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Quantitative electroencephalogaphy (QEEG) and neurofeedback training (NFT) for elderly with mild cognitive impairment (MCI)

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Abstract

Neurofeedback training (NFT) has been widely used to alter the brain activity to enhance the brain function. This study aimed to apply neurofeedback to enhance the cognitive performance in elderly with Mild Cognitive Impairment (MCI) by focusing on alpha wave in the neurofeedback training as it is positively associated with cognitive decline in elderly. 10 subjects who passed the criteria were assigned to experimental and control group. With 15 sessions of alpha neurofeedback, increase in alpha absolute power was rewarded while simultaneous suppression of theta and beta2 were done in experimental group. Results showed that after completion of neurofeedback, all subjects in experimental group learn to increase their alpha absolute power while mixed result was recorded for suppression of theta and high beta either at individual, inter and intra group level. Cognitive results in individual level revealed that pattern of increase and decrease of score was regular in experimental group and at grouped level, significant increment observed in Digit Span and Symbol Search in experimental group only. These results suggest that MCI elderly could learn to increase specific components of EEG activity that such enhanced activity may facilitate in working memory and processing speed enhancement.

Keywords: *Cognitive enhancement; elderly; mild cognitive impairment; neurofeedback; QEEG*