves thousands of years ago. Physicians in the Middle-Ages used a ladder-shaped bed called the Scamnum Hippocrates to facilitate inverted traction.



**Joseph Pilates**

In the late-1800's, the noted strongman C. A. Sampson advocated the use of an inversion device called the Roman Column. The famous body builder John Grimek trained upside down in the 1940's and 50's. Joseph Pilates, founder of the now popular Pilates System of body alignment and conditioning, also used a variety of inverted postures. Inversion equipment is currently popular for home use in the United States and many countries abroad. American chiropractors, physical therapists, physical trainers and athletes have used inverted decompression, mobilization and oscillation for decades.

The majority of historical and scientific research concerned with inverted decompression, mobilization and oscillation indicates that when properly employed, it is practical, safe and beneficial. At the intuitive level, the instinct and natural inclination for humans to assume a head downward position is seen in the third trimester of human development when the fetus moves to that position. Infants and children often find ingenious ways to get into an inverted position. Elsewhere in nature, the hen regularly rotates her eggs so gravity can properly mold the chicks.

Robert Manatt Martin, Sr., D.C., D.O., M.D., is most often credited with best articulating our modern understanding and application of inverted decompression, mobilization and oscillation. Martin was born and spent his childhood in central Iowa during the early 1920s. He began gymnastics training at the age of six. His father was a Chiropractor.

Robert was regularly sent to the Hermann Institute of Physical Education in Philadelphia for training in gymnastics. After over a decade of training and teaching in physical education, Robert eventually became a Chiropractor, Osteopath and Medical Doctor specializing in orthopedics. Early in his career, he began to combine the healing power of movement to his medical treatments. Dr. Martin migrated to Southern California, and was there in the early 1960's when a new national interest in physical fitness, weight training and gymnastics was ignited under the leadership of President John F. Kennedy. Martin's ideas began to appear in California-based health and physical fitness magazines. From his clinic in Pasadena, he combined decades of

medical studies with the lessons he had learned as a physical educator, relying heavily on the power of rational movement to heal his patients.

In his 1975 book, Cum Gravity—Living with gravity, Martin wrote, “Being a physician who also practices and teaches gymnastics, one discovery became most pronounced to me. I found that my avocation was often helping people far more, in many ways, than my vocation. It was something of a miracle to see the wonderful transformation of ailing men and women into persons of commanding physique and stamina; some of these were individuals who at the beginning of their exercise programs seemed most unlikely to improve.”

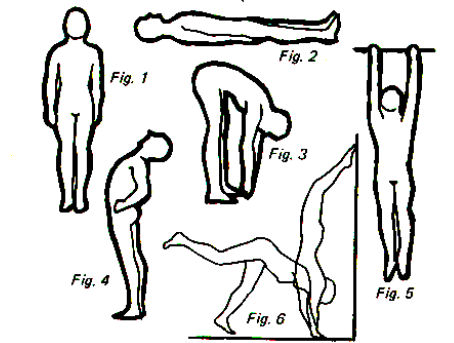
Martin suggested that there are six basic human postural categories. Three of them are common. Most people spend their lives, twenty-four hours a day, in them. The other three postures are uncommon. Under the unidirectional and relentless force of gravity, the common postures produce compression and shortening of stature while the uncommon postures decompress and elongate. In other words, the uncommon postures are compensatory. They mitigate the wear and tear caused by constantly assuming the dominant common postures.

### ***Group I - Common Postures***

Effects: Produce body compression and shortening of stature.

Used: In work, play, rest, etc.

1. The ERECT POSTURE (Fig. 1)  
(The posture of Dominance)
  - a. Sitting
  - b. Standing
2. The HORIZONTAL POSTURE (Fig. 2)  
(The posture of neutrality)
  - a. Lying (On side, back, or front)
3. The FLEXED POSTURE (Fig. 3)  
(The posture of Accessibility)
  - a. Bending forward



**Six Postures**

### ***Group II - Uncommon Postures***

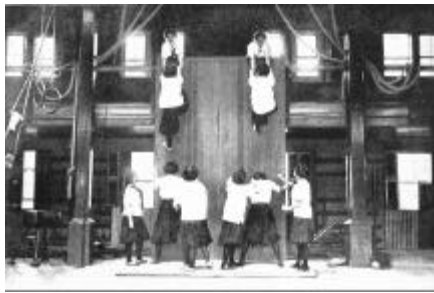
Effects: Produce body decompression and elongation of stature.

Used: To counter and correct adverse effects of gravity produced by the common postures

4. The EXTENDED POSTURE (Fig. 4)  
(The posture of Bending Backwards)
5. The BRACHIATED POSTURE (Fig. 5)  
(The posture of hanging by the limbs - upper or lower)
6. The INVERTED POSTURE (Fig. 6)  
(The Upside-down Posture)
  - a. Hand stand
  - b. Forearm stand
  - c. Shoulder stand
  - d. Hanging by the lower limbs

Early in his career, Dr. Martin began inventing devices that allowed his patients to assume the uncommon postures in his clinic and in their own homes. Martin's inversion boots and tables sparked tremendous public interest in the mid-1970s. Dr. Martin is now retired, but numerous manufacturers continue to produce inversion equipment.

Inverted exercise outside the medical community and specifically related to personal use for the prevention of ailments and/or physical fitness, is found throughout the history of our modern physical culture which began in the mid 1800's.



**Harvard College Mid-1800's**

As commercially available inversion equipment emerged in the early 1970's, some physical educators began teaching the concepts to university physical education students. The University of Iowa was one of the first to integrate decompression, mobilization and oscillation into some of its courses. Northern Illinois University followed in the late 1970's. In a 1986 letter to Dr. Martin, past president of the American Alliance for Health, Physical Education, Recreation, and Dance B.D. Lockhardt wrote, "If the AAHPERD embraces the concepts you teach and modifies its fitness assessments accordingly, every child in physical education classes throughout American will be positively affected by your ideas. I am hopeful that we will make these adjustments as soon as possible and start on a steady and sensible program of preventing back pain long before it starts."



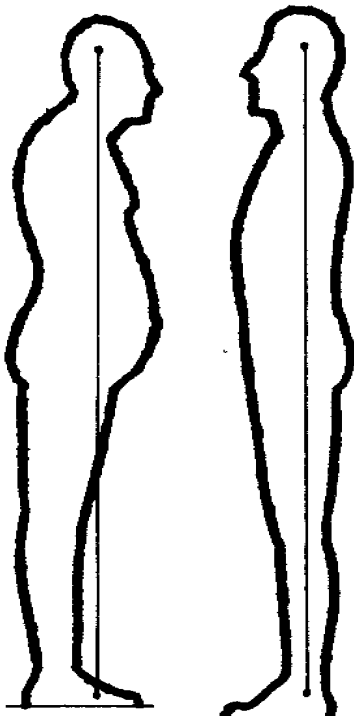
**U.S. Army soldiers**

In 1998, the United States Army Physical Fitness School began training soldiers throughout the Army to use inversion boots. Using a system first developed by United States Army Rangers, soldiers work in teams to move through a series of inverted exercises designed to relieve back stress, develop spatial awareness and compensate for the general stresses of their missions.

## Benefits

Posture can be simply defined as, “Any position in which the body resides.” Good posture is a rational adjustment of the various parts to each other and of the body as a whole to its environment, task or work. The complex human organism is constantly in motion, so our posture is continually shifting. Body mechanics is posture’s close relative. It is the mechanical correlation of the various systems of the body with special references to the skeletal, muscular, and visceral systems and their neurological associations.” In other words, good posture and body mechanics are the foundations of body alignment and efficient motion.

With all its benefits, the upright bipedal posture presents some serious kinesiological challenges. Our many moving parts must constantly seek a center of gravity to avoid unwanted stress and strain. This requires tremendous muscular balance and neural coordination. Slight misalignments anywhere in the system create imbalance throughout the organism, and a pernicious cycle of structural and functional defects follows.



The human body is an organic unit. Its structures and functions adjust to the forces of gravity. Postural deficiencies fueled by gravity’s relentless force lead to a wide variety of physical ailments. Ptosis (drooping or falling) is one of the primary problems associated with poor posture and body alignment. Skeletal ptosis manifests as a forward dropping of the head and various unnatural spinal curves with rotation and displacement. Visceral ptosis is another common condition where an organ or organs are displaced downward. The common hyperflexed slump displaces the lungs, heart, liver, intestines, and other vital organs. Exterior structural adaptations and indicators often include rounded shoulders, a flattened chest and protruding abdomen. Blood ptosis is a downward displacement and collection of blood in the splanchnic veins of the abdomen caused by insufficient nervous control of the splanchnic veins that must work against gravity to do their job.

Postural deterioration can also lead to problems related to asymmetry or unevenness in the body. Hanging from the limbs is a practical way to employ the natural pull of gravity to realign and elongate the entire organism. This is commonly achieved in the head downward position through:

- Decompression—Anchoring the lower limbs and allowing gravity to stretch the body by moving to an inverted position.
- Mobilization—Systematically and carefully moving the body while in the inverted position.
- Oscillation—This is done on an inversion table, and involves rocking gently from the inverted to the erect posture.

Over the years, many claims have been made concerning the benefits of inverted exercise. Anecdotal success has been reported with brain-damaged children, relief from symptoms of cerebral palsy, and spatial awareness for the blind. Some of these claims have not been fully investigated, but there is general agreement that decompression, mobilization and oscillation might offer numerous health-related benefits including but not limited to:

- *Reduced pain and muscle spasm in common back problems*
- *Maximum traction in minimum time*
- *Rhythmic, soothing oscillation to relax muscles*
- *Improved circulation*
- *Decompressed intervertebral discs by painless vertical suspension*
- *Increased mobility of the spine*
- *Painless stretching of paraspinal and vertebral muscles and ligaments*
- *Free inverted suspension, enabling full range of motion for maximum restoration of joint function*
- *Relief from varicose veins*
- *Increased oxygenation of the brain*
- *Enhanced rhythm, especially for children with autism and cerebral palsy*
- *Improved spinal curve in scoliosis*
- *Enhances spatial orientation*

There is a considerable amount of scientific research supporting the use of decompression, mobilization and decompression for some of the above benefits, and the appropriateness of the concept has been likewise investigated and supported. In the mid-1980's, Herbert A. deVries, Ph.D., an authority on exercise physiology and Professor Emeritus at the University of Southern California, and Rene Calliet, M.D., former Chairman and Professor of Rehabilitation Medicine at USC School of Medicine, completed an investigation of the effects of inversion by monitoring the electrical impulses of the back musculature before, during and after inversion through EMG testing. Their findings were published in the June 1985 issue of the *American Journal of Physical Medicine*. A significant reduction of tension was found to result from two minutes of inversion with the effects lasting for two hours or more. Their findings suggested that this prolonged reduction in neuromuscular tension may be responsible for beneficial clinical effects reported in the treatment of low back pain by inversion exercise. The study also found that heart rate and blood pressure were not significantly different after inversion compared with the pre-inversion measurements.

Michael Kane, M.A., R.P.T., of Madigan Army Medical Center in Tacoma, Washington, did an analysis on the effects of gravity traction on intervertebral dimensions of the lumbar spine published in the March/April 1985 issue of *The Journal of Orthopaedic and Sports Physical Therapy*. Vertebral separation was measured on lateral roentgenograms both pre- and post inversion. Results indicated that inversion previously undemonstrated separation at the anterior intervertebral margins and intervertebral foramina. The study concludes that if separation of the lumbar vertebrae is important in the relief of low back pain, inversion is an effective method of treatment.

W. Pforringer, M.D., of the State Orthopaedic Clinic in Munich, West Germany, in conjunction with two colleagues, completed a study published in volume 47 of

*Munchener Medizinische Wochenschrift*. Radiological testing of the lumbar vertebrae taken both before and during inversion demonstrated that inversion produces a separation of the vertebrae resulting in decompression of the spinal column, an enlargement of the foramina intervertebralia and thereby relief of peripheral nerves in the area. Secondary findings indicated an improvement in patients with previously proven degenerative arthrosis of varying degrees in both hip joints.

A study by Robert Goldman, D.O., along with associates at the Chicago College of Osteopathic Medicine, focused on the effects of systemic blood pressure, pulse rate, intraocular pressure, and central retinal arterial pressure during gravity oscillating inversion. Their findings were published in the March 1985 issue of *The Physical and Sportsmedicine*. Systemic BP fell throughout the 15-minute oscillation period. Both systolic and diastolic pressure was significantly reduced. Pulse rate also decreased upon inversion and throughout the oscillation period. Intraocular pressure rose initially, then fell slightly, but was still elevated above preinversion values. The authors concluded that full inversion using an oscillation procedure presents no risk to normal individuals.

Decompression, mobilization and oscillation may not be appropriate for certain individuals with specific medical conditions. Some manufacturers of this equipment provide books and videos that include contraindications as well as specific instructions for assembly and use with their products. The main contraindications include:

- *History of uncompensated congestive heart failure*
- *Severe vascular disease*
- *History of space-occupying brain lesions*
- *Arterial hypertension (uncontrolled)*
- *Severe myopia with tendency for retinal tears*
- *Carotid artery stenosis*
- *Osteopathia: e.g., cancer and tuberculosis of the bone*
- *Detached retina*
- *Glaucoma*
- *Vulnerable areas of stress from recent injury or stress*
- *Medullary pins, and surgically implanted orthopedic supports.*
- *Hiatus hernia (large)*
- *Ventral hernia*
- *Extreme obesity*
- *Pregnancy*
- *Middle ear infection*
- *The use of anti-coagulants, including high doses of aspirin*

## Sources

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