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Effects of Whole-Body Vibration Training on Fibrinolytic and Coagulative Factors in Healthy Young Man

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Abstract : Background: Use of whole body vibration (WBV) as an exercise method has rapidly increased over the last decade. The aim of this study was to evaluate effects of five week whole-body vibration training with different amplitudes and progressive frequencies on fibrinolytic and coagulative factors. Methods: Twenty five healthy male students were divided randomly in three groups: high amplitude vibration group (n=10), low amplitude vibration group (n=10), and control group (n=5). The vibration training consisted of 5 week whole-body vibration 3 times a week with amplitudes 4 and 2 mm and progressive frequencies from 25Hz with increments of 5Hz weekly. Concentrations of fibrinogen, plasminogen, tPA, and PAI-1 before and after 5 weeks of training were measured in plasma samples. Statistical analysis was done using one way analysis of variance. In order to compare pre-test with post test we used Wilcoxon signed ranked test .$P<0.05$ was considered statistically significant. Results: The 5 week high amplitude vibration training caused a significant improvement in tissue plasminogen activator (tPA) (p=0.028), and PAI-1 (p=0.033), fibrinogen showed decrease albeit not significantly (p=0.052). Plasminogen showed decrease not significantly (p=0.508). Low-amplitude vibration training caused a significant improvement in tissue plasminogen activator (tPA) (p=0.006) and and PAI-1 showed decrease not significantly (p=0.907). Fibrinogen showed decrease albeit not significantly (p=0.19). Plasminogen showed decrease not significantly (p=0.095). However, between groups there was no significant effect on tissue plasminogen activator (tPA) (p = 0.50), PAI-1 (p=0.249), Plasminogen (p=0.742), and fibrinogen (p=0.299). Conclusion: Amplitude of vibrations training is a important variable that effect on fibrino lytic factors.

Keywords : vibration, fibrinolysis, blood coagulation, plasminogen
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