Our Facilities

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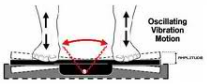
Whole Body Vibration Therapy

Whole body vibration therapy (WBV) has recently become part of musculoskeletal rehabilitation, and has many reported benefits. It was initially developed in the late 1970's by Russian scientists, to maintain muscle and bone strength in their cosmonauts. Research has now been conducted for over 30 years, and there is evidence for a wide range of beneficial effects – particularly in muscles. These include improvements in muscle strength, flexibility, and proprioception. Positive effects have also been reported for balance, circulation and chronic pain.

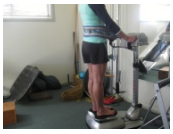
WBV essentially consists of a platform on which the patient stands, sits or places the upper limbs. It vibrates at a set low frequency (in the case of our machine there is a choice of two frequencies).



Some of the research is summarized below.

1. **EFFECTS ON SKELETAL MUSCLES**

a) **Proprioception:** WBV has been shown to selectively stimulate muscle spindle & joint mecho-receptors, important receptors involved in proprioception. There is also stimulation of extroceptive receptors in the skin, of the vestibular system, and alteration in neurotransmitter and hormone concentrations (Moezy et al, 2008; Schuhfried, 2005). Moezy et al (2008) compared balance and strength tasks with and without WBV in patients post-ACL reconstruction. The WBV group had significant improvements in proprioception and postural balance compared to controls. Fontane et al (2005) compared a repositioning task for the lumbar spine between WBV and controls, and showed 39% improvement in the WBV compared to the control group.



b) **Balance:** Runge et al (2000) compared 2 months of 3 x per week (3 x 2 minute sessions) of balance training with WBV vs controls in elderly subjects. There was an 18% improvement in repeated sit to stand test for WBV, and no improvement for the controls. Schuhfried (2005) looked at balance in MS patients with moderate disability, and found significant improvements.

c) **Flexibility:** WBV is thought to enhance circulation, reduce pain, and enhance relaxation, all of which can improve flexibility. There is also a theory that the oscillations dampen the Golgi-tendon organ reflexes, thus promoting better muscle relaxation. Issurin et al (1994) showed significant improvements in thigh adductor flexibility compared to controls and conventional stretching (increase of 14.5cms, 2.0cms and 4.1cms in thigh 'split' respectively). Fagnani et al (2006) compared 8 weeks (3 x per week) with subjects simply standing on the WBV platform and found significant improvements in leg muscle flexibility. Ahlborg et al (2006) looked at spasticity in adults with cerebral palsy, and found significant reductions in knee extensor spasticity after WBV.

d) **Strength:** Ahlborg et al (2006) also found improvement in muscle strength in their group. Issurin et al (1994) showed arm isotonic strength increases of 50% compared to 16% for controls. Fagnani et al (2006) found significant improvement in knee extensor strength.

e) **Core-Stability Training:** The stabilising muscles of the body (those closest to the joints) are also the ones with the greatest number of muscle spindle receptors, which have been shown to be selectively stimulated with WBV. Core stability training is likely to be enhanced with WBV. Benefits have been found for the lumbar spine and pelvic floor muscles.

2. BONE DENSITY

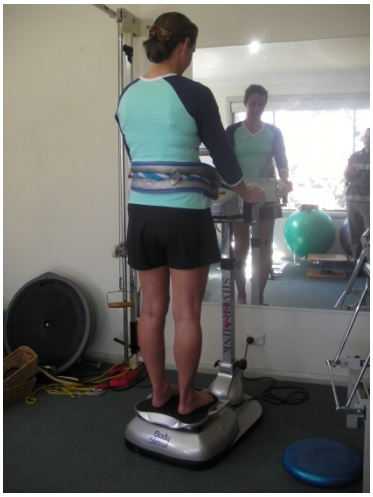
Numerous studies over the last 30 years have shown benefits in bone density, both in healthy subjects and those with reduced bone mineral density (BMD). Rittweger et al (2004) measured tibial BMD in healthy subjects after 8 weeks of bed-rest. The WBV group showed no decreases in BMD, compared to decreases of up to 4% in the control group. Muscle power was also better maintained in the experimental group. Gilsanz et al (2006) looked at 48 young females with low BMD and a history of at least 1 skeletal fracture. 12 months of intermittent WBV (10 minutes per session) produced significant increases in lumbar cancellous and femoral cortical bone, (measured using CT). There is also evidence that WBV can improve fracture healing where there is delayed union. Animal studies demonstrated 34.2% femoral BMD increase after 1 year of 5 x week WBV (Rubin et al (2002)).

3. CIRCULATION

Kerschan-Schindl et al (2001) looked at muscle blood volume (quadriceps & gastrocnemius) and arteral blood flow in the popliteal artery using Doppler ultrasound after 9 minutes standing on a WBV platform. There were significant increases in muscle blood volume, blood flow velocity (6.5 to 13.0 cm/s) and a significant reduction in blood flow resistive index.

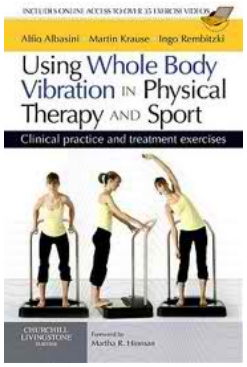
4. MASSAGE

There is empirical evidence of benefits for reducing muscle tension and spasm in non-acute conditions. The unit at my practice incorporates a body belt which can be used around the spine or shoulders where



appropriate. It is a good aid to recovery after exercise, by relaxing muscle, enhancing flexibility, and through its benefits to the circulation.

Where appropriate my patients receive WBV as part of their treatment or exercise programme. Alternatively they can attend for 15-minute sessions doing their own program. Ongoing sessions are particularly beneficial for patients with osteoporosis, arthritis, fibromyalgia, circulation problems, cerebral palsy and mild to moderate MS.



If you are interested in further reading, a book was recently written on the subject. The authors are Albasini, Krause & Rembitzke (Churchill Livingstone, 2010).

In summary, WBV can benefit people with:

- Circulatory problems – including diabetes
- Back or neck problems
- Arm and leg problems
- Osteoporosis
- Stress incontinence / pelvic dysfunction
- Weight problems
- Muscle weakness
- Poor balance / difficulty walking

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