Whole-body vibration exercise in different postures on handgrip strength in healthy women: a cross-over study.

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Objective: To compare the effect of Whole-Body Vibration Exercise (WBVE) applied in push-up modified and half-squat positions, on handgrip strength (HS) and on the electromyography registry (EMGrms) of the flexor digitorum superficialis muscle (FDSM) of the dominant hand.

Methods: Nineteen healthy women (age 23.40 ± 4.03 years, bodyweight: 58.89 ± 9.87 kg), performed in a randomized order five different tests: (S1) Control; (S2) Push-up modified; (S3) Push-up placebo; (S4); Half-squatting; (S5) Half-squatting placebo. The HS and the EMGrms were assessed at baseline and immediately after the tests. ANOVA two-way design mixed test, with Tukey *post hoc*, was used to evaluate the HS, EMGrms and the ratio between EMGrms and HS, i.e., neural ratio (NR). Thus, the lower NR represents the greater neuromuscular modifications. The statistical significance level was set up at $p < 0.05$.

Results: WBVE on S2 increased HS compared to the stimulus applied to the S4 ($p = 0.0001$). The increase in HS was associated with a reduction in the EMGrms of the FDSM ($p < 0.001$) and a lower NR ($p < 0.0001$), i.e., greater neuromuscular modifications, in the S2 compared to the S4 after the tests.

Conclusion: The distance of the stimulus and the positioning on the vibratory platform influence the maximum muscular strength due to neuromuscular modifications of hands in healthy women.