

The Effects of Qigong Exercise Intervention on the Cognitive Function in Aging Adults

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Abstract : Objectives: Qigong is an ancient Chinese practice in pursuit of a healthier body and a more peaceful mindset. It emphasizes on the restoration of vital energy (Qi) in body, mind, and spirit. The practice is the combination of gentle movements and mild breathing which help the doers reach the condition of tranquility. On account of the features of Qigong, first, we use cross-sectional methodology to compare the differences among the varied levels of Qigong practitioners on cognitive function with event-related potential (ERP) and electroencephalography (EEG). Second, we use the longitudinal methodology to explore the effects on the Qigong trainees for pretest and posttest on ERP and EEG. Current study adopts Attentional Network Test (ANT) task to examine the participants' cognitive function, and aging-related researches demonstrated a declined trend on the cognition in older adults and exercise might ameliorate the deterioration. Qigong exercise integrates physical posture (muscle strength), breathing technique (aerobic ability) and focused intention (attention) that researchers hypothesize it might improve the cognitive function in aging adults. Method: Sixty participants were involved in this study, including 20 young adults (21.65 ± 2.41 y) with normal physical activity (YA), 20 Qigong experts (60.69 ± 12.42 y) with over 7 years Qigong practice experience (QE), and 20 normal and healthy adults (52.90 ± 12.37 y) with no Qigong practice experience as experimental group (EG). The EG participants took Qigong classes 2 times a week and 2 hours per time for 24 weeks with the purpose of examining the effect of Qigong intervention on cognitive function. ANT tasks (alert network, orient network, and executive control) were adopted to evaluate participants' cognitive function via ERP's P300 components and P300 amplitude topography. Results: Behavioral data: 1. The reaction time (RT) of YA is faster than the other two groups, and EG was faster than QE in the cue and flanker conditions of ANT task. 2. The RT of posttest was faster than pretest in EG in the cue and flanker conditions. 3. No difference among the three groups on orient, alert, and execute control networks. ERP data: 1. P300 amplitude detection in QE was larger than EG at Fz electrode in orient, alert, and execute control networks. 2. P300 amplitude in EG was larger at pretest than posttest on the orient network. 3. P300 Latency revealed no difference among the three groups in the three networks. Conclusion: Taken together these findings, they provide neuro-electrical evidence that older adults involved in Qigong practice may develop a more overall compensatory mechanism and also benefit the performance of behavior.

Keywords : Qigong, cognitive function, aging, event-related potential (ERP)

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