Effects of Rhythmic Exercise Using a Balance Ball on Parkinsonism in Binswanger Disease

Mio KONDO, PT, Yasuhiro IWATA, PT, Yuki IIDA, PT MSc
Department of Physical Therapy, Kainan Hospital

Otone ENDO, MD
Department of Neurosurgery, Kainan Hospital

Purpose: This study was performed to examine the effects of rhythmic exercise using a balance ball on parkinsonism in a patient with Binswanger disease.

Subject: The study subject was a male patient in his 60s with Binswanger disease who had difficulties in sit-to-stand transition and walking due to parkinsonism with bradykinesia.

Methods: This was a single-subject A-B-A-B design control study. The intervention phase A consisted of sit-to-stand training combined with rhythmic exercise using a balance ball, while the withdrawal phase B consisted of conventional sit-to-stand training. We measured the sit-to-stand time, walking speed, functional independence measure (FIM), and Unified Parkinson’s Disease Rating Scale (UPDRS) during phases A and B.

Results: Sit-to-stand time showed significant improvement in the intervention phase ($p < 0.05$). Analysis using the split-middle line method showed a significant improving trend of sit-to-stand time during the intervention phase ($p < 0.05$) compared to the withdrawal phase. There were no significant changes in walking speed, FIM, or UPDRS during both phases.

Conclusions: Rhythmic exercise using a balance ball improve sit-to-stand time in parkinsonism in cases of Binswanger disease. The results suggested that the effect of rhythmic cue improve response time to a start, and imbalance induced by the balance ball may facilitate stabilization of sitting position.