



---

# Whole-Body Vibration Training on the iTonic® and Acute Changes in Blood Pressure



*The use of the FreeMotion Fitness®  
iTonic® Platform as a form of resistance  
training does not increase blood pressure  
like conventional resistance training  
exercise.*

---

⋮

---

# Whole-Body Vibration Training on the iTonic® and Acute Changes in Blood Pressure

*The use of the FreeMotion Fitness®  
iTonic® Platform as a form of resistance  
training does not increase blood pressure  
like conventional resistance training  
exercise.*

## **Demonstrated Changes in Blood Pressure during Whole-Body Vibration Training**

This research examining changes in blood pressure during whole-body vibration training, demonstrates:

- *Blood pressure is not significantly elevated during WBV exercise.*
- *WBV exercise may serve as an effective tool to maintain muscular fitness in individuals suffering from cardiovascular disease, high blood pressure, risk of stroke, or other cardiovascular conditions.*

## **Importance of Resistance Exercise for Maintaining Functional Fitness**

Resistance training has been shown to have valuable effects on functional abilities in people of all ages. This impact is especially important among an aging population where physical activity patterns have a great influence on the prevention of chronic disease. If an individual lacks the muscular fitness (power, strength, muscular endurance) to perform basic activities of daily living or to participate in a basic cardiovascular exercise routine, their health will suffer. Quality of life is also closely tied to muscular fitness in an aging population with individuals found to have higher levels of strength reporting much greater life satisfaction.

One challenge that exercise professionals and clinicians have faced with regards to resistance training is the marked increase in blood pressure that occurs during a resistance training exercise. In fact, high-intensity resistance training has been shown to increase blood pressure to as high as 480/350 mmHg. Holding one's breath during resistance training and the

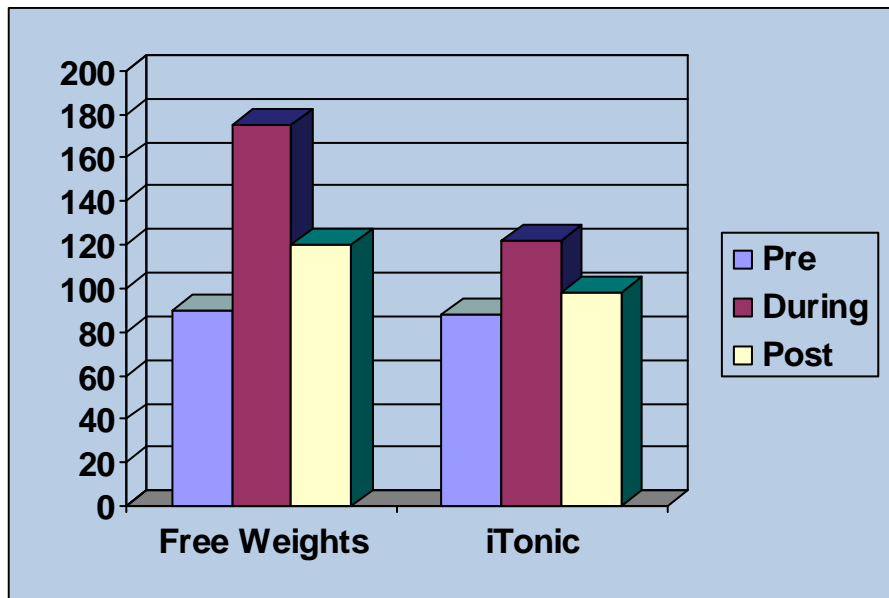
pressure of the contracting muscle applied to the blood vessels results in high internal pressures that must be overcome to continue to move blood through the circulatory system. For individuals susceptible, or already suffering, from high blood pressure or heart conditions, this dramatic elevation in blood pressure is not suggested or healthy. This results in the inability to perform exercises that will maintain or improve muscular fitness and a spiral effect eventually leads to low physical activity and an even greater risk of cardiovascular disease.

A form of resistance training that can increase muscular fitness, without dramatically increasing blood pressure, would serve to prevent the decline in muscular fitness and physical activity patterns among populations where conventional resistance training is avoided due to health conditions or concerns.

### Examining Acute Changes in Blood Pressure during WBV Exercise

Recent research conducted under the direction of Dr. Matthew Rhea, Director of Human Movement at A.T. Still University, demonstrates that whole-body vibration exercise on the iTonic® does not significantly increase mean arterial blood pressure. Twelve healthy adults ages 20-45 years (8 men, 4 women) performed 1 set of either free weight squats at 75% of 1RM for 30 seconds or 1 set of body weight squats on the iTonic® for 30 seconds (35 Hz, High amplitude). Blood pressure was measured by a cordless arm cuff before, during, and after each set of exercise. Mean arterial pressure, representing the average pressure in the circulatory system, was calculated and analyzed to compare the two forms of resistance exercise. Moderate-intense free weight squats increased blood pressure approximately 3 times more than whole-body vibration squats.

Figure. Changes in Mean Arterial Pressure





---

## Implications for Exercise Prescription

These data demonstrate that WBV exercise does not significantly increase blood pressure. When compared to conventional resistance exercise, the elevation in blood pressure is only slight during WBV. The bulk of published research demonstrates that WBV exercise is a safe and effective means for improving muscular fitness. Together with this research, WBV exercise can be considered an effective alternative to conventional resistance training to enhance or maintain muscular fitness among individuals who currently suffer from, or are at risk for, cardiovascular conditions such as high blood pressure, atherosclerosis, or coronary heart disease.