POWER PLATE®

Topic 3

Power Plate® and the Treatment of Pre-hypertension and Hypertension

Cardiac Dysfunction

The leading cause of death in the developed world is myocardial infarction (heart attack), a direct consequence of atherosclerosis or hardening of the arteries. As the arteries lose their flexibility, the heart pumps blood but the walls of the arteries do not move as they should, causing an increase in blood pressure. As the heart pulses, and the pressure is higher, the heart has to work harder to contract. The higher the pressure gets, the greater likelihood an individual will have a cardiac incident (heart attack or stroke). Atherosclerosis is primarily caused by chronic dietary habits, but also has environmental and genetic factors. Conventional exercise reduces blood pressure by increasing the strength of the heart but does not affect arterial stiffness to a significant degree (Casey, et al. 2007).

A Potential Solution via Reflexes

Medical researchers have been studying methods to decrease the stiffness of arteries with pharmaceutical interventions, but in 2005, researchers in Japan found that the muscular reflexive engagement of the body through whole body vibration (WBV) exercise significantly increased blood flow and oxygenation (Yamada, et al.). Three years later a different group of Japanese researchers found that WBV (using Power Plate) acutely decreased arterial stiffness with males in their mid twenties. (Otsuki, et al. 2008) This research has now given way to a greater level of understanding of what WBV can do for de-conditioned patients who suffer from cardiac dysfunction, as well as creating interest from the scientific research community.

Dr. Arturo Figueroa, an associate professor at Florida State University, has conducted numerous studies on the effect of using WBV/reflexive activation to decrease arterial stiffness.The findings of Dr. Figueroa and his research group showed decrease in arterial stiffness in a young obese/overweight female population. This population differed from the young males that were previously studied, as obese/overweight females are often not able to engage in conventional exercise. Subjects decreased their arterial stiffness significantly using WBV therapy 3 times weekly over 6 weeks. (2011, 2012) Dr. Figueroa has continued to study populations who are at greater risk of heart attack and stroke, with greater levels of de-conditioning. In 2013, he and other researchers began studying similar protocols with post menopausal hypertension and pre-hypertension patients. (Figueroa, et al. 2014) Results were also seen passively with stroke survivors in a parallel study at Florida State University. Stroke survivors in this study could not engage paralyzed lower limbs yet still received the benefit of lower blood pressure and decrease in arterial stiffness using the standard squatting protocol. (Koutnik, et al. 2014) Finally, Dr. Figueroa and his research group found that blood pressure reduction and reduction of arterial stiffness with lower leg strength increase. With conventional exercise, these two elements are not necessarily correlated.This suggests that WBV can be an effective treatment for decreasing cardiovascular risk in postmenopausal hypertensive and pre-hypertensive women (2014), in addition to the previous populations studied.

Unlike most WBV platforms, Power Plate moves in a triplanar manner and has slight tip/pitch in response to movement maximizing reflex engagement with increased safety. Power Plate has long been recognized as the world leader in WBV platforms. Dr. Arturo Figueroa and the Florida State University researchers chose Power Plate as the basis for their WBV/reflexive study and received no compensation from Performance Health Systems LLC, or any subsidiary.

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