Effects of age and gender on gait characteristics using a wearable foot inertial-sensor device assessment
Chayanin Angthong, MD, PhD

Category: Gait studies

Keywords: Gait, wearable device, age, gender

Introduction/Purpose: This study is to determine the effects of age and gender on the gait characteristics using a wearable foot inertial-sensor assessment in the patients with foot and ankle conditions.

Methods: There were 53 patients with foot and ankle-related conditions (38 females and 15 males, mean age: 51.4 (±14.0) years) who were collected for this study. For all patients, the clinical assessments, including the evaluations with validated patient-reported outcome using visual analogue scale foot and ankle (VAS-FA) score and health-related quality of life using validated Short Form-36 (SF-36), diagnoses, and gait characteristics assessment using a wearable foot device with the Micro electro mechanical systems (MEMS) inertial-sensor technology during patients' walking trial for a distance of 10-meter at their self-selected speed. This device captures the gait parameters as distance walked, step counts or length, cadence, and walking speed. Foot Pod output can be wireless synced to a compatible smartphone or tablet. Pearson’s correlation coefficient r or Analysis of variance (ANOVA) tests were used to express the correlation between age and gait parameters or to compare the parameters between male and female groups.

Results: There were insignificantly negative Pearson’s correlation coefficients r between age and walking speed or between age and cadence (P>0.05). Male patients had significantly higher maximum walking speed (P=0.015) and step length than female patients (P=0.011).

Conclusion: In contrary to the previous study, the present study demonstrated that higher age had no effect on the reduction of walking speed. However, the effects of gender on gait characteristics were proved as higher maximum walking speed and step length in men.

Foot & Ankle Orthopaedics, 2(3)
DOI: 10.1177/2473011417S000096
©The Author(s) 2017

This open-access article is published and distributed under the Creative Commons Attribution-NonCommercial 3.0 License (http://www.creativecommons.org/licenses/by-nc/3.0/) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (https://us.sagepub.com/en-us/nam/open-access-at-sage).