

(S22) SOMATOSENSORY DEFICITS IN INDIVIDUALS WITH MULTIPLE SCLEROSIS

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Background: Individuals with multiple sclerosis (MS) report balance problems; however, it is unclear which sensory systems may be affected. Sensory input from the visual, vestibular, and somatosensory systems contributes to balance control.

Purpose: Our purpose was to assess whether ability to use sensory systems involved in balance control was different between MS and age-matched control (20–59 years) data.

Methods: Seventeen volunteers (13 women, 4 men) with relapsing-remitting MS and an Expanded Disability Status Scale (EDSS) score of <6.5 performed the NeuroCom SMART Balance Master Sensory Organization Test to assess static and dynamic balance. Participants completed three trials in each of six conditions in which eyes were open or closed and the platform and visual surroundings were stable or moving. Subjects were tested twice to minimize learning effects, and only the second set of test data were used. Ratios, expressed in decimal form, were calculated from force plate data for each sensory system. Higher values indicated improved ability to utilize sensory input from that system. One-sample t tests ($\alpha = .01$) were used to compare ratios with age-matched normative data.

Results: Ambulatory individuals with MS demonstrated smaller somatosensory ratios (0.93 ± 0.04) than controls (0.98 ± 0.05) ($P < .0001$), indicating decreased ability to use somatosensory input to balance. No significant differences in visual, vestibular, or visual preference ratios ($P > .05$) were noted.

Conclusion: Our preliminary data suggest that individuals with MS exhibit diminished ability to utilize input from sensory receptors in the skin, muscles, tendons, and joints of the lower extremities to balance compared with control data.

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