The acquisition of control in self-regulation of Galvanic skin response and slow cortical potentials: A randomized trial

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Learning curves of volitional control of GSR and SCP after feedback will be presented, and compared to changes in simultaneously measured spontaneous SCP and GSR. Effects of training on QEEG profiles and neuropsychological functioning will be discussed. Both GSR and SCP have been associated with epilepsy. These measures may be different expressions of a single underlying neurophysiological (arousal) system. Eight men and 11 women were randomly assigned to either a GSR biofeedback condition or an SCP neurofeedback condition. GSR and SCP were measured in both conditions. Each subject participated in 24 sessions of four runs, consisting of 40 trials each, in which pseudo-randomly increases and decreases in SCP or GSR were trained. For the GSR feedback a polynomial curve was found to fit the data best. An increase in arousal (increase in GSR) appeared to be learned slightly better than a decrease. Four out of 10 subjects showed evidence of discrete self-regulation of their GSR. For the SCP feedback, preliminary analyses suggest a flat linear learning curve (re- gression coefficient r=0.033). Again, an increase in arousal (cortical negativity) appeared to be learned slightly better than a decrease. Three out of 9 subjects showed evidence of discrete self-regulation of their SCP's. Interrelationships of GSR and SCP grand averages over sessions and changes from pre to post QEEG and neuropsychology will be discussed. The polynomial curve for the GSR group suggests GSR was easier to learn, further supported by the individual results. Future studies should focus on these effects in epilepsy patients.

Keywords. GSR biofeedback; SCP neurofeedback; self-regulation