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News from Other Journals and Websites

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NEWS FROM OTHER JOURNALS AND WEBSITES

Martijn Arns, MSc, Senior Editor

In the following section, interesting new articles recently published are summarized. The articles are mainly from the broad area of Applied Neurosciences with a focus on neurofeedback, brain computer interface, quantitative EEG, and repetitive transcranial magnetic stimulation. These are the articles, which could be found between March 10, 2010, and September 6, 2010.


Article discussing the impact of GSK and AstraZeneca announcing they are ceasing drug discovery to CNS drugs such as depression, schizophrenia, and anxiety.


The 6-month follow-up of the Gevensleben multicenter RCT demonstrating that the effects of neurofeedback were maintained at 6-month follow-up.


The first prospective randomized controlled trial investigating the use of referenced EEG (rEEG) in selecting the appropriate medication in depression. This study demonstrates promise of the use of rEEG in selecting the appropriate medication in depression on primary endpoints and most secondary endpoints, except for remission.


A randomized controlled trial investigating the effects of LENS in fibromyalgia demonstrating that both the sham group and the LENS group improved and no specific effects were found on primary and secondary outcome measures for LENS treatment. The authors concluded that LENS cannot be relied on as a single modality treatment for fibromyalgia.

Randomized study comparing neurofeedback to escitalopram in the treatment of fibromyalgia. Both treatments were associated with clinical improvements, however neurofeedback was found to demonstrate greater statistically significant benefits.


A study demonstrating that a deviating Theta/Beta ratio in ADHD is only found using fixed frequency bands. When frequency bands are adjusted for individual alpha peak frequency there is no significant difference in Theta/Beta ratio anymore, suggesting that this measure actually combines at least two functionally different subtypes of ADHD, namely, the frontal theta type and slowed alpha peak frequency type.


A pilot study investigating a sham-controlled double blind method in healthy volunteers. They found no effects and no trend between placebo and neurofeedback after 15 sessions. The two major drawbacks of this study are the use of “auto-thresholding” for neurofeedback and the use of QEEG based protocol selection based on the inspection of only one rater.


Study carried out by the BBC investigating if brain training also has a transfer effect in 11,430 participants. Only improvements were found on the test, which was used to train on, but no transfer effects were found to other tests measuring the same cognitive domain.


Study investigating the use of pretreatment EEG to predict treatment outcome to Clozapine.


Neurofeedback with feedback provided in a virtual reality environment for improving acting performance.


Study investigating independent components analysis in a Go/NoGo ERP paradigm in adults with ADHD and healthy controls.

Report of normative EEG parameters across age (7–89 years of age) for eyes open and eyes closed EEG, also reporting on independent components.


Retrospective study in ADHD which found that good methylphenidate responders had higher intrahemispheric coherences over short, medium, and long interelectrode distances in the theta band.


This study demonstrated that in addition to increased delta and theta and decreased beta, both absolute and relative gamma are decreased in ADHD.


Study demonstrating that children with ADHD demonstrate lower EEG Vigilance and more unstable EEG Vigilance regulation. Lower EEG Vigilance regulation was numerically associated with worst CPT performance and best response to stimulant medication, though not significantly.


This study investigated the EEG of patients’ diagnoses with Burnout syndrome and found that these patients did not deviate on frontal alpha asymmetry suggesting this disorder is different from depression. However, burnout patients demonstrated a P3A and P3B suggesting that they had an inability to automate information processing possibly also explaining part of the symptomatology such as mental fatigue.


Interesting review on VNS, rTMS, and tDCS.


This study tried to replicate the original findings of Nunez (1978) of a negative correlation between head size and the spectral position of the alpha peak, which was not replicated in this study. They found other relations and concluded that white matter architecture rather than neocortical area determines the dynamics of the alpha rhythm.


ERP-based lie detection method.

Advance online publication. doi:10.1016/j.neuroimage.2010.07.060

Methodological paper on real-time fMRI.


Study investigating the effects of add-on neurofeedback in opioid dependent patients, demonstrating added efficacy of neurofeedback, with concomitant changes in the post-treatment QEEG.


Low-frequency rTMS in autism and the effects on ERPs.


This study employed a BCI approach based on the cognitive control network as opposed to often-employed approaches using the sensori-motor network. In this study three patients with intractable epilepsy were implanted with subdural grid electrodes over the left dorsolateral prefrontal cortex. All subjects gained accurate BCI control by modulation of gamma-power of the left DLPFC.


A neurophysiological predictor is proposed which could differentiate which participants are able to learn to operate an SMR-based BCI based on 2-min eyes open EEG.


Interesting review on structural and functional connectivity in ADHD.


Critical review of meta-analyses of antidepressants arguing for a reappraisal of the current recommended standard of care of depression.


Methodological article on combining TMS and EEG and explaining the different artifact issues TMS pulses have on the EEG.

Venediapin, A., Cheng, L., & George, M. S. (2010). Feasibility of simultaneous cognitive behavioral therapy and left prefrontal rTMS for treatment resistant depression. *Brain Stimulation. Advance online publication. doi:10.1016/j.brs.2010.03.005*

Feasibility study investigating the possibilities of combined cognitive behavior therapy and rTMS in depression.


Study demonstrating that using an extracephalic tDCS reference electrode does not
affect autonomic functions and can hence be used safely.


Validation of a new neuromodulation technique: transcranial Alternating Current Stimulation.


Letter to the editor demonstrating potential side effects of tDCS, namely, skin lesions.


Study suggesting a relationship between a hypersensitive HPA axis and treatment outcome after high frequency rTMS in melancholic depression.


Several sessions of slow rTMS (1 Hz) exerted neuroplastic changes in the motor cortex persisting for at least 1 day after stimulation.


Study demonstrating that there are alterations in theta activity related to stimulus novelty and routinization during and auditory oddball task in ADHD.


Study demonstrating reduced pulvinar volumes in youths with ADHD and indicating this area is relatively enlarged in patients treated with stimulants compared to those untreated.


FMRI guided rTMS in the treatment of OCD.


A study demonstrating that personalizing rTMS stimulation frequencies based on individual alpha peak frequency did not improve clinical outcomes in the treatment of depression. A tendency for a differential effect of 9 Hz TMS was found.

History of discovery of Mirror Neurons and their involvement in autism.


Relation between EEG cordance and suicidal ideation and mood during antidepressant treatment.