

The Influence of Whole Body Vibration Stimulus on Energy Expenditure in Obesities

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Master's Thesis

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Abstract

Purpose: To explore the influence of different levels of acceleration and combinations of amplitude frequency on energy expenditure and oxygen uptake in obesities undertaking whole body vibration (BodyGreen) stimulus.

Methods: Twenty-four volunteer subjects of National Chung-Cheng Universities were equally divided into normal (n =12; age: 23.25±2.77 yrs, height: 168.98±8.48 cm, weight: 63.83±7.94 kg, BMI 22.28±1.34 kg/m²) and obesity (n =12; age: 23.92±2.64 yrs, height: 172.25±7.94 cm, weight: 89.73±11.40 kg, BMI 30.14±2.03 kg/m²) groups according to body mass index (BMI).

Subject-within design was adopted in this study. All subjects were served a whole body vibration stimulus test performed for three times consisted of five combinations of amplitudes. Three-way mixed design ANOVA was utilized exploring the influence of group, acceleration and amplitude frequency on energy expenditure and oxygen uptake. Oxygen uptake obtained minuses baseline oxygen uptake was the dependent variable.

Results: (1) The difference of energy expenditure and oxygen uptake increased in whole body vibration between normal and obesity groups didn't reach statistical significant ($p > .05$). (2)

The difference between all combinations of amplitude frequency reached statistical significant in the levels of acceleration of 0.6g, 0.8g and 1g. 0.8g and 1g both presented the phenomenon of 7mm > 5mm > 3.6mm > 2.4mm > 1.5mm. 0.6g was 7mm > 5mm > 3.6mm > 2.4mm, 1.5mm. (3) The difference between all levels of acceleration reached statistical significant (1g > 0.8g, 0.6g) in the level of amplitude frequency of 7mm.

Conclusion: (1) The amount of energy expenditure was the same for formal and obesities people in whole body vibration stimulus. (2) The energy expenditure in whole body vibration stimulus increased as the level of amplitude frequency increased.

Key words: whole body vibration stimulus, obesity, energy expenditure, oxygen uptake