The Disassociation between Static Balance Assessment and Mobility Risk Score from Quantitative Time Up and Go Test in People with Parkinson's Disease

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ABSTRACT

Postural instability in people with Parkinson's disease (PD) is the relevant factors contributing to risk of falls and disabilities. Some studies in PD focused on dynamic postural instability related to gait impairment. Some other studies indicated static postural instability in term of static balance to be crucial characteristics in PD. However, there have not been identified the direct relationship between static postural instability and dynamic postural instability in PD. Therefore, the aim of this investigation was to determine the association between static and dynamic postural instability in individuals with PD. A total of 36 people with PD, aged 50-75 years with Hoehn and Yahr stage 2-3, participated in this study. Outcomes represented for static postural instability were computed using the Biodex balance system. Data obtained from wearable sensor during the Quantitative Timed Up and Go (QTUG) test represented as dynamic postural instability. Person's correlations showed moderate positive correlation between the medial-lateral stability index and the symmetry score referring to gait asymmetry ($r = 0.479$, $p < 0.005$), and the medial-lateral stability index and the variability score explaining the gait variability ($r = 0.527$, $p < 0.002$). Moreover, there was low positive correlation between the overall stability index and the variability score ($r = 0.350$, $p < 0.046$). Based on the current findings, the mediolateral sway from static balance seems to be associated with the mobility risk score during QTUG test. Nevertheless, the absence of correlations between static balance in anterior-posterior direction and the mobility risk score. It is possible that the measurements for static postural instability are unable to indicate those for dynamic postural instability. This suggests that the static balance assessment should be separate from dynamic balance assessment for benefits of test and train in people with PD.

Keywords: Dynamic postural instability; Static postural instability; Quantitative timed up and go test; Parkinson's disease

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