

# Strength Gains and Higher Jumps with Power Plate® Training

Research Shows Power Plate Training Results in Strength Gains and Improved Vertical Jump Height in 12 Weeks.

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## Study Conclusions:

1. Whole body vibration - performed on the “classic” Power Plate - increases strength at least as effectively as conventional resistance training.
2. The whole body vibration’s strength increases are not due to the placebo effect.
3. Whole body vibration enhances the body’s sensory awareness and function, force production and vertical jump height.
4. Previous studies with untrained subjects proved that whole body vibration workouts had no adverse side effects. In general, workouts were considered enjoyable and not exhausting.
5. The positive results suggest the indication of Power Plate training for therapeutic uses in populations who are not attracted to or physically able to perform conventional strength training. This may provide safe, proactive, effective interventions to enhance wellness in many environments.

These research findings reveal exceptionally positive outcomes for many populations who wish to enhance their strength for all activities in daily life. Benefits of Power Plate training are not exclusive to healthy, untrained subjects, like those studied here. Benefits can be seen by anyone who wants to become or remain strong and perform better in life. Many populations, including the elderly, post-injury and rehabilitation patients and high-performance athletes will benefit from the simple, effective exercises performed in Power Plate training.

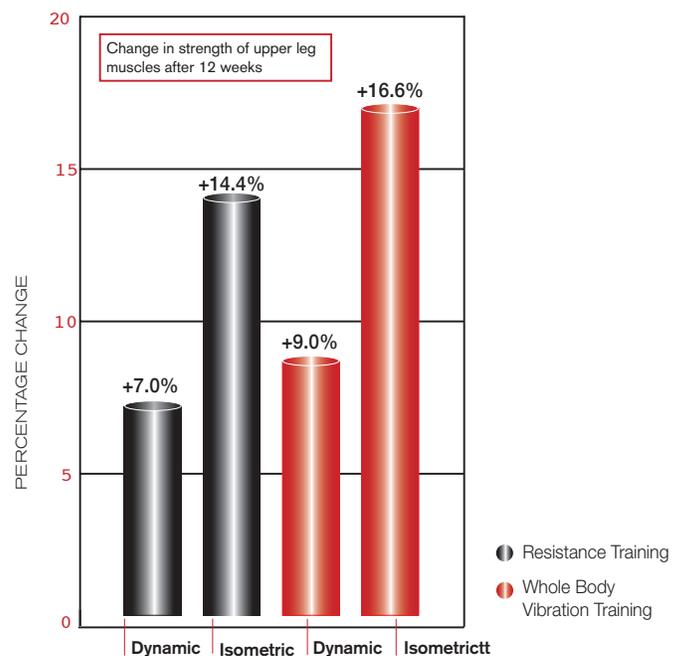
## Method:

Sixty-seven untrained subjects were divided into four groups, and exercised three times per week for 12 weeks.

1. The whole body vibration group used Power Plate. They performed standing knee extensor exercises at a frequency of 35-40 Hz, such as lunges and squats (see fig. 3).
2. The placebo group also used Power Plate, which was adapted so that it did not generate vertical sinusoidal vibration. They felt a vibration, but it was too subtle to elicit a training effect. They performed the same exercises as the whole body vibration group.

Figure 1

Change in strength of upper leg muscles (M. rectus femoris) after 12 weeks in both groups.



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- The resistance training group performed a cardio warm-up and knee extensor exercises on two conventional strength training machines.
- The control group did not participate in any training.

Tests: The contractile properties of the knee extensors were evaluated at the start (pre-test) and after 12 weeks (post-test). A dynamometer was used both times to measure isometric, dynamic and ballistic knee extensor strength on all subjects.

## Results:

The whole body vibration group achieved a 16.6% gain in isometric strength of knee extensors, a 9% increase in dynamic strength of the quadriceps muscles, and a 7.6% increase in vertical jump height. There were no reports of adverse side effects. Most subjects found the vibration training enjoyable and fatiguing, but did not consider it a hard or exhausting workout. The placebo group, using a non-functional vibration machine, did not achieve strength or power gains, although they performed the same standing knee extensor exercises.

The resistance training group achieved strength gains of 14.4% in isometric and 7.0% dynamic strength respectively; there was no significant improvement in power and vertical jump height.

The control group showed no improvement in any of the properties measured.

## Conclusions:

Training on a whole body vibration platform is an efficient training stimulus to increase muscle strength.

In addition, it is likely that while Power Plate training requires little exertion and is considered enjoyable, it does elicit a biological adaptation that is similar to that produced by conventional resistance training.

Whole body vibration provides people with all of the benefits of strength and power training without the possible negative effects of heavy loading, which is particularly important for populations who would not tolerate loading but could truly benefit from gaining muscle strength and power. Whole body vibration may be indicated for use in all strength training environments, and for a variety of populations.

Figure 3

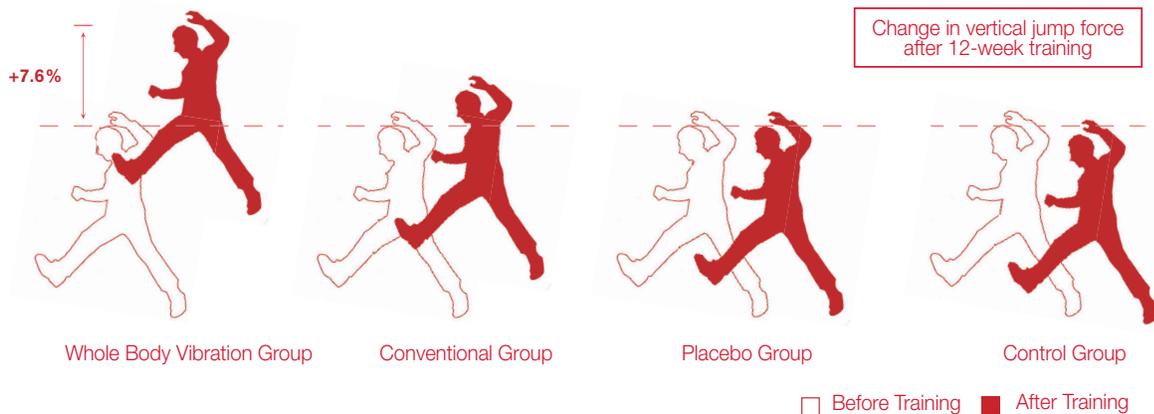


Lunge

Squat

Figure 2

Change in vertical jump force after 12 weeks training for the four experimental groups.



This research suggests that whole body vibration has great potential in therapeutic environments. It can enhance muscle performance in rehabilitation patients and the elderly, as well as in populations who may not be attracted to, or physically able to, perform strength training. Whole body vibration can also enhance the performance of athletes, as suggested by improved strength and vertical jump height as achieved by the subjects in this study.