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Effect of sensorimotor training on balance measures and proprioception among middle and older age adults with diabetic peripheral neuropathy.

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Abstract

PURPOSE: The aim of the study was to evaluate the effect of sensorimotor training on balance measures, and proprioception, among middle-aged and older adults with diabetic peripheral neuropathy (DPN). **METHODS:** A randomized controlled study with four parallel arms (two intervention groups and two control groups) was conducted at CPRS, Jamia Millia Islamia. Thirty-seven individuals were selected on the basis of inclusion and exclusion criteria. Of these, 16 middle-aged and 21 older adults were randomly allocated to intervention and control groups, respectively. Subjects in the intervention group were administered eight weeks (3days/week) of sensorimotor training, involving 10 different types of exercises, progressed from easy to hard every two weeks, along with diabetes and foot care education; subjects in control group received diabetes and foot care education only. Outcomes measures involved static and dynamic balance measures, centre of pressure (COP) range, COP sway, and proprioception, measured before and after eight weeks. **RESULTS:** Baseline measures showed significant age effect for timed up and go test (TUG) ($p = 0.002$), one leg stance (OLS) in eyes open (EO) and eyes closed (EC) ($p \leq 0.041$), COP range in front ($p = 0.007$), back ($p = 0.009$) and right direction ($p = 0.013$), COP sway with visual feedback in front-back direction ($p = 0.027$), COP sway without visual feedback in left-right direction ($p = 0.028$), and proprioception in right direction ($p = 0.026$). After intervention, OLS EO and EC on both legs showed significant time effect ($p \leq 0.003$), group effect as well as time \times group interaction ($p < 0.05$), and age effect and time \times age interaction ($p \leq 0.04$). Functional reach test, TUG, COP range, COP sway, and proprioception were found with significant time effect ($p < 0.03$), group effect, and time \times group interaction ($p \leq 0.035$). Age effect and time \times age interaction were found to be non-significant for all COP ranges and COP sway. **CONCLUSION:** Sensorimotor training improved static and dynamic balance as well as proprioception measures after eight weeks of exercise intervention. Static balance showed

greater improvement in the middle-aged than older aged adults, while dynamic balance and proprioception showed similar results for both.

KEYWORDS:

Balance training; COP range; COP sway; Dynamic balance; Rehabilitation; Static balance

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