UNIVERSITI TEKNOLOGI MARA

EFFECTS OF LOWER LIMB MUSCLE FATIGUE ON SPATIOTEMPORAL GAIT PARAMETERS AMONG INDIVIDUALS WITH PARKINSON'S DISEASE

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

One of the key features of Parkinson's Disease (PD) is gait disturbance and constant spatiotemporal gait parameters changes include increased number of steps, shorter step length, narrower step width and increased step variability during turning. Lower limb muscle fatigue may deteriorate these further. This study aimed to investigate the effects of lower limb muscle fatigue on spatiotemporal gait parameters during straight walking and turning among individuals with PD. This quasi-experimental study involved twenty individuals with PD in H&Y Stage 2 and 20 individuals with PD in H&Y Stage 3. Participants performed extended-TUG test before and after lower limb muscle fatigue, induced by a repeated sit-to-stand task on a chair. Spatiotemporal gait parameters were captured using video-based assessment system. In both groups, participants significantly (p = 0.001) increased total time, the number of steps taken, stride length and velocity and decreased stride duration to complete the extended-TUG test after lower limb muscle fatigue. During turning, there was a significant increase in time and number of steps (p = 0.001) to accomplish turning during extended-TUG test after lower limb muscle fatigue. Individuals with PD in H&Y 3 group presented marked more deterioration of gait performance after lower limb muscle fatigue compared to individuals with PD in H&Y 2 group. The spatiotemporal gait parameters changes could be an attempt to improve balance and safety during walking under lower limb muscle fatigue condition.

PD: Parkinson's disease; H&Y: Hoehn & Yahr; extended-TUG: Extended-Timed Up and Go

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