

Acute effects of whole-body vibration alone or in combination with maximal voluntary contractions on cardiorespiratory, musculoskeletal, and neuromotor fitness in obese male adolescents.

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Musculoskeletal and neuromotor fitness (MSMF) is reduced in obesity. Physical exercise (including whole-body vibration exercise [WBVE]) is reported to improve components related to MSMF. The aim of the study is to evaluate the acute effects of WBVE and maximal voluntary contraction (MVC), alone and in combination, on the cardiorespiratory and MSMF in obese adolescents. Eight obese adolescents performed 3 tests (WBVE, MVC, and MVC + WBVE) in different days and randomly. The outcome measures were diastolic blood pressure (DBP), systolic blood pressure (SBP), mean arterial pressure (MAP), heart rate (HR), peripheral oxygen saturation (SpO_2), handgrip strength (HS), one-leg standing balance (OLSB) test, sit-and-reach (SR) test, stair climbing test (time: T_{SCT} and power: P_{SCT}), and sit-to-stand test (time: T_{STS} and power: P_{STS}). No significant changes were observed in SBP, DBP, MAP, and SpO_2 after the 3 tests, only an HR increase being observed after MVC + WBVE ($P < .01$) and MVC alone ($P < .05$). No significant differences were found in HS, OLSB, T_{STS} , and P_{STS} after the 3 different sessions. An increase in SR was found after MVC + WBVE, MVC, and WBVE ($P < .01$, $P < .05$, and $P < .01$, respectively), while a decrease in T_{SCT} ($P < .01$) and an increase in P_{SCT} were observed only after WBVE ($P < .01$). Taking into account the positive WBVE effects on cardiorespiratory and MSMF, WBVE might represent a nonimpact, viable, and safe exercise suitable for obese patients, which need MSMF improvement without overloading joints.

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