

## **Effect of Galvanic Skin Response (GSR) biofeedback on seizure frequency in patients with poorly controlled epilepsy**

### **Results:**

Behavioural interventions including biofeedback represent an alternative or adjunctive therapeutic axis in the management of drug refractory epilepsy. Our previous study suggested that the modulation of the peripheral state of arousal as indexed by the Galvanic Skin Response (GSR) had considerable influence on cortical excitability, indicating the possible use of biofeedback in controlling seizure activity. In the present study we investigated the effect of the GSR biofeedback training on seizure frequency in patients with treatment resistant epilepsy. Eighteen patients with drug refractory epilepsy were randomly assigned either to an active GSR biofeedback group ( $n = 10$ ) or to a sham control biofeedback group ( $n = 8$ ). Patients received a total of 12 sessions over four weeks, representing either real GSR biofeedback training, where subjects were trained to control their GSR by receiving feedback of their own GSR change on the computer screen, or sham training, where the feedback was unrelated to the subjects' GSR.

Biofeedback training significantly reduced patients' seizure frequency in the active biofeedback group ( $p = 0.005$ ), but not the control group ( $p > 0.10$ ). This was manifest as a significant between group differences in seizure reduction ( $p = 0.016$ ). Furthermore there was a correlation between degree of patients' improvement in biofeedback performance and reduction of seizure frequency ( $\rho = 0.736$ ,  $p = 0.001$ ), confirming that the effect of biofeedback treatment was related to physiological change. Our findings demonstrate that a behavioural intervention, GSR biofeedback training, may be associated with a significant reduction in seizure frequency in drug refractory epilepsy, highlighting the potential therapeutic value of this method.

### **Published Work:**

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