Some Conclusions on Brain Training for Brain-Machine-Interface using Motor Imagery

Lisette Paris-Shaadi, Andrew H. Rawicz
Biomedical Engineering, Simon Fraser University

We would like to report observations collected during the monitoring of long-term brain training using standard EEG from motor cortex. The purpose of the experiment was to determine if the reliability of noninvasive EEG, applied for controlling a computer, can be improved by repetition. Study of five subjects trained with no feedback over 1000 trials demonstrated the intuitive hypothesis that repeatability of cortical motor imagery reaction time to visual stimulus is improved. The "improvement" was quantified by computing the cross-correlation. An unexpected observation was that the average cortical reaction time is the same for all subjects and does not change with number of training repetitions. This behavior suggests that the cortical reaction time is "hard wired" and thus a property of the nervous system. The long lasting repetitive training process did not adversely affect the reaction signal amplitude even after some "automation" of the reaction had been observed.