Is There a Role For Whole Body Vibration in Protecting Cardiovascular Disease?

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Short Editorial related to the article: Whole-Body Vibration Training Increases Myocardial Salvage Against Acute Ischemia in Adult Male Rats

Cardiovascular disease is the leading cause of death worldwide. In this context, it is well accepted that physical activity plays a critical role as a powerful therapeutic strategy for prevention and progression of cardiovascular disease, both in experimental models and in different clinical situations.[1,2]

Whole body vibration training (WBV) is a new intriguing training program. Importantly, if vibration-induced protection is an effective method of exercise, it could be an alternative to exercise training especially for those who are unable to perform the traditional exercise. Therefore, the effects of WVB on different systems, including the cardiovascular system, has been investigated in recent years.

Considering clinical studies, the results suggesting benefits with this strategy have been conflicting. For example, the effects of WBV on neuromuscular performance, mobility, spasticity, and cardiovascular responses have been studied after stroke. Although some positive results were reported, recent systematic review concluded that there is no solid evidence confirming the beneficial effects of WBV among people with stroke.[3] On the other hand, in pediatric cancer patients, WBV improved lower extremity muscle mass and strength, balance control, gait, and walking ability.[4] Likewise, in patients with moderate COPD, WBV increased physical performance and quality of life. However, there were no effects on inflammatory and oxidative biomarkers.[5]

Keywords

Cardiovascular Diseases; Mortality; Exercise/prevention and control; Vibration; Exercise Movement Techniques; Mobility; Stroke/rehabilitation.

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In experimental models, WBV therapy after ischemia reduced brain damage in senescent rats.[6] In another model, WBV attenuates oxidative stress to ameliorate liver steatosis and improves insulin resistance in db/db mice.[7] Likewise, whole-body vibration reversed ageing-induced increases in hepatic lipid storage in mice.[8]

In this issue of the Arquivos Brasileiros de Cardiologia, Autor et al studied the safety and efficacy of vibration on myocardial ischemia-reperfusion injury.[9] Twenty four male Wistar rats were divided into control and vibration groups and all the rats were subjected to myocardial IR injury. Vibration training consisted of vertical sinusoidal whole body vibration for 30 min per day, 6 days per week. The data showed that vibration training increased the cardiac tolerance to IR injury in rats, as evidenced by the reduction of infarct size and cardiac arrhythmias, and by facilitation of spontaneous defibrillation.

Although promising, these results should be interpreted with caution, because not infrequently, the success of the experimental treatments studied does not replicate when applied to clinical studies. Additionally, cardioprotection strategies in situations of ischemia reperfusion is the main model used to exemplify the difficulties of translational medicine, since positive results from experimental studies are obfuscated by the fact that to date, cardioprotection strategies in clinical studies have shown negative results.[10]

For the above, although the data are not consistent, there is evidence of the benefit of WBV in different models. However, the vast majority of the evidence comes from experimental research and clinical studies with small numbers of patients, single-centre, non-randomized, and not having cardiovascular events as the main outcomes. Therefore, more studies are needed to clarify the exact role of this new modality of physical activity in the management of cardiovascular disease.

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