Summary

In a current running multicenter randomized controlled study financially supported by the Swiss National Science Foundation (SNF) a computerized alcohol-specific inhibition-training (Alc-IT) is evaluated in abstinent patients with alcohol use disorders (AUD) attending standard inpatient treatment programs. This computerized Alc-IT seems to be a promising new intervention as it reduced drinking behavior and implicit attitudes towards alcohol in a heavy drinking student population. Furthermore, recent neurophysiological findings suggest that alcohol-specific inhibition (tested with Go-NoGo-tasks) demand additional neuronal resources by recruiting a network which is most likely impaired in AUD patients. According to these findings, Alc-IT targets crucial neuronal processes, whose improvements may eventually lead to modification of highly relevant clinical variables. Additionally, this short, computerized Alc-IT is very easy to implement in routine inpatient and outpatient treatment settings as neither expensive equipment nor specially trained staff is needed. It might thus be a cost-effective add-on to standard treatment and may enhance clinical outcome of AUD.

The running SNF-study entitled "Learning to resist the urge: Inhibition training for abstinent alcohol dependent patients" (SNF-Nr.: 105319-159286/6) now tests this training for the first time in recently abstinent patients with AUD attending inpatient treatment programs. The effects of the Alc-IT on implicit associations towards alcohol, on inhibitory control and on neurophysiological reactivity to alcohol related stimuli are related to clinical outcome, including on drinking behavior.

The aim of the present project "Changes in neuronal correlates induced by alcohol specific inhibition training in patients with AUD" is to additionally investigate the changes of neuronal correlates of the inhibition training using fMRI in a subgroup of 50 patients. fMRI measures changes in blood flow associated with neural activity and is able to capture whole-brain changes in metabolic activity related to brain activity with good spatial resolution (but relatively low temporal resolution compared to EEG). In this sense, and also in that they reflect different neuronal parameters (electrical activity vs. metabolic changes) it is complementary to EEG. Thus, fMRI data will complement our neurophysiological data, which are so far collected with EEG. fMRI is a method that is characterized by high spatial resolution and allows the investigation of brain activity in subcortical regions. These are key structures in habit learning, action initiation, cue reactivity and addiction memory.

Thus, the additional investigation with fMRI will significantly contribute to the understanding of the underlying changes in neuronal correlates of addiction and the understanding in improvement of an effective ad-on intervention in evidence-based treatment of AUD.