World Academy of Science, Engineering and Technology
International Journal of Health and Medical Engineering
Vol:18, No:10, 2024

Postural Balance And Falls Risk In Persons With Multiple Sclerosis: Effect Of Gender Differences

Authors : Sonda Jallouli, Sameh Ghroubi, Salma Sakka, Abdelmoneem Yahia, Mohamed Habib Elleuch, Imen Ben Dhia, Chokri Mhiri, Omar Hammouda

Abstract : The pathophysiology, prevalence, and progression of MS are gender dependent. Indeed, the inflammation is more pronounced in women, but the neurodegeneration is more important in men. In addition, women have more sleep disorders while men suffer more from cognitive decline. These non-physical disorders can negatively affect postural balance and fall risk. However, no study has examined the difference between men and women in those physical parameters in MS. Our objective was to determine the effect gender difference on postural balance and fall risk in MS persons. Methods: Eight men and twelve women with relapsing remitting-MS participated in this study. The assessment includes a posturographic examination to assess static (with eyes opened (EO) and eyes closed (EC)) and dynamic (with EO) postural balance. Unipedal balance and fall risk were assessed by a clinical unipedal balance test and the Four Square Step Test, respectively. Sleep quality was assessed using Spiegel's questionnaire, and cognitive assessment was performed using the Montreal Cognitive Assessment (MoCA) and the Simple Reaction Time Test. Results: Compared to men, women showed an increase in CdPVm in static bipedal condition with EC ($p=0.037$; $d=0.71$) and a decrease in MoCA scores ($p=0.028$; $d=1.06$). No gender differences were found in the other tests. Discussion: Static postural balance was more impaired in women compared to men. This result could be explained by the more pronounced cognitive decline observed in women compared to men. Indeed, cognitive disorders have been shown to be predictive factors of postural balance impairment. Conclusion: women were less stable than men in the static condition, possibly due to their lower cognitive performance. This gender difference could be taken into account by therapists in training programs.

Keywords : multiple sclerosis, bipedal postural balance, fall risk, sleep disturbance, cognitive deficiency
Conference Title : ICSN 2024 : International Conference on Sports Neurology
Conference Location : Paris, France
Conference Dates : October 28-29, 2024