

## **Neurorehabilitation of disordered sleep, chronic headache and processing speed after traumatic brain injury**

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**F**orty-four subjects were enrolled into a seven-month-long FDA, double-blind clinical trial designed to evaluate the efficiency of our unique, multi-modal approach to neurorehabilitation for chronic symptoms associated with mild-to-moderate traumatic brain injury (TBI). Our intervention combines the use of targeted training, breathing and awareness exercise, and non-invasive neurostimulation delivered transcutaneously through the tongue. While results are preliminary, effects of the intervention on disordered sleep, chronic headache, and processing speed are clear. At the time of enrollment, 36 participants had negatively impacted sleep quality, 37 experienced chronic headache or migraine, and 17 had below average processing speed. Between two weeks and three months of intervention the number of positive responders to treatment for sleep, headache, and processing speed was 22, 27, and 39 respectively. Already, we can see that the range of improvement includes several significant outcomes. These results are highly encouraging regarding the applicability of our therapy to rehabilitate several chronic conditions that often result from TBI. Disordered sleep, chronic headache,

and decreased cognitive processing speed are common and often untreatable manifestations of traumatic brain injury that can devastate an individual's quality of life. Our results demonstrate the recoverability of chronic symptoms beyond what was previously thought possible. These findings have important applications in the fields of applied neuroscience and rehabilitation.

### **Speaker Biography**

Dafna Paltin was an Executive Member of her university's Neuroscience Honor Society (Nu Rho Psi) and a recipient of the Diamond Peer Scholar Award. She got her start in behavioral neuroscience research at the Center for Neural Decision Making (CNDM) in Philadelphia, where she assisted in the study of neuro-economics. After her independent research on neuroplasticity and sensory substitution captured the attention of scientific director, Dr. Danilov and then she was invited to join him in Madison at the Tactile Communications and Neurorehabilitation Laboratory (TCNL). There she performs all the neuropsychological and cognitive testing with clinical research participants. Her recent achievements include scientific publication in peer-reviewed journals as well as poster presentations at conferences. She will continue to seek out diverse opportunities that relate to her interests in Neuroscience and Psychology as she progresses towards her goal of enrolling into a graduate program for the study of Clinical Psychology.

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