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YOUR GUIDE TO PHYSICAL THERAPY

VOLUME 1

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stretching reflex in the respective muscle via the muscle spindle

during one up and down vertical movement. The neuromuscular system reacts to this stimulation by a chain of rapid muscle contractions which result in entire-body vibration.

Exercise causes the body to tire; rest allows the body to recover. By repeating this process, the body adjusts to the level of effort, resulting in an increase in physical performance. This phenomenon, called super-compensation, similarly occurs when training on the TurboSonic® platform. However, compared with traditional training methods, greater results are achieved and hormonal production is increased in much less time when training on the TurboSonic®.

You will see the results of increased flexibility each time you do a SWBV work-out. Touch your toes before your session, and again after the session. You'll be amazed. And, by the end of the session you won't even be sweating or feel fatigued. What you will feel is less stress and more energy!

TurboSonic BENEFITS

NEW: Sonic Whole Body Vibration Therapy

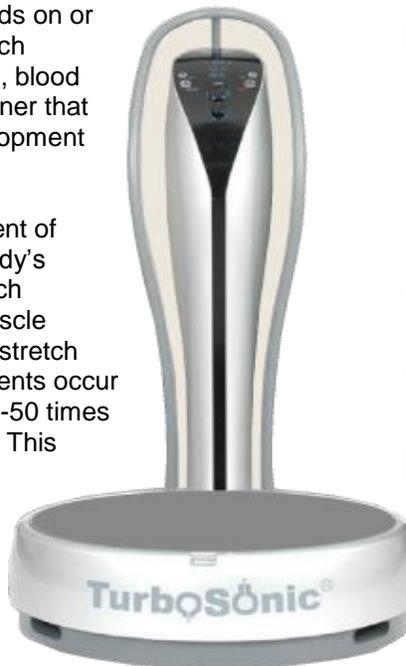
TurboSonic® - Sonic Whole Body Vibration (SWBV) is an advanced patented technology that is used by major medical, rehabilitation, therapeutic centers, senior centers, spas and gyms across the country and around the world.

The therapy consists of standing upright on a TurboSonic® platform that produces sonic vertical vibrations from 3Hz to 50Hz with variations of amplitude

TurboSonic® Vibration Therapy

TurboSonic® consists of a sonic (sound) vibrating platform that the user stands on or performs exercises on which stimulates bones, muscles, blood vessels and cells in a manner that promotes their rapid development and circulation.

The sonic vertical movement of the plate stimulates the body's natural "stretch reflex" which causes a spontaneous muscle contraction to instinctively stretch and contract: both movements occur at varying rates between 3-50 times per second. (3Hz to 50Hz) This movement produces mechanical oscillations with an average cycle length of about 40 msec, which is the time required to induce a natural monosynaptic



from 0 to 100. These sonic vibrations are transferred to your body, stimulating absolutely every part of your body, from your cells to the blood vessels, to your organs and muscles.

These muscle contractions stimulate a dramatic increase in critical blood flow to joints and their connective tissues throughout the body. The result is reduced muscle/tendon/joint-related pain with an increase in bone/muscle mass, strength and flexibility.

Whole-body-vibration offers a host of benefits:

- Provides benefits of both anaerobic and aerobic exercise
- Increases physical strength, dexterity, and endurance
- Increases balance and coordination
- Increases flexibility, range of motion and mobility
- Reduces arthritic pain, joint and ligament stress
- Enhances critical blood flow throughout the body (oxygenation and lymph drainage)
- Increases secretion of hormones that are important in regeneration and repair processes, such as HGH (Human Growth Hormone), IGF-1, and testosterone
- Increases bone density
- Improved pelvic floor function
- Relieves menopausal symptoms
- Increases the “happiness” hormones serotonin and neurotrophine, substances that support our thinking process
- Decreases the stress hormone cortisol
- Rehabilitates injuries and ailments
- Enhances explosive strength and fast twitch muscles
- Enhances conventional training results
- Speeds training recovery
- Accelerates weight loss
- Enhances pain reduction
- Improves collagen production
- Reduces appearance of cellulite
- Tightens Facial Muscles
- Eliminates the effects of stress
- Relieves tension and chronic pain in ankles, knees, lower back and neck

Vibration Therapy : What started out in the Russian space training programs to combat the effects of the gravity-free environment encountered by astronauts in outer space has evolved into a very effective human growth hormone (HGH) releasing machine. Sonic whole body vibration training encourages the release of key wellness, recovery and rehabilitation hormones such as serotonin, **human growth hormone** and testosterone.

Clinical Applications

Vibration Therapy is used in the medical field for the treatment and prevention of a variety of illnesses, injuries, and adverse health conditions.

Emphysema: Ordinarily, patients with emphysema find it nearly impossible to undertake any kind of physical exercise. TurboSonic Vibration Therapy enables patients to achieve most of the benefits of a regular workout and helps them to do cardio-fitness training such as walking or even running.

MS / ALS: Patients with Multiple Sclerosis and Amyotrophic Lateral Sclerosis are unable to train because the nerves are no longer capable of controlling the muscles properly. TurboSonic Vibration activates the muscles directly without relying on the nervous system. Patients tend to feel better, have more energy to cope with everyday activities, experience less pain and are less dependent on others.

Osteoporosis: Millions of Americans, especially women, are at risk of developing this disease, which results from the decalcification of the bones due to hormonal imbalances. The bones become fragile with a tendency to break easily. TurboSonic Vibration Therapy increases bone density, usually reversing the effects of osteoporosis.

Arthritis and Rheumatism: TurboSonic Vibration Therapy can reduce the pain and discomfort of these conditions. It has been proven to increase blood circulation in the joints and dramatically improve flexibility and range of motion.

Lower Back Pain: TurboSonic Vibration Therapy can strengthen the weakened lower back muscles that cause back pain. (Patients with an acute back hernia should not use Vibration Therapy).

Pelvic Instability: This condition usually results from softening of the connective tissue during pregnancy. TurboSonic Vibration Therapy quickly brings the hormonal system into balance, enabling connective tissue to recover its strength and firmness.

Excess Body Fat: TurboSonic Vibration Therapy works several ways to dissolve excess body fat; it increases metabolism which burns calories more rapidly; increases blood circulation and lymphatic drainage thereby removing toxins faster. Human Growth Hormone secretion increases dramatically (460%). Excess body fat melts away effortlessly. People, who use the TurboSonic Vibration Trainer for 10 minutes, three times a week, lose significantly more fat than those who engage in aerobic activity for one hour three times a week!

Cellulite: Those lumpy fatty deposits that form an

unattractive dimpling effect around the thighs and other parts simply melt away under TurboSonic Vibration Therapy.

Stress: Modern life is stressful, causing the release of toxic stress hormones such as cortisol and epinephrine, which throw the immune system out of balance and destroy brain cells by the millions. Sonic Vibration Therapy increases human growth hormone and serotonin (the "happiness, relaxation and well-being hormone") secretion, lowers cortisol and epinephrine secretion 31%, and enhances circulation, all of which counteract the effects of stress on the body and spirit.

Disclaimer: TurboSonic is not intended to diagnose, treat or cure any disease. The benefits listed herein this web site are based on independent studies which reference years of research into (WBV) whole body vibration therapy and training and those studies are independent of the TurboSonic technology and have not been evaluated by the FDA.

[Turbosonicusa.com](http://www.turbosonicusa.com). 5 May 2009
<<http://www.turbosonicusa.com/HowTSWork.php>>.

Vestibular Rehabilitation Therapy (VRT)

Why is therapy needed?

If the brain cannot rely on the information it receives from the vestibular system, a person's ability to maintain posture and coordinate balance can become overly dependent on vision or on the information received from the muscles and joints (proprioception).

This can lead to developing new patterns of movement to compensate for the change and to avoid head movements that are apt to create symptoms of dizziness and nausea. For example, a person might adopt an exaggerated hip sway as a method of balancing, might swivel the entire body rather than just the head in turning to look at something, or might always look down at the floor to avoid what appears as a confusing swirl of activity.

Unfortunately, these types of adaptation can result in headache, neckache, muscle stiffness, general fatigue, and a decrease in the ability to retrain the brain to adjust

to the vestibular problem, hence making the symptoms much worse.

The goal of VRT is to retrain the brain to recognize and process signals from the vestibular system in coordination with information from vision and proprioception. This often involves desensitizing the balance system to movements that provoke symptoms.

What happens during vestibular therapy?

A qualified therapist will first perform a thorough evaluation. This includes observing posture, balance, movement, and compensatory strategies.

Using the result of this evaluation, the therapist will develop an individualized treatment plan that will include exercises to be performed both in the therapy department and at home and that combine specific head and body movements with eye exercises. Many times, treatment may also include increasing activities and exercise in order to strengthen muscles and increase tolerance for certain stimuli.

Some of the exercise and activities may at first cause an increase in symptoms, as the body and brain attempt to sort out the new pattern of movements. But with time and consistent work, the coordination signals from the eyes, proprioception, and vestibular system will occur.

How does therapy help?

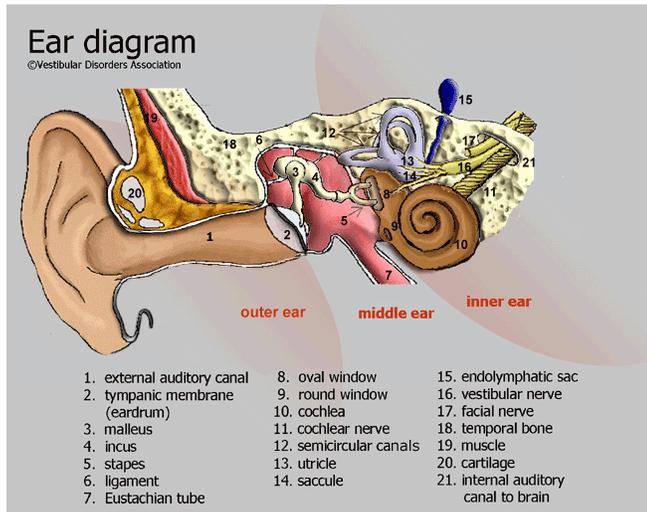
In most cases, balance improves if the exercises are correctly and faithfully performed. Muscle tension, headaches, and fatigue will diminish, and symptoms of dizziness, vertigo, and nausea will decrease or disappear. Many times, vestibular VRT is so successful that no other treatment is required.

From VEDA publications M-5: *Vestibular Therapy*, and F-26: *Vestibular Injury: Compensation, Decompensation, and Failure to Compensate*.

Causes of Dizziness, Vertigo, and Imbalance

Dizziness is the second most common complaint heard in doctors' offices (after lower back pain). Many of these cases involve vestibular (inner ear) disorders. Other cases of dizziness are due to problems unrelated to the inner ear, such as cardiovascular, neurological, or psychological disorders.

- Dizziness caused by vestibular disorders
- Dizziness from non-vestibular causes



Dizziness from Non-Vestibular Causes

Visual disturbances can result in lightheadedness or dizziness. Some people feel dizzy while adjusting to bifocals or a new eyeglass prescription, or from reduced vision due to cataracts.

Hyperventilation can cause temporary dizziness. During rapid breathing, more carbon dioxide than normal is expelled and the level of carbon dioxide in the blood falls, which in turn affects the function of brain cells.

Decreased blood flow to the brain or brain stem can cause dizziness, because insufficient oxygen is reaching the cells. Conditions that can reduce blood flow to the brain include orthostatic hypotension (low blood pressure upon suddenly rising from a lying or sitting position), **dehydration**, **vasovagal syndrome** (a nervous-system response that causes sudden loss of muscle tone in peripheral blood vessels), **arteriosclerosis** (hardening or narrowing of blood vessels), and **osteoarthritis** (a joint disease that can narrow the openings in the neck vertebrae through which blood vessels flow).

Nervous-system disorders such as **peripheral neuropathies** (diminished nerve function in the legs or feet) can cause unsteadiness. A **tumor** may affect the brain stem, the cerebellum (the coordination center of the brain), or the part of the cerebral cortex that controls voluntary muscle movements.

Even **stress, tension, or fatigue** may cause dizziness. Under these conditions, the brain stem functions less efficiently, resulting in some loss of automatic reflex control of balance. This leads to elevated levels of activity for the cerebral cortex, as conscious energy is used to help maintain balance by controlling voluntary muscle movements. Lightheadedness and unsteadiness can result.

From VEDA publication B-1, *Balancing Act*, 2nd edition

Possible Symptoms of Vestibular Disorders

The human balance system depends on the inner ear, the eyes, and the muscles and joints to transmit reliable information about the body's movement and orientation in space. If the inner ear or other elements of the balance system are damaged, the result may be vertigo, dizziness, imbalance, and other symptoms.

Dizziness Caused by Vestibular Disorders

The vestibular organs of the inner ear provide the brain with information about changes in head movement. If the vestibular system is not functioning properly, dizziness, vertigo, imbalance, spatial disorientation, and other symptoms can result.

Vestibular-system distress can be caused by a variety of influences, including viral infections of the labyrinth (labyrinthitis) or the vestibular nerve (vestibular neuronitis). Bacterial infection of either the middle ear (**otitis media**) or the brain coverings (meningitis) may spread to the inner ear. **Allergies** can cause changes in the inner ear fluids or middle ear pressure because of swelling of the Eustachian tube and production of fluid in the middle ear.

Head trauma is a common cause of inner ear damage in people under age 50. A blow to the head or a "whiplash" injury can result in, for example, perilymph fistula or benign paroxysmal positional vertigo (BPPV). Vestibular-system dysfunction may appear immediately following head trauma or after a delay of days, weeks, or months.

Vestibular disorders can also occur from exposure to ototoxins (drugs or chemicals that are harmful to the inner ear or the vestibulo-cochlear nerve). Degeneration of the hair cells in the inner ear is also thought to occur with aging and can result in dizziness and vertigo as well as hearing loss. A benign tumor known as an acoustic neuroma can grow on the vestibulo-cochlear nerve. In many cases of vestibular disorders, including Meniere's disease and other forms of endolymphatic hydrops, the underlying or original cause cannot be determined.

With vestibular disorders, the type and severity of symptoms can vary considerably. Symptoms can be frightening and difficult to describe. People affected by certain symptoms of vestibular disorders may be perceived as inattentive, lazy, overly anxious, or seeking attention. They may have trouble reading or doing simple arithmetic. Functioning in the workplace, going to school, performing routine daily tasks, or just getting out of bed in the morning may be difficult for some people.

The following is a list of symptoms that have been reported by people with vestibular disorders. Not all symptoms will be experienced by every person with an inner ear disorder, and other symptoms are possible. An inner ear disorder may be present even in the absence of obvious or severe symptoms. It is important to note that most of these individual symptoms can also be caused by other conditions, unrelated to the ear.

Vertigo and dizziness

- Spinning or whirling sensation; an illusion of movement of self or the world (vertigo)
- Lightheaded, floating, or rocking sensation (dizziness)
- Sensation of being heavily weighted or pulled in one direction

Balance and spatial orientation

- Imbalance, stumbling, difficulty walking straight or turning a corner
- Clumsiness or difficulty with coordination
- Difficulty maintaining straight posture; tendency to look downward to confirm the location of the ground
- Head may be held in a tilted position
- Tendency to touch or hold onto something when standing, or to touch or hold the head while seated
- Sensitivity to changes in walking surfaces or footwear
- Muscle and joint pain (due to difficulty balancing)

Vision

- Trouble focusing or tracking objects with the eyes; objects or words on a page seem to jump, bounce, float, or blur or may appear doubled
- Discomfort from busy visual environments such as traffic, crowds, stores, and patterns.
- Sensitivity to light, glare, and moving or flickering lights; fluorescent lights may be especially troublesome
- Tendency to focus on nearby objects; increased discomfort when focusing at a distance

- Increased night blindness; difficulty walking in the dark
- Poor depth perception

Hearing

- Hearing loss; distorted or fluctuating hearing
- Tinnitus (ringing, roaring, buzzing, whooshing, or other noises in the ear)
- Sensitivity to loud noises or environments
- Sudden loud sounds may increase symptoms of vertigo, dizziness, or imbalance

Cognitive and psychological

- Difficulty concentrating and paying attention; easily distracted
- Forgetfulness and short-term memory lapses
- Confusion, disorientation, difficulty comprehending directions or instructions
- Difficulty following speakers in conversations, meetings, etc., especially when there is background noise or movement
- Mental and/or physical fatigue out of proportion to activity
- Loss of self-reliance, self-confidence, self-esteem
- Anxiety, panic
- Depression

Other

- Nausea or vomiting
- "Hangover" or "seasick" feeling in the head
- Motion sickness
- Ear pain
- Sensation of fullness in the ears
- Headaches
- Slurred speech
- Sensitivity to pressure or temperature changes and wind currents

From VEDA publication M-3, *Possible Symptoms of Vestibular Disorders*

Vestibular Disorders Association – VEDA. May 7, 2009.
<http://www.vestibular.org/vestibular-disorders/treatment/vestibular-rehab.php>