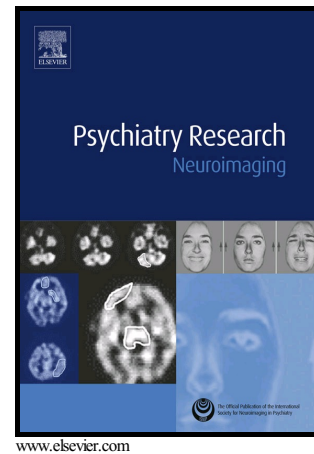


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Plasticity of prefrontal cortex connectivity in schizophrenia in response to antisaccade practice

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Abstract

People with schizophrenia exhibit difficulties in cognitive control that are often attributed to deficits in prefrontal cortex (PFC) circuitry. Practice paradigms have been used to improve these PFC-mediated deficits. The neural consequences of practice on task-based PFC activation have been addressed, however, effects on task-based PFC connectivity are largely unknown. We recruited people with schizophrenia and controls to practice antisaccades, a measure of PFC-mediated cognitive control that is disrupted in people with schizophrenia. Subjects performed antisaccades during functional magnetic resonance imaging (fMRI) before and after eight days of antisaccade practice. A group (schizophrenia, controls) \times time (pre-, post-test) repeated measures ANOVA on the results of a psychophysiological interaction (PPI) analysis was used to evaluate changes in PFC connectivity; a similar model was used to evaluate changes in antisaccade behavior. After practice, antisaccade behavior improved and PFC connectivity with insular/temporal regions (involved in bottom-up orienting processes) increased in the schizophrenia group. The level of connectivity at post-test in the schizophrenia group was similar to that seen at pre-test in controls and positively correlated with antisaccade performance.

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