

Metastable neurophysiological processes: A novel framework for understanding thought and action

Initiative: "Experiment!" (beendet)

Ausschreibung: Explorative Phase

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Executive functions, or cognitive control, refer to a set of processes that are required for goal-directed behavior. These processes are critical for mental and physical health as well as success in school and in life and are dysfunctional in many psychiatric disorders. But how can humans move from one thought and goal to another without losing long-range goals and how can we concentrate on a thought or goal without getting stuck on it? The author hypothesizes that a possible neural mechanism to do so relates to a concurrent realization of partial neural synchronization (locking) and desynchronization (unlocking) within short time frames (i.e. metastability). This intermediate neural state has not been identified during goal-directed behavior and would initiate a completely new view on the mechanisms behind major aspects of human cognition, making it necessary to refine current theories. This may pave the way to a new understanding of disorders of cognition in psychiatric diseases and their treatment.

Projektbeteiligte

Prof. Dr. Christian Beste

Technische Universität Dresden
Klinik für Kinder- und Jugendpsychiatrie
Kognitive Neurophysiologie
Dresden

Open Access-Publikationen

Deep learning based on event-related EEG data differentiates children with ADHD from healthy controls

Applying deep learning to single-trial EEG data provides evidence for complementary theories on action control.

