

Topic 1

Power Plate® for Anti-Aging and Regenerative Hormonal Response

Regeneration of Energy, Skin, Mind and Body

Naturally produced growth hormone (GH) maintains bodily functions such as tissue repair, muscle growth, brain function, bone density development, skin thickness, energy, and metabolism, throughout life. As we age, GH levels diminish and associated body functions suffer (Rudman et al. 1990). Researchers, who focus on anti-aging, have been searching for ways to maintain and increase GH levels throughout adulthood. Since Rudman et al reported in *The New England Journal of Medicine; Effects of Human Growth Hormone in Men over 60 Years Old*, physicians have been prescribing GH for anti-aging purposes. These GH therapy prescriptions cost patients up to \$30,000 USD per year and require daily injections. With the desire to find an easier, safer, and more affordable way to stimulate creation of GH naturally within the body, researchers have begun to look at reflexive movement of the human body as a gateway to stimulate this natural anti-aging effect.

Reflexes Can Create Positive Hormonal Responses

Medical researchers have been studying methods to decrease the Deconditioning affiliated with aging is similar to the deconditioning experience in space travel in a weightless environment. Whole Body Vibration (WBV) was first developed by Soviet scientists in an effort to heal cosmonauts from the deconditioning from being in a weightless environment (Rittweger, 2010). They noticed that even when an individual is too weakened to voluntarily contract a muscle, their reflexes engage the muscle. They designed a platform to destabilize the body in order to engage reflexes throughout the body to accomplish their objective. Positive outcomes led to clinical research and an understanding of the health benefits. Researchers in Italy (Bosco et al. 2000) demonstrated this destabilization had a more powerful effect on the hormonal balance of the body than regular exercise. They saw a naturally occurring 460% increase in GH post destabilization stimulation with athletic males (Bosco et al. 2000). This was more than double the GH compared to existing research on conventional exercise and GH stimulation. Numerous researches replicated this study with GH changes ranging from 435% (DiLoreto et al, 2004) - 560% to 2,600% (Sartorio, et al. 2010) - 1,375% (Guinta, 2012) following exposure to vibration. These results indicate a similar but safer benefit can be achieved with WBV than with anti-aging GH prescriptive therapy, as this response is created naturally.

Destabilization

While there is a relationship between WBV and GH response, the cause and effect relationship is not fully understood. In a 1988 literature review on endocrine response to exercise, a 220% increase in GH was demonstrated with conventional resistance training, but heavy (70-85% of 1RM) Olympic lifting had a 609% increase in GH (Kraemer, 1988). With Olympic lifting, stabilization is a key element to moving and balancing the heavy load throughout space, which appears to initiate reflexive balancing neuromuscular engagement. This is similar to the effect of WBV, as the platform destabilizes and in the destabilization, reflexive balancing neuromuscular engagement occurs.

Of WBV platforms, Power Plate moves in a tri-planar manner and has slight tip/pitch in response to movement for both destabilization and safety purposes. Power Plate has long been recognized as the world leader in WBV platforms.

Bosco, C. Iacovelli, M. Tarpela, O. Cardinale, M. Bonifazi, M. Tihanyi, J. Viru, M. De Lorenzo, A. Viru, A. (2000). Hormonal Responses to Whole-body Vibration in men. *European Journal of Applied Physiology*; 81: 449-454.

DiLoreto, C. Ranchelli, A. Lucidi, P. Murdolo, G. Parlanti, N. DeCicco, A. Tarpela, O. Annino, G. Bosco, C. Santeusano, F. Bolli, G. and DeFeo, P.

(2004). Effects of whole-body vibration exercise on the endocrine system of healthy men. *Journal of Endocrinological Investigation*. 27 (4):323-7.

Guinta, M. Cardinale, M. Agosti, F. Patrizi, A. Compri, E. Rigaminti, A. and Sartorio, A. (2012). Growth Hormone-Releasing Effects of Whole Body Vibration Alone or Combined with Squatting plus External Load in Severely Obese Female Subjects. *European Journal of obesity*; 5:567-574.

Kraemer, W. (1988). Endocrine response to resistance exercise. *Journal of Medicine and Science in Sports and Exercise*. 20 (5):S152-S157.

Rittweger, J. (2010). Vibration as an exercise modality: how it may work, and what its potential might be. *European Journal of Applied Physiology*. 108(5): 877-904.

Rudman, D. Feller, A. Nagraj, H. Gergans, G. Lalitha, Goldberg, P. Schlenker, R. Cohn, L. Rudman, I. and Mattson, D. (1990). Effects of Human Growth Hormone in Men over 60 Years Old. *New England Journal of Medicine*; 323:1-6. DOI: 10.1056/NEJM199007053230101.

Sartorio, A. Lafortuna, C. Maffioletti, N. Agosti, F. Marazzi, N. Rastelli, F. Rigamonti, A. Muller, E. (2010). GH responses to two consecutive bouts of whole body vibration, maximal voluntary contractions or vibration alternated with maximal voluntary contractions administered at 2-h intervals in healthy adults. *Growth Hormone & IGF Research*. 20: 416-421.

powerplate.com