



Service Priorities and Programmes Electronic Presentations

Convention ID: 708

Submitting author: Mr Benjamin Ka Ki LAU

Post title: Physiotherapist I, Prince of Wales Hospital, NTEC

Effects of different kinds of footwear on balance performance: A preliminary study

Lau BKK(1), Yeung AKC(1), Wu CM(1)

(1) Physiotherapy Department, Prince of Wales Hospital

Keywords:

Balance

Footwear

Introduction

Fall is a common problem in the elderly and may lead to serious consequences such as lower limbs fractures and hospitalizations. Footwear is suggested to be one of the contributing factors to fall.

Objectives

This preliminary study is aimed to investigate the influences of common footwears to the balance performance of an individual.

Methodology

A healthy middle-aged man was recruited in the study. Smart Balance Master system (NeuroCom) was employed to evaluate the balance performance by three balance assessment testing protocols: the Sensory Organization Test (SOT), the Adaptation Test (AT) and Unilateral Stance Test. These tests were aimed to evaluate the postural stability under different challenges to balance. The subject was asked to perform the three tests under four scenarios with different footwears: i. Normal sport shoes ii. Home-use slippers iii. Socks iv. Bare feet.

Result

Higher scores in SOT indicate a better balance with the use of visual, proprioceptive and vestibular systems. In the SOT, the subject performed best when wearing shoes and wearing socks with composite equilibrium score of 83, followed by bare feet of 81 and slippers of 78. The higher the score in SOT indicate a better balance with the use of visual, proprioceptive and vestibular systems. In the AT, the subject was assessed for the ability to minimize sway when unexpected changes in support surface inclination were given. Results showed that the subject had minimal sway with bare feet followed by shoe, socks and then slippers. In the unilateral stance test, the subject was tested with single leg standing in eye-closed and eye-open circumstances. There were 4 times of fall out of 12 trials when the subject wore socks and wore slippers; 3 falls out of 12 trials in bare feet and only 2 falls when wearing shoes. Conclusion The preliminary study showed a tendency that wearing shoes or bare feet seemed to enable better balance reactions than wearing socks or slippers in the three balance assessment testing protocols. Although this study is not able to

generate statistical difference or provide generalization statement due to limited subject numbers and study scale, it is suggested that the Smart Balance Master system (NeuroCom) along with other functional tests can be used as outcome measures when investigating effects of footwear on balance in future studies.