Abstract

Background: Gait disorders are common in individuals with Parkinson’s Disease (PD) and the concurrent performance of motor and cognitive tasks can have marked effects on gait. The Gait Profile Score (GPS) and the Movement Analysis Profile (MAP) were developed in order to summarize the data of kinematics and facilitate understanding of the results of gait analysis. Objective: To investigate the effectiveness of the GPS and MAP in the quantification of changes in gait during concurrent cognitive load while walking in adults with and without PD. Method: Fourteen patients with idiopathic PD and nine healthy subjects participated in the study. All subjects performed single and dual walking tasks. The GPS/MAP was computed from three-dimensional gait analysis data. Results: Differences were found between tasks for GPS (P<0.05) and Gait Variable Score (GVS) (pelvic rotation, knee flexion-extension and ankle dorsiflexion-plantarflexion) (P<0.05) in the PD group. An interaction between task and group was observed for GPS (P<0.01) for the right side (Cohen’s d=0.99), left side (Cohen’s d=0.91), and overall (Cohen’s d=0.88). No interaction was observed only for hip internal-external rotation and foot internal-external progression GVS variables in the PD group. Conclusions: The results showed gait impairment during the dual task and suggest that GPS/MAP may be used to evaluate the effects of concurrent cognitive load while walking in patients with PD.

Keywords

Parkinson’s disease; gait; kinematics; attention; rehabilitation.