Brain Plasticity in Neurological Disorders: Measurement, Modulation and Rehabilitation

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Professor Thickbroom is best known for his work with non-invasive brain stimulation to study brain plasticity in people living with a neurological disorder, and in studies of basic motor cortex physiology in control populations. Cortical mapping software that he developed revealed clinically relevant brain plasticity across multiple neurological disorders, highlighting the ubiquity of central reorganisation in acute and progressive pathologies.

He has developed brain stimulation methodologies to modulate synaptic excitability (potentiation and depression), which involve multi-pulse sequences that follow the temporal dynamics of excitatory synaptic transmission while accounting for cortical inhibition and disinhibition.

He has also developed and implemented functional MRI protocols for imaging cortical activity associated with motor tasks, muscle fatigue, and language (expressive and receptive), and participated in over 100 clinical cases of motor, visual, auditory and language function as part of pre-surgical workups.

Recent Publications

