

## STUDIES

While the use of vibration therapy and training is a still relatively new concept to most consumers, it is commonly used by Hospitals, Physical Therapists, Chiropractors, and Personal Trainers. It certainly does not suffer from lack of supportive research, and while there is obviously much research yet to be done in the area, the overwhelming consistency of findings from scientific research that currently exists on the subject is a compelling precursor to the potential applications and impact on this revolutionary method of training and treatment.

Here are examples of published science, supporting some of Whole Body Vibration technology and claims, including enhanced muscle strength, bone density, hormonal release/circulation and pain reduction. This list while being large is not exhaustive of the subject. All exercise carries with it some element of risk. To reduce the risk, everyone, particularly those over 35 or who have known back, heart or blood pressure problems or any other medical illness or problem should be cleared by a physician before beginning any exercise program.

### *Physical Therapy Articles*

- <http://physical-therapy.advanceweb.com/Article/All-Shook-Up-5.aspx>
- <http://physical-therapy.advanceweb.com/Article/Moving-Ahead-With-Vibration-Therapy-2.aspx> <http://physical-therapy.advanceweb.com/Article/A-New-Platform-to-Better-Health.aspx>
- <http://physical-therapy.advanceweb.com/Article/On-Solid-Ground-9.aspx> Fitness
- [Acute changes in neuromuscular excitability after exhaustive whole body vibration exercise as compared to exhaustion by squatting exercise](#)
- [Acute Effects Of Whole-Body Vibration On Muscle Activity Strength & Power](#)
- [Acute physiological effects of exhaustive WBV exercise in man](#)
- [The effects of Whole Body Vibration](#)
- [Human Responses to Vibration Therapy](#)
- [Whole body vibration exercise are vibrations good for you](#)

### *Performance*

- [Acute & Residual Effects of Vibratory Stimulation on Explosive Strength in Elite and Amateur Athletes](#)
- [Acute effects of whole-body vibration on muscle activity, strength, and power](#)
- [Comparing the Effects of Different Whole Body Vibration Intensities on Vertical Jump Performance](#)
- [Effect of 4-month vertical whole body vibration on performance and balance](#)
- [Effect Of Knee Flexion Angle On Neuromuscular](#)
- [Effect of vibration exposure on muscular performance and body balance](#)
- [Effect of Whole-Body-Vibration on Muscular Performance, Balance & Bone](#)
- [Effects on leg muscular performance from whole-body vibration exercise](#)
- [Electromyographic response during whole-body vibrations of different frequencies with progressive external loads](#)
- [Electromyography Activity of Vastus Lateralis Muscle During Whole-Body Vibrations of Different Frequencies](#)

- [Improving strength and postural control in young skiers: whole-body vibration versus equivalent resistance training](#)
- [Influence of vibration frequency amplitude and external load](#)
- [Influence of vibration on mechanical power and electromyogram activity in human arm flexor muscles](#)
- [Oxygen uptake during whole-body vibration exercise comparison with squatting as a slow voluntary movement.](#)
- [Oxygen uptake in whole-body vibration exercise](#)
- [Strength increase after whole-body vibration compared with resistance training](#)
- [The assessment of vibromyographical signals in the time and frequency domains during a fatigue protocol](#)
- [The effects of a whole-body vibration program on muscle performance and flexibility in female athletes](#)
- [Vibration Training Versus Equivalent Power Training For Young Skiers Effects On Strength](#)
- [Vibrations and their applications in sport](#)
- [Whole-body-vibration-induced increase in leg muscle activity during different squat exercises.](#)
- [Will Whole-Body Vibration Training Help Increase The Range Of Motion Of The Hamstrings?](#)

## Arthritis Studies

- [Natural Treatment for Arthritis with Whole Body Vibration](#)
- [Effect of whole body vibration exercise on muscle strength and proprioception in females with knee osteoarthritis](#)
- [Influence of Whole Body Vibration Platform Frequency on Neuromuscular Performance of Community-Dwelling Older Adults](#)
- [Whole body vibration compared to conventional physiotherapy in patients with gonarthrosis: a protocol for a randomized, controlled study](#)
- [Does Acute Whole Body Vibration Training Improve Physical Performance for People with Knee Osteoarthritis?](#)
- [Whole-Body Vibration Compared To Traditional Physical Therapy In Individuals With Total Knee Arthroplasty](#)

## Blood Circulation Studies

- Metabolic And Cardiovascular
- Whole-body vibration exercise leads to alterations in muscle blood volume
- The effect of whole body vibration on lower extremity skin blood flow in normal subjects
- Whole-body vibration dosage alters leg blood flow

## Bone Density Studies

- Whole Body Vibration Therapy Increases Bone Strength
- Anabolism - Low mechanical signals strengthen long bones
- Adaptive responses of human skeletal muscle to vibration exposure
- Effect of 4-month vertical whole body vibration on performance and balance
- Effect of 6 Month Whole Body Vibration on Hip Density Muscle Strength and Postural Control in Postmenopausal Women
- Estrogen and Bone-Muscle Strength and Mass Relationships

- Prevention of Postmenopausal Bone Loss by a Low-Magnitude, High-Frequency Mechanical Stimuli A Clinical Trial
- Assessing Compliance Efficacy and Safety
- The anabolic activity of bone tissue, suppressed by disuse, is normalized by brief exposure to extremely low-magnitude mechanical stimuli
- The effect of weight bearing exercise with low frequency whole body vibration on lumbosacral proprioception
- Transmissibility of 15-Hertz to 35-Hertz Vibrations to the Human Hip and Lumbar Spine
- Whole Body Vibration effect on spinal cord injury
- Low-frequency vibratory exercise reduces the risk of bone fracture more than walking
- Whole-body vibration can reduce calciuria induced by high protein intakes and may counteract bone resorption: A preliminary study
- Low-level mechanical vibrations can influence bone resorption and bone formation in the growing skeleton

## *Cerebral Palsy Studies*

- Whole Body Vibration Therapy Increases Bone Strength
- Vibration Intervention to Improve Bone and Muscle in Children with Cerebral Palsy
- Whole-body vibration training compared with resistance training: effect on spasticity, muscle strength and motor performance in adults with cerebral palsy.
- Preliminary results on the mobility after whole body vibration in immobilized children and adolescents
- Whole-body vibration training for people with cerebral palsy
- Effects of whole-body vibration on spasticity, balance, & hamstring flexibility in a child with cerebral palsy: a case report
- Vibration treatment in cerebral palsy: A randomized controlled pilot study
- Vibration Intervention to Improve Bone and Muscle in Children With Cerebral Palsy

## *Diabetes Studies*

- Efficiency of vibration exercise for glycemic control in type 2 diabetes patients
- The Magic of the Vibration Exercise Machine
- The effect of whole body vibration on lower extremity skin blood flow in normal subjects.
- Take Advantage of the Health Benefits from Whole Body Vibration Machines

## *Fall Prevention Studies*

- Controlled Whole Body Vibrations to decrease fall risk and improve related quality of life in elderly
- Controlled Whole Body Vibrations Improve Health Related Quality Of Life In Elderly Patients
- Vibration therapy improves walk, balance in elderly
- Controlled whole body vibration to decrease fall risk and improve health-related quality of life of nursing home residents

- Controlled Whole Body Vibrations to decrease fall risk and improve related quality of life in elderly
- Controlled Whole Body Vibrations Improve Health Related Quality Of Life In Elderly Patients

## *Fibromyalgia Studies*

- Use of Vibration Assisted Exercise in Fibromyalgia Patients
- Whole Body Vibration as Fibromyalgia Treatment
- Six weeks of whole-body vibration exercise improves pain and fatigue in women with fibromyalgia.
- Improving balance in fibromyalgia using whole-body vibration
- Effective fibromyalgia treatment with whole body vibration
- Fibromyalgia and Whole Body Vibrations

## *Fitness Studies*

- Acute changes in neuromuscular excitability after exhaustive whole body vibration exercise as compared to exhaustion by squatting exercise
- Acute Effects Of Whole-Body Vibration On Muscle Activity Strength & Power
- Acute physiological effects of exhaustive WBV exercise in man
- The effects of Whole Body Vibration
- Human Responses to Vibration Therapy
- Whole body vibration exercise are vibrations good for you
- Whole body Vibration vs. Walking
- Vibrating Machines Make a Comeback
- Vibration Platforms May " Shake Up" Warm-Ups for Softball Players

## *Flexibility/Mobility/Balance Studies*

- Balance Training and Exercise in Geriatric Patients
- Effect of 4-month vertical whole body vibration on performance and balance
- Effect of vibration exposure on muscular performance and body balance
- Effect of whole-body vibration exercise and muscle strengthening, balance, and walking exercises on walking ability in the elderly
- Effect On Muscles Of Mechanical Vibrations Produced By The Galileo 2000 In Combination With Physical Therapy In Treating Female Stress Urinary Incontinence
- Effects of whole body vibration training on postural control in older individuals: A 1 year randomized controlled trial
- Suppressive mechanism of gastric motility by whole-body vibration
- The Feasibility Of Whole Body Vibration In Institutionalized Elderly Persons And Its Influence On Muscle Performance, Balance And Mobility
- Whole-Body Vibration Exercise In The Elderly People
- Whole-body-vibration training increases knee-extension strength and speed of movement in older women

## *Hormonal Response Studies*

- Effect of 6 Month Whole Body Vibration on Hip Density Muscle Strength and Postural Control in Postmenopausal Women
- Effects of vibration and resistance training on neuromuscular and hormonal measures
- Hormonal responses to whole-body vibration in men
- Suppressive mechanism of gastric motility by whole-body vibration

## *Metabolism Studies*

- Metabolic And Cardiovascular Responses During WBV
- Metabolic Study Shows Promise

## *Multiple Sclerosis Studies*

- Effects of whole-body vibration in patients with multiple sclerosis
- How can Whole Body Vibration Exercise Help with Taming MS Symptoms?
- MS and WBV: A Promising Combination.
- Effects of whole-body vibration in patients with multiple sclerosis: a pilot study
- Whole Body Vibration Therapy in Participants With MS Related Balance Deficits

## *Neurological Conditions Studies*

- Effect of whole body vibration stimulus and voluntary contraction on motoneuron pool
- Motor rehabilitation of spinal cord dysfunction by means of whole body vibration
- Neuromuscular Responses To Two Whole-Body Vibration
- Short-term Effects on WBV on Postural Control in Unilateral Chronic Stroke Patients
- The effects of whole body vibration on reflex-induced standing in persons with chronic and acute spinal cord injury

## *Osteoporosis Studies*

- Effect of 6-month whole body vibration training on hip density, muscle strength, and postural control in postmenopausal women: a randomized controlled pilot study
- Effect of whole-body vibration exercise on lumbar bone mineral density, bone turnover, and chronic back pain in postmenopausal osteoporotic women treated with alendronate
- Low-Level, High-Frequency Mechanical Signals Enhance Musculoskeletal Development of Young Women With Low BMD
- Whole body vibration exercise: are vibrations good for you?
- Effect of 6-month whole body vibration training on hip density, muscle strength, and postural control in postmenopausal women
- Whole-Body Vibration for Osteoporosis
- Reversing Osteoporosis Naturally With Whole Body Vibration
- Low-frequency vibratory exercise reduces the risk of bone fracture more than walking:
- Whole Body Vibration for Osteoporosis and Fall Prevention

- Whole-body vibration as potential intervention for people with low bone mineral density and osteoporosis
- Is High-Vibration Exercise Safe for Patients With Osteoporosis?
- High-Frequency Vibration Training Increases Muscle Power in Postmenopausal Women
- Vibration exercise makes your muscles and bones stronger: fact or fiction?

## *Pain Management Studies*

- The effects of whole body vibration on reflex-induced standing in persons with chronic and acute spinal cord injury
- The role of paraspinal muscle spindles in lumbosacral position sense in individuals with and without low back pain

## *Parkinson's Disease Studies*

- Effects of random whole-body vibration on postural control in Parkinson's disease
- Whole Body Vibration for Parkinson's Disease
- Parkinson's Patients Rehab with Whole Body Vibration
- <http://cre.sagepub.com/content/21/9/782.abstract>

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- Acute & Residual Effects of Vibratory Stimulation on Explosive Strength in Elite and Amateur Athletes
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- Will Whole-Body Vibration Training Help Increase The Range Of Motion Of The Hamstrings?

## Rehabilitation Studies

- Medicinal EMFs: Harnessing Electric and Magnetic Fields for Healing and Health
- Molecular pathways mediating mechanical signaling in bone
- New Trend in Fitness, Wellness and Healing
- OSU Researchers to Shake-Up Hip Replacement Therapy
- Power Plate Stimulates Recovery After ACL Rupture
- Preliminary results on the mobility after whole body vibration in immobilized children and adolescents
- Short-Term Effects of Whole-Body Vibration on Postural Control in Unilateral Chronic Stroke Patients: Preliminary Evidence
- The effect of weight bearing exercise with low frequency whole body vibration on lumbosacral proprioception

## Weight Loss Study

This is a summary of a study published in Obesity Facts. The European Journal of Obesity. Vol. 3(2). 2010.

By Vissers, D., A. Verrijken, I. Mertens, C. van Gils, A. van de Sompel, S. Truijen, and L. van Gaal University of Antwerp, Belgium

### Study Conclusions:

For obese people, abdominal fat (or visceral) is one of the biggest health issues. There is a strong correlation between the incidence of cardiovascular diseases and high levels of visceral fat and it is therefore a major health concern.

### Method:

The study of Vissers et al. (2009) involved 79 obese adults (61 completed the study), who were randomly divided into 4 groups:

- Group 1 received a diet only program (DIET)
- Group 2 received a diet plus traditional fitness program. (FITNESS)
- Group 3 received a diet and a Whole Body Vibration machine program (WBV)
- Group 4 made no changes to their lifestyle (CONTROL).

Each group followed the intervention for six months and then had a six month follow up. Body composition and metabolic features were measured at three, six and 12 months. One measurement performed was the determination of visceral fat tissue.

In all three study groups (DIET, FITNESS and WBV) bodyweight decreased significantly (5-10%).

In measurements taken after the 6 month follow up only the FITNESS and WBV groups managed to maintain their weight loss of 5% or more in the six month follow up period. The WBV group maintained a weight loss of over 10%.

The WBV group lost twice as much visceral fat after six months, when compared to the FITNESS and DIET groups. The decrease in visceral fat also remained at the same level in the WBV group after 12 months, while the DIET and FITNESS groups returned to their baseline values after 12 months.

### Q& A's

Why did the WBV group not return to baseline values as the other groups did after 12 months?

It may be related to the hormonal changes that WBV training may cause. An animal study (Rubin et al. 2007) showed that vibration caused the adipogenesis (creation of fat cells) in mice to drop by 27%. Therefore the vibration prevented the creation of new fat cells. Research is currently being conducted to fully understand the underlying principles of these possible changes in humans.

Why did the DIET group lose more visceral (abdominal) fat than the FITNESS group?



The human body needs energy during and up to 24 hours after fitness training. This is called the 'after-burning' effect. In order to get that energy, the human body will burn the 'easy' fat tissue (the subcutaneous fat) first rather than visceral fat. The results which showed that the FITNESS group lost more body weight than the DIET group is caused by this reduction in subcutaneous fat tissue.

Why did the CONTROL group lose visceral fat tissue during the first six months and then gain visceral fat tissue over the next six months?

The CONTROL group knew they were involved in a study which would involve their weight and fat tissue being measured after the first six months. This may have caused them to eat healthier, eat smaller meals, etc. This would result in a minor decrease in visceral fat tissue. During the second six month phase of the study, the group could be aware that the others being tested were not doing any interventions, so they would feel comfortable in adopting their previous lifestyle, resulting in an increase in visceral fat tissue.

Conclusion:

Adding Whole Body Vibration (WBV) Training to a low calorie diet can help to achieve a sustained long term weight loss and can reduce visceral adipose tissue in obese adult's more than aerobic exercise with a low calorie diet.

TIP: A protein drink 15 to 20 minutes before using wbv attacks the fat and not the muscle. Awesome results.

