

Effect of 6 weeks whole-body vibration exercise on functional fitness in the elderly

CHEN, K. W. C.¹, CHEN, W. C.², CHIA, P. S.⁴, CHIU, P. K.³, WANG, S. W.⁵

¹ Chang Gung Institute of Technology / General Education Center, Taoyuan, Taiwan, R. O. C.

² National Taiwan Sports University / Department of Adapted Physical Education, Taoyuan, Taiwan, R. O. C.

³ National Taiwan Sports University / Department of Sports Training Science-Athletics, Taoyuan, Taiwan, R. O. C.

⁴ Southern Taiwan University /Physical Education Center, Tainan, Taiwan, R. O. C.

⁵ Chang Gung University / Department of Physiology, College of Medicine, Taoyuan, Taiwan, R. O. C.

Introduction: Impairment of muscle strength and dynamic balance, and walking ability have been found to be important risk factors for fall. These parameters are known to become impaired with aging. Whole body vibration (WBV) training is being used as a new method for improving strength, power and body balance for the young people and athletes. However, it is not known long-term and short time training of WBV will affect the elderly functional fitness which including lower limbs strength, cardio function and body balance.

Purpose: To determine the long-term six weeks WBV training effect on the elderly functional fitness which including three test: six meter up and go, thirty seconds chair stand and six minutes walk.

Methods: 24 healthy elderly people (only 19 people completely finished the training that were 10 males age 84.3 ± 6.7 yrs, 63.8 ± 7.6 kg, 164.8 ± 7.1 cm; 9 females age 79.7 ± 5.0 yrs, 60.6 ± 6.8 kg, 157.2 ± 6.4 cm) were volunteered to participate in this study which were six weeks WBV training. Elderly people were performed in standing position on a BodyGreen whole vertical vibratory machine (Taiwan), at an intensity of the 1st week to the 4th week: frequency set at 12 Hz, amplitude set at 3mm, exercise time was 10minutes, during the 5th week: frequency set at 9 Hz, amplitude set at 4mm, exercise time was 15minutes and during the 6th week : frequency set at 8 Hz, amplitude set at 5mm, exercise time was 15minutes, for every Monday, Wednesday and Friday morning in a week. We analyze the data before 6 weeks WBV training and after the training for using Paired Samples T-test.

Results and Conclusions: : After 6 weeks WBV exercise program, the 6 minutes walking distance, the time of six meter up and go and the times of thirty seconds chair stand were all significantly improved ($p<.05$). Thus, the present study showed the beneficial effect of the 6 weeks WBV exercise in the elderly functional fitness. This easy WBV exercise program maybe can be promoted to the community to prevent the elderly falling.

Keywords: whole body vibration, older, the elderly, functional fitness