

The short-term effect of whole body vibration training on physical capabilities on active young recreationally athletes.

INTRODUCTION

In recent years, whole body vibration (WBV) has been the subjects of a great amount of research towards improving physical capabilities as a postactivation potentiation the muscle spindle's sensitivity can be increased (Bassenger, 2010). Typically, WBV is realized by the subject above the platform in squat position while the platform oscillates at different intensities and amplitudes (see figure.1)

Previous reports have shown that WBV produces conditioning effects that lead to an increase of power and flexibility (Jacobs & Burns, 2009), but exist controversial data that show no positive effect if don't use an optimal dosage in a controlled manner (Villarreal et al., 2009) and it has been suggested that the frequency may affect to output (Turner et al., 2011).

The purpose of this study was to investigate the effects of a single-body of vibration at two different frequencies on isometric lumbar extension (EL), isometric deadlift (ID), posterior leg flexibility (PLF) and core muscle endurance test (CMET).

METHODS

Participants 23 physically fit and healthy subjects (26.39 ± 4.45) from NOWYOU personal training studio were recruited for the experimental session 30WBV of 50 Hz WBV.

Protocol Each subject complete two trials, i) 30 Hz (3 sets of 30 seconds 2mm amplitude); ii) 50 Hz (3 sets of 30 seconds 2mm amplitude) at position (see figure) using a commercial platform of WBV (PowerPlate Pro 5, Tecno) for isometric strength measurement for lower limb and lumbar was taken using a load cell and followed the ASEP recommendation for muscular assessment. All signals were acquired in digital form. All records of force (kg) were stored on a hard drive for later analysis. Flexibility was tested with sit and reach test was performed using the procedures outlined in the ACSM manual. The participant sat on the floor with shoes on, and fully extended one leg so that the sole of the foot was flat against the floor. She then extended her arms forward, placing one hand on top of the other. With palms down, she reached forward sliding hands along the measuring scale as far as possible without bending knee of the extended leg. Core test was assessment using the suggesting of McGill (1998) we selected test Puente prone. This positions was maintained as possible for evaluate

the endurance stability muscle performance was recorded the maximum time that a person could hold the position without significant alterations or voluntarily surrender

Statistical Analysis

The peak of the three trials on each test was stored on a hard drive for subsequent analyses. Peak data for heart rate, flexibility and time endurance test for both trials were compared using repeated measures ANOVA. Changes in the different physical capabilities parameters for all groups were analyzed by repeated measures ANOVA. Contrast analysis was used to assess between and within group difference.

RESULTS

The 23 subjects completed the study protocol without adverse effects. An analysis revealed that no changes occur in any capability after single exposure WBV ($p > 0.05$)

ID don't increase in any conditions ($p > 0.05$) baseline values 69(6), post30 72(51), post50 73(25). After WBV mean values of peak irLE don't increase significantly for baseline values (50,77), post30 53(89), post50 53(89). The mean air reach test maintain without significant changes ($p > 0.05$) baseline values 2,426, post30 4(452), post50 5(556). The same values without significant changes ($p > 0.05$) in (CMET) baseline values 57(739), post30 (62,208) and post50 (63,565).

DISCUSSION

The present investigation examined the acute effects of WBV on extremity flexibility and muscular. A single bout of WBV don't change values in physical capabilities in any conditions. This data is different from previous reports. For example, (2011) and that in golfers increase the flexibility and power output after a WBV (50 Hz; 2mm; 30 sec) warm up. Protocol differs of our research because they exercised with WBV while our study only use the squat position. This data suggest that the number of exercise can be an important variable for achieve a postactivation potentiation. Similar results are reported by Jacobs & Burns (2009) who found an integram up effect for flexibility and dynamic strength post WBV protocol that was similar to our (near 30 Hz in a squat position 175€ knee extension) but these researchers prolonged the WBV for a total minutes that is superior to our exposure. Thus, time of exposure can be an important variable for warm up which will lead deep changes.

CONCLUSIONS

The results of the current study show that WBV is an ineffective method to acutely increase lower limb muscular force production and flexibility. It is recommended that future research studies investigate the specific effects of various WBV frequencies associated effects the contractile activity muscle skeletal muscle. Further research also needs to investigate the underlying neurological mechanism associated with WBV. Future research is warranted addressing the influence of various protocols-body vibration (., duration, amplitude, frequency) on athletic performance and for their effects on postactivation potentiation

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