Effective Repetitive Transcranial Magnetic Stimulation (rTMS) Taking in Account Real-Time Frequency and Phase Of Intrinsic Brain Activity

Tech ID: 30579 / UC Case 2018-400-0

BACKGROUND

Current research and practice in the field of therapeutic rTMS is not taking into account 1) inter-individual variability 2) variability between brain areas 3) variability or differences between oscillations in distinct and overlapping frequency bands, 4) existence of high- and low-excitability phase periods in each oscillatory cycle. Clinical treatments with rTMS and experimental research findings show mixed effects, with rTMS protocols inducing variable degrees of brain plasticity over subjects and sessions.

TECHNOLOGY DESCRIPTION

Researchers from UC San Diego have developed a patent-pending technology that allows for more effective transcranial magnetic stimulation (TMS) of the brain than is currently applied in clinical treatments. This method uses spatial and temporal information about the underlying brain dynamics to maximize the effectiveness and consistency of rTMS, thus providing for the delivery of repetitive TMS stimulation in specific phases of the ongoing intrinsic brain activity.

APPLICATIONS

This innovation allows delivery of more effective and consistent electromagnetic brain stimulation of a number of cortical brain regions and can be used to enhance the clinical effects of existing methods of rTMS-supported depression treatment, or obsessive compulsive disorder treatment, plus treatments for addictions and many other conditions.

ADVANTAGES

This invention can be used for producing more reliable stimulation effects in basic neurocognitive studies. The fast estimation of the optimal phase for stimulation makes the approach suitable for integration into clinical therapies.
Readily estimate high excitability phases during the treatment in real time and also estimate longer periods of spontaneous fluctuations in excitability which will increase efficacy of rTMS stimulation even further.

INTELLECTUAL PROPERTY INFO

UC San Diego is looking to partner with organizations and companies interested in commercializing this technology. Worldwide rights are available.

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	WO 2020/061517	03/26/2020	2018-400

CONTACT

University of California, San Diego
Office of Innovation and Commercialization
innovation@ucsd.edu
tel: 858.534.5815.



OTHER INFORMATION

KEYWORDS

Transcranial Magnetic Stimulation, Intrinsic Brain Activity, electromagnetic brain stimulation, neurocognitive studies

CATEGORIZED AS

- **Medical**
  - Disease: Central Nervous System
  - Rehabilitation
- **Research Tools**
  - Other

RELATED CASES

2018-400-0

© 2019, The Regents of the University of California
Terms of use
Privacy Notice