
NEUROFEEDBACK USING REAL-TIME FMRI IN PATIENTS WITH ALCOHOL USE DISORDER

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Several previous studies have shown that real-time neurofeedback can be used to willfully regulate neuronal activity in specific brain-regions. The aim of the study was to find out whether patients with alcohol dependency would be able to learn how to regulate their neuronal activity in dependency-associated areas. In addition, neurofeedback-related variations to craving for alcohol are assessed.

11 patients with alcohol dependency and 14 healthy participants were investigated. Neutral and alcohol-associated pictures were presented during functional MRI measurements. Alcohol-associated BOLD-responses in the frontal cortex (anterior cingulate cortex, dorsolateral prefrontal cortex, insula) were used as a region of interest (ROI). During the neurofeedback sessions, participants were instructed to down regulate their neuronal activity in the specific ROI during the presentation of alcohol-associated pictures.

The results show that the patients were able to regulate their neuronal activities in areas related to dependency ($p=0,048$). After the neurofeedback-sessions, the individual craving (valued on the basis of the obsessive compulsive drinking scale) was slightly reduced in comparison to before the sessions ($p=0,068$).

It seems feasible for patients with alcohol dependency to down-regulate their neuronal activity using rtfMRI. In addition, there is some evidence that craving can be influenced by this technique. However, so far, there were great differences within the group of patients.