Dipole sources localization of alpha activity in EEG neurofeedback training.

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Abstract

The neurofeedback training-induced alpha activity have been observed over widespread brain regions on topographic electroencephalogram analysis. However, the generation mechanism of the alpha activity has not been clarified yet. The present study was aimed to identify sources of the alpha activity through four different temporal/spectral analytic techniques, i.e., max peak average, positive average, negative average and event-related spectral perturbation average methods. Twenty participants were trained through 12 sessions by receiving feedback of alpha amplitude and showed significant alpha amplitude increment. The alpha activities were averaged through four different methods for dipole source analysis. Similar results from four methods showed that the sources of the alpha activity clustered in precuneus, posterior cingulate cortex and middle temporal gyrus. Our findings indicated that alpha activity is trainable through our NFT protocol. The three brain regions play important roles for enhancing the training-induced alpha activity.