



Increased muscle activation with Vertex™ vibration exercise



*The use of the FreeMotion Fitness™
Vertex™ increases muscle activity up to
326%*



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This research examining the influence of the Vertex on muscle activity during exercise, demonstrates:

- *Vertex exercise can increase the amount of muscle activity by 326% over exercise without vibration.*
- *High amplitude and 30Hz demonstrated the greatest muscle activity.*
- *An examination of the platform movement patterns demonstrated that virtually all movement was in the vertical direction.*

Muscle Activation

In order to cause motion, stabilize the body, or move an external resistance, the neuromuscular system generates force through contracting muscles. The amount of muscle that is activated depends on the task or conditions. Complex movements require greater muscle activation as do movements resisted by heavy resistance. Simple movements or those requiring very precise control rely on small amounts of muscle tissue.

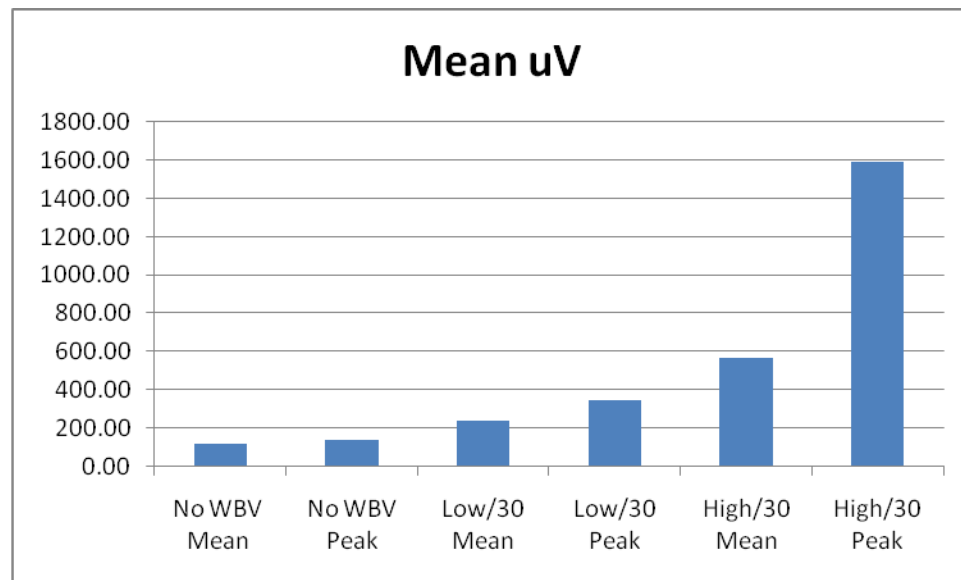
When using exercise as a means of improving muscular fitness, the goal is to overload (place an unaccustomed stress) on as much muscle tissue as possible in the least amount of time. Especially in the beginning stages of training, the nervous system does not recruit large amounts of muscle tissue to perform resistance training exercises. Thus, strength is limited but increases very quickly as the brain becomes more accustomed to the stress of such exercise. Even in heavy resistance training it is difficult to recruit large amounts of muscle tissue among the general population. It takes years of training and preparation before the brain will allow the recruitment of large portions of muscle tissue and generate high levels of force. The result is exercise that focuses on small portions of the body's muscle tissue and a failure to train muscle fibers that are not recruited. What is needed is a form of exercise that promotes increased muscle tissue activation, enabling more rapid and impressive strength adaptations.

Whole-Body Vibration and Muscle Activation

Vibration exercise has been shown to increase strength and power to a degree similar to light-to moderate-resistance training. One theory as to why such training mimics the effectiveness of conventional exercise is an increased activation of muscle tissue during training. Recent research conducted under the direction of Dr. Matthew Rhea, Director of Research for the RACE Rx™ Academy of Exercise Sciences, demonstrates that whole-body vibration exercise on the Vertex increases muscle tissue activation during exercise by as much as 326%.

Ten men were prepared with EMG monitors over muscles in the legs. EMG measures the amount of muscle tissue activation and provided a means for comparing the amount of activity with and without vibration stimulus. Measures were taken at low/high amplitudes, 30 Hz. Comparisons of both mean and peak muscle activity were made following data collection.

Muscle activity (μV) with and without vibration stimulus



These data demonstrate that vibration stimulus has a profound effect on muscle activity during exercise. An increase in up to 326% represents the recruitment will dramatically increase the amount of strength/power gains observed following training on the Vertex platform.



Implications for Exercise Prescription

These data suggest that WBV will enable the exerciser to recruit and train more muscle tissue in less training time. The result is an increased effectiveness and efficiency of exercise programs. Trainers can include the Vertex into training programs to enhance the overall amount of muscle tissue trained.

Recent meta-analyses published by Dr. Rhea and Dr. Pedro Marin demonstrated that vertical movement platforms result in significantly greater strength and power improvements as compared to oscillating platforms. The results also demonstrated that amplitude of 8-10 mm at frequencies of 30-40 Hz were optimal for developing strength and power. Testing was performed on the Vertex (via the use of an accelerometer) to determine the specific movement patterns. This analysis demonstrated that virtually all motion was vertical and amplitudes of 4-10 mm were measured. Therefore, the movement patterns and amplitudes on the Vertex represent an effective form of vibration exercise.

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