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Precision Medicine fMRI Neuromodulation Enhances Swallow Control Targeted for Lower Cranial Neuropathy Patients

Dr. T. Dorina Papageorgiou obtained a BA in Psychology and Sociology (University of Georgia), a M.H.Sc. in Psychiatric Epidemiology (Johns Hopkins Bloomberg School of Public Health), and a Ph.D. in the Biomedical Sciences The (University of Texas - M.D. Anderson Cancer Center; MDACC) with a focus on human brain neuroimaging, specifically the effects of morphine in the pain matrix networks. She continued with three postdoctoral fellowships: (i) neuroimaging of cancer symptoms and its treatment (MDACC); (ii) cortical neuromodulation of speech using real-time functional MRI neurofeedback (Baylor College of Medicine; BCM); and (ii) cortical neuromodulation of visual perception in cortical blindness (BCM). As an Assistant Professor of Psychiatry, Neuroscience, Physical Medicine and Rehabilitation, Center for Space Medicine, Dan L. Duncan Comprehensive Cancer Center at BCM and an Adjunct Assistant Professor of Electrical and Computer Engineering, Neuroengineering, and Applied Physics at Rice University her lab's research focuses on the development and application of targeted, and individualized real-time fMRI NeuroModulation (iNM) translational applications and computational methods to elucidate the causal spatiotemporal mechanisms of cortical plasticity in health, and disease. Clinical applications focus on the neurorehabilitation of chronic pain syndromes following the side effects of cancer treatments, such as radiation induced lower cranial neuropathy, post-mastectomy pain syndrome following lymph node dissection, as well as cortical blindness, cognitive impairment. The principle of precision medicine iNM is based on promoting the reorganization of networks by bypassing lesioned pathways and capitalizing on redundant, intact but functionally associated networks to the injured ones. The Papageorgiou - Investigational Targeted Brain Neurotherapeutics Lab's research is funded by the McNair Medical Institute, the McNair Foundation, the TIRR Foundation, various other foundations, and NIH mechanisms. She is the Chief Editor of the internationally successful book "Advanced Brain Neuroimaging Topics in Health and Disease – Methods and Applications" (ISBN: 978-953-51-1203-7; DOI: 10.5772/58256; eBook (PDF) ISBN: 978-953-51-7209-3), which has been downloaded ~58K times to date. She has presented her lab's work at several international conferences, such as the Brain Stimulation Conference, Vancouver (2019) the International Real-time NeuroImaging Conference (Maastricht, 2019; and at Yale School of Medicine, 2022), the International Cognition and Cancer Task Force, the 2nd Annual NIH Meeting on Interoception Meeting for Investigators (2023), American Academy of Neurology (2023), and others. Finally, she is co-editor to the Special Issue of Neuroimaging Neuromodulation, expected to be published by the Philosophical Transactions of the Royal Society in 2024.