


STANDING POSTURAL SWAY AND BALANCE CONFIDENCE IN PERSONS WITH MULTIPLE SCLEROSIS AT FALL RISK AS COMPARED TO CONTROLS

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Imbalance and falls are common symptoms in persons with Multiple Sclerosis (MS). Force platforms have frequently been used to assess postural stability, but detailed characteristics of standing postural sway are not well-documented for persons with mild-to-moderate MS. In addition, the relationship between objective postural sway measures and subjective report of balance confidence is unknown.

PURPOSE. This study aimed to investigate the differences in standing postural sway parameters and subjective balance confidence in persons with MS as compared to age-matched controls. The relationships between postural sway parameters and balance confidence were also examined.

METHODS. Nineteen ambulatory persons with MS at fall-risk (mean ± SD age=53.4 ± 11.7 years, EDSS=4.9 ± 1.0, Disease Duration=16.0 ± 11.4 years) and 14 age-matched Healthy Controls (HC) (age=54.6 ± 11.9 years) were recruited. Participants were asked to stand still for 25 seconds with their eyes open on an in-ground force platform for 10 trials and center of pressure was recorded. Postural sway parameters included sway velocity, sway frequency, Medio-Lateral (ML) and Anterior-Posterior (AP) sway amplitude and total sway path. Balance confidence was assessed by the self-reported Activities-specific Balance Confidence (ABC) Scale. Between-group differences by Mann-Whitney U tests and spearman rank correlations were determined.

RESULTS. As opposed to HC, persons with MS demonstrated significantly (p<0.01) increased sway velocity, sway frequency, ML and AP sway amplitude, total sway path and decreased ABC scores. Moderate-to-strong negative correlations were observed between all postural sway parameters and ABC scores.

CONCLUSIONS. Persons with MS demonstrated widespread impairments in standing postural sway and balance confidence suggesting poor postural control during a quiet standing task as well as activities of daily living. The objective postural sway parameters were correlated with subjective balance confidence as well. These findings suggest the utility of laboratory and self-report postural stability measures in individuals with mild-to-moderate MS at known fall-risk for balance assessments. Future research should examine the effect of therapeutic interventions on postural stability measures in persons with MS.