A Study of Brain-Computer Interface (BCI) Performance

A BCI system allows the electroencephalography (EEG) signals to be used as commands to communicate, to move or to control. A BCI system is able to translate human intentions into control signals to establish a direct communication channel between the human brain and output devices. Human factors, such as fatigue, frustration, concentration and other mental-state variation can affect the BCI performance. Successful BCI operation requires proper control of EEG activities. Previous studies showed that mindfulness training such as meditation can enhance the efficacy of BCI control.

The objective of this research is to quantify the functional changes in brain activity of subjects using motor imagery to make selections in a BCI before and after a 6 week mindfulness meditation training programme, using fMRI and EEG measurements that are correlated with actual performance.