

Investigation of the change in the acceleration of whole body vibration in a simulated environment on individuals response time and mental performance

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Abstract

Introduction: Exposure to vibration as one of the consequences of industrial noise or the use of vibration generators can cause discomfort, reduce the efficiency and level of safety in workplaces. Therefore, in this study, the effect of whole body vibration on individual's mental performance and response time was investigated.

Material and Method: In this study, 40 male students of Tehran University of Medical Sciences were selected randomly and divided into two 20 subjects groups. Each group participated in two Pegboard Board and Math Calculations tests. Subjects in each stage of test were exposed to whole body vibration with acceleration in 0.8 and 1.1 m/s² as well as background mode without vibration and were investigated response time and mental performance.

Result: In the present study, the mean response time to the manual Purdue Pegboard test in the vibrational acceleration of 0.0, 0.8 and 1.1 m/s² with a decreasing trend was 197.55 ± 2.7 , 176.25 ± 5.38 and 177.58 ± 2.92 , respectively, which results in a significant reduction in the accuracy of the test. Also, the results showed that whole body vibration does not affect mental performance in shallow levels. But, in the intermediate and deep levels, this difference is statistically significant ($p < 0.001$).

Conclusion: Based on the results, whole body vibration is an effective factor in individual's response time and mental performance, which can lead to a reduction in the accuracy of the work.

Key words: *Whole Body Vibration, Purdue Peg Board Test, Mathematics Calculation, Response Time, Mental Performance*

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