

The Short-Term and Long-Term Effects of Single Session Cerebellar Transcranial Direct Current Stimulation on Balance and Postural Stability in Older Adults with High Risk of Fall: A Randomized Double-Blind Sham-Controlled Study

Fatemeh Ehsani^{1*}, Poria Mohammadi¹ and Shapour Jaberzadeh²

¹Semnan University of Medical Sciences, Iran

²Monash University, Australia

Poor postural stability and balance impairment are common problems in older adults with high falls risk. Preventive interventions to decrease falling rate in aging population is important. The aims of this study were to investigate the short-term and long-term effects of cerebellar anodal transcranial direct current stimulation (a-tDCS) on postural stability and balance in older individuals with high falls risk.

Twenty nine older adults with high falls risk were randomly allocated into two groups of experimental (n=15) or sham tDCS group (n=14). Cerebellar a-tDCS was applied for 20 minutes with 2 mA in experimental group. The berg balance scale and the anterior-posterior, medial-lateral and overall stability indices in both static and dynamic levels of Byodex Balance System (BBS) were assessed before, immediately after and one-week after the intervention.

The results indicated no changes in postural indices and balance immediately or one-week after a-tDCS intervention in experimental group ($P>0.05$). In addition, there were no significant differences in postural stability indices or balance between groups ($P>0.05$).

This study showed that one-session cerebellar a-tDCS could not improve postural control or balance in older individuals with high falls risk.

Keywords: Older adult, high fall risk, Transcranial direct current stimulation, cerebellum, balance

Biography:

Fatemeh Ehsani is the faculty member of Neuromuscular Rehabilitation Research Center, Semnan University of Medical Sciences, Semnan, Iran. Her academic degree is PhD of physiotherapy and is working as assistant Professor. Her research fields are motor control and motor behaviors, clinical neuroscience in the ageing and neurological disorders. Thirty-six papers are published in these fields by her and her colleagues. The current study was also investigated about the effect of CNS modulator (tDCS) on posture and balance of older adults with high falling risk.