15th EUROPEAN
NEUROLOGY CONGRESS

August 29-31, 2017 | London, UK

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Translingual Neurostimulation (TLNS): A novel approach to neurorehabilitation

Cranial nerve non-invasive neuromodulation (CN-NINM) is new technology, that represents a synthesis of a new non-invasive brain stimulation technique with applications in physical medicine, cognitive, and affective neurosciences. CN-NINM is a method of intervention that combines Translingual Neurostimulation (TLNS), using the Portable neurostimulation Stimulator (PoNS™) device, and targeted training designed for movement control rehabilitation. Our new stimulation method appears promising for the treatment of a full spectrum of movement disorders, and for both attention and memory dysfunction associated with traumatic brain injury. The integrated CN-NINM therapy proposed here aims to restore function beyond traditionally expected limits by employing both newly developed therapeutic mechanisms for progressive physical and cognitive training - while simultaneously applying brain stimulation through a portable neurostimulation device PoNS™. Based on our previous research and recent pilot data, we believe a rigorous in-clinic CN-NINM training program, followed by regular at-home exercises that will also be performed with CN-NINM, will simultaneously enhance, accelerate, and extend recovery from multiple impairments (e.g. movement, vision, speech, memory, attention, and mood), based on divergent, but deeply interconnected neurophysiological mechanisms of neuroplasticity.

Biography

Yuri Danilov is a system neuroscientist with over 35 years' experience in research on brain functions and the special senses. He is the lead discoverer of the balance retention effect, lead development of the specific training regimens, and continues to identify potential clinical and non-clinical application of neuromodulation and sensory substitution technology. He received the M.S. degree in biophysics and the Ph.D. degree in neuroscience, in 1984, from the Pavlov Institute of Physiology, USSR Academy of Science. He is a co-inventor the CN-NINM technology and his interest areas are neuroplasticity, neurorehabilitation, enhancement of human performance.

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J Neurol Neurophysiol, an open access journal
ISSN: 2155-9562

Neurology Congress 2017
August 29-31, 2017

Volume 8, Issue 6

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