

# INTRODUCTION



Juvent's Dynamic Motion Therapy® (DMT) is a unique and patented exercise device which has the potential to dramatically improve a person's health and lifestyle. This research overview touches on a number of major medical conditions that Juvent's DMT has shown to help.

Ideally all the research presented would have used only Juvent's device, but studies on the wide range of conditions addressed with Juvent in the clinic would require resources far above those of a small device company. We do, however, take great care to make sure that any non-Juvent research presents data that reflects similar outcomes observed in the field when a Juvent is used.

This is also not an attempt to show an overall equivalence between Juvent's DMT and other whole body vibration(WBV) technologies. Juvent conforms to the strict ISO vibration standards for exposure and assures that each user will not be exposed to potentially dangerous levels of vibration. It is an accepted medical paradigm that safe dosing is as important as the benefits of the therapy being applied. Juvent's patented mechanism applies a pure sinusoidal vertical displacement(.05-.07mm, 0.3g) coupled with an accelerometer and a sophisticated computer algorithm not seen in other platforms.

We do not want to leave the impression that the research behind Juvent's DMT technology is lacking. There has been over \$45 million dollars in research and development, 50+ peer reviewed papers and 6 double blind, prospective, randomized studies completed. Many of these studies have demonstrated a clear benefit over placebo and additional studies are on-going.

The mechanism of action for the Juvent platform is still not fully understood. Research in the lab and clinic have pointed to several key mechanisms that appear to be at work; micro-impact(defined as less than 1g in force.), activation of Type II muscle fibers, stimulation of the lymphatic system and in animal studies, the up regulation of mesenchymal stem cells, thought to promote healing in a wide variety of orthopedic conditions. Additionally, recent research is pointing to the importance of an active and healthy skeletal system as a vital component of the endocrine system.

In closing, Juvent is not a drug or cure for any disease. It is a unique and novel exercise device. Many of the same principals apply to Juvent as to any exercise, a user must use the device frequently and regularly over an extended period of time to achieve the desired outcomes. Additionally, a physician should be involved with any well designed and executed treatment or exercise program to maximize results.

We hope that this overview will begin a productive application of this technology in your practice.

Sincerely,  
Rush E. Simonson, Chairman & CEO  
W. Andrew Hodge, MD. FACS, Chairman, Medical Advisory Board

# SAFETY



## ABSTRACT S1

According to experimental studies, low-amplitude high-frequency vibration is anabolic to bone tissue, whereas in clinical trials, the bone effects have varied. Given the potential of whole body vibration in bone training, this study aimed at exploring the transmission of vertical sinusoidal vibration to the human body over a wide range of applicable amplitudes (from 0.05 to 3 mm) and frequencies (from 10 to 90 Hz). Vibration-induced accelerations were assessed with skin-mounted triaxial accelerometers at the ankle, knee, hip, and lumbar spine in four males standing on a high-performance vibration platform. Peak vertical accelerations of the platform covered a range from 0.04 to 19 in units of G (Earth's gravitational constant). Substantial amplification of peak acceleration could occur between 10 and 40 Hz for the ankle, 10 and 25 Hz for the knee, 10 and 20 Hz for the hip, and at 10 Hz for the spine. Beyond these frequencies, the transmitted vibration power declined to 1/10th–1/1000th of the power delivered by the platform. Transmission of vibration to the body is a complicated phenomenon because of nonlinearities in the human musculoskeletal system. These results may assist in estimating how the transmission of vibration-induced accelerations to body segments is modified by amplitude and frequency and how well the sinusoidal waveform is maintained. **Although the attenuation of vertical vibration at higher frequencies is fortunate from the aspect of safety, amplitudes >0.5 mm may result in greater peak accelerations than imposed at the platform and thus pose a potential hazard for the fragile musculoskeletal system (our emphasis added).**



**“Transmission of Vertical Whole Body Vibration to the Human Body” *Journal of Bone and Mineral Research* Volume 23, Number 8, 2008: 1318-1325.**

**Juvent note:** Safety is our Company's number one priority. The majority of whole body vibration (WBV) systems on the market today operate as user controlled, 1mm - 20mm displacement, 2Hz - 200Hz, 0.5g - 12g+ (not including the potential transient levels of energy that can be much higher.) We believe that papers like to the one above speak to the dangers of these unregulated levels of energy the users are exposed to. Clinicians are unable to safely control or measure the levels their patients bodies experience with these devices.

Juvent's Micro-Impact Platform uses a patented, resonant feedback loop which monitors and controls our signal to levels that are far within published safety guidelines; 0.05mm maximum displacement, 32Hz - 37Hz, and 0.3g of force. Clinicians can be confident that when they put a patient on a Juvent Platform they will only receive safe levels of energy. Each Juvent platform is built and precision calibrated, not seen in other devices, and then certified by a high resolution accelerometer prior to leaving our factory.