Whole-body vibration as antihypertensive non-pharmacological treatment in hypertensive individuals with knee osteoarthritis: randomized cross-over trial.

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Background: Hypertension is a serious medical condition characterized by a persistent increase in blood pressure (BP), which is prevalent in individuals with knee osteoarthritis (KOA). Pharmacological interventions are normally used to treat both hypertension and KOA; however, a more sustainable form of treatment is desirable for these clinical conditions. Whole-body vibration (WBV) exercise has been proposed as a non-pharmacological therapy for reducing both BP and KOA symptomatology. This study aimed to evaluate the antihypertensive effect of WBV in hypertensive individuals with KOA.

Methods: Nineteen hypertensive individuals with KOA were randomly allocated to either a control (CG) (n = 9) or a WBV group (WBVG) (n = 10). Subjects in the WBVG were positioned sitting in a chair in front of a vibrating platform (VP) with the feet on the base (peak-to-peak displacement 2.5, 5.0 and 7.5 mm; frequencies 5 to 14 Hz). In the CG, subjects assumed the same position with the VP turned off. The protocols in the CG and WBVG were performed 2 days/week for a total of 5 weeks.

Results: No baseline differences (age, anthropometrics, BP parameters and medications) between the groups were found ($p > 0.05$). WBV exercise reduced systolic BP (SBP: 126.1 ± 2.7 versus 119.1 ± 3.2 mmHg; $p = 0.001$; post hoc: $p = 0.02$; $F = 23.97$) and mean BP (MBP: 82.6 ± 1.8 versus 78.7 ± 1.8, $p = 0.001$, post hoc: $p = 0.02$; $F = 23.97$), while no significant changes were found in diastolic BP (DBP: 68.5 ± 2.2 versus 64.4 ± 2.3; $p = 0.11$; $F = 2.68$).

Conclusions: WBV might be considered a sustainable therapy for exerting an antihypertensive effect in medicated hypertensive individuals with KOA. This decline in BP might translate to a reduction in pharmacological need, although further studies are necessary to understand the mechanisms underlying the described effect.