NEWSLETTER

neuroConn

Dear customers,

This is our current neuroConn newsletter containing information about our work, our equipment as well as technical issues and current events.

More information can be found at:
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Latest news

We would like to take the opportunity to thank all readers of this newsletter for your interest and your trust in our work in the past year. We wish you a happy and successful year 2015 and look forward to receiving your feedback / queries on this issue or suggestions for future newsletters.

New approval for DC-**STIMULATOR** PLUS

We are pleased to announce that the Korean FDA (KFDA) have approved our DC-**STIMULATOR** PLUS.

Safety of ADHD medications for children

In addition to the article in our previous newsletter on the slightly decreasing prescriptions rates for methylphenidate, we would like to draw your attention to a review (Clavenna, Bonati, 2014) on the safety of medicines used for ADHD in children.

The meta analysis reviews six studies (N < 2,200) that monitored drug safety and it provides evidence that treatment-related side effects (AEs) are quite common. The amount of reported AEs ranges from 58% to 78% - most commonly decreased appetite, insomnia, headache and abdominal pain. Up to a quarter of the patients discontinued medication due to such AEs within the first few months of treatment.

Research: non-invasive brain stimulation

tDCS in depression: current state of research

In one of our previous newsletters we reported about two studies by Palm et al. (University of Munich, Germany) and Loo et al. (University of New South Wales, Australia) on the effects of transcranial direct current stimulation (tDCS) in the treatment of therapy-resistant depression. These are two of the seven randomized clinical trials (N=295) reviewed in a new meta-analysis by Shiozawa et al. The publication assesses the efficacy of tDCS as a treatment for major depressive disorder (MDD) and was published in the International Journal of Neuropsychopharmacology last summer. In that publication tDCS showed small to medium effect sizes of 0.37 in the treatment of acute depression and compares to pharmacological treatment (0.39) or repetitive transcranial magnetic stimulation (rTMS) (0.39 – 0.55). The studies by Loo and Palm had been performed with neuroConn systems.

For the acute phase of a depression Brunoni et al. (2014) (N=120) showed the combined treatment with tDCS plus medication with Sertraline to best improve the overall condition of the patients after six weeks of treatment. The sole treatment with tDCS or with Sertraline presented comparable but less effective results.

Contrary to rTMS, follow-up data over twelve months have not yet been reported for tDCS. Therefore, and due to the existing studies, tDCS can only be considered as an effective treatment of acute depression.

Current research investigates if and to what extend the positive effects of the tDCS in acute depression can be extended over a period of six to ten weeks, and why the tDCS - like the rTMS and the pharmacological treatment - is only effective in 30 % of the patients.

New fields of research on tDCS

The University of Music, Drama and Media in Hanover, Germany and the University of Göttingen, Germany have recently published a study investigating the effect of tDCS on the fine motor control in patients with focal hand dystonia, a neurological movement disorder that affects professional musicians. They tested various tDCS settings in affected pianists and found that only behavioral therapy assisted by anodal bihemispheric stimulation improved dystonic symptoms and fine motor control of the fingers. The improvement lasted for a few days.

Another study of the University of Lübeck, Germany, assessed the effect of tDCS on appetite and food intake regulation. 14 healthy young men with normal weight participated in this study. After one week of daily tDCS or sham stimulation the experimental group showed a reduced overall caloric intake and less appetite than the control group. This might be a promising option for the future treatment of overweight and adiposity.

The study was financed by the DFG (German Research Foundation) and has recently been published in the American Journal of Clinical Nutrition.

German Center for Brain Stimulation in Psychiatry (GCBS)

Non-invasive and invasive brain stimulation techniques are currently developing to be the third pillar in psychiatric therapy.

With the German Center for Brain Stimulation (GCBS), the German government promotes for the first time a translationally-oriented research network, which aims at developing specific techniques for clinical applications on the one hand and establishing an innovative overall research strategy on the other hand.

During the annual meeting of the German psychiatrics (DGPPN) at the end of November 2014, scientists presented the priorities of their work. tDCS plays a major roll here, offering future opportunities for home application and for the combination with cognitive training in the therapy of psychiatric diseases.

tDCS only with medical supervision and with certified medical devices!

The Internet provides instructions on how to make your own transcranial brain stimulator at home. Commercial companies promote consumer products, promising better attention, for example when playing computer games or calculating. Such statements are about to establish a dangerous trend among adventurous gamers and students. But this is not without risk and can even be dangerous, because improper use can result in injury and brain performance may even impair [Cohen Kadosh et al. 2014].

There are several scientific studies that do indeed suggest that certain cognitive abilities improve under the electric brain stimulation [e.g. Cohen Kadosh et al. 2013, Hauser et al. 2013]. Nevertheless, authorities and scientists warn over applying tDCS without medical supervision. Instead, they demand regulations for all available devices and argue for the responsible and careful handling of the method.

All neuroConn DC-**STIMULATOR** systems are certified medical devices, which are subject to the strict regulations of the Medical Devices Act and are used by scientists and health care professionals for research purposes as well as for the therapy of neurological diseases.

Research: Neurofeedback

SCP training sustainable in the treatment of Epilepsy

Self-regulation of the slow cortical potentials (SCP) causes lasting improvements of epileptic symptoms, scientists from the University of Tübingen, Germany state in their follow-up study published in Frontiers in Human Neuroscience.

Even ten year after the controlled clinical trial on Neurofeedback in patients with intractable epilepsy, the attendees of the follow-up study were still able to control their SCPs. Furthermore, they still have less seizures today than they had had before the start of the therapy.

The researchers conclude that training of the SCPs should be considered as an option in the treatment for patients with intractable epilepsy, although the small number of evaluated patients diminishes the ability to make causal interferences.

Neurofeedback and NIRS for ADHD

In the past we mainly reported about training of the slow cortical potentials for ADHD. The researchers at the University of Tübingen, Germany, are now investigating a new approach: They combined near-infrared spectroscopy (NIRS) with Neurofeedback with the THERA **PRAX**®. A study with adult ADHD patients is still ongoing [see video - only in German language] while the very promising pilot study with ADHD children has just been published in Frontiers in Human Neuroscience.

Pictures: Oliver Koll, Thanh Mai CampusTV

In NIRS neurofeedback oxygenated hemoglobin in the prefrontal cortex is measured and fed back. The patient is required to increase or decrease hemodynamic activity in the investigated cortex. The researches hope that this method increases the patients attention.

Brain research in forensic psychiatry

Prof. Niels Birbaumer and neuroscientist Dr Lilian Konicar from the University of Tübingen, Germany, investigated the fear reactivity in a number of high psychopathic violent offenders in maximum security forensic psychiatric institutions. It had been known from previous studies using functional MRI (fMRI), that the regions of the brain that play a major role in the formation of fear show only very little or no activity in persons with high psychopathy scores. Thus, even in moments of imminent danger these persons do not feel fear.

In their study the scientist from Tübingen conducted a fear-conditioning training, in which the participants should learn to fear an imminent pain. They used the THERA **PRAX**® system to collect special event-related potentials and skin conductance responses. This study allows to distinguish between different groups of psychopathy [read study].

Workshops and conferences

Recommendations: Workshops / symposia – Q1-2 / 2015

30 – 31 January 2015: Masterclass Neuromodulation and Personalized Medicine QEEG, ERP, rTMS, tDCS, Neurofeedback, Brainclinics, Nijmegen, The Netherlands [read more]

23 – 25 February 2015: Transcranial Magnetic and Electrical Stimulation, University of Göttingen, Germany [read more]

21 – 24 April 2015: Neurofeedback in ADHD and insomnia, Brainclinics, Nijmegen, The Netherlands [read more]

29 – 1 May 2015: Preconference Workshops SABA 2015, Atlanta, GA, USA [read more]

Exhibitions / conferences with neuroConn participation – Q1-2 / 2015

2 – 4 March 2015: 1st International Brain Stimulation Conference, Singapore [read more]

19 – 21 March 2015: THERAPIE, Leipzig, Germany [read more]

28 – 31 March 2015: CNS 2015, San Francisco, USA [read more]

18– 25 April 2015: AAN 2015, Washington DC, USA [read more]

16 – 20 May 2015: APA 2015, Toronto, Canada [read more]

28 – 31 May 2015: 5th World Congress on ADHD, Glasgow, Great Britain [read more]

14 – 18 June 2015: OHBM 2015 Annual Meeting, Honolulu, Hawaii, USA [read more]

Imprint

neuroConn GmbH
Albert-Einstein-Straße 3
98693 Ilmenau
Germany

Phone: +49 3677 68 979 0
Fax: +49 3677 68 979 15
E-Mail: info@neuroconn.de
Web: www.neuroconn.de

Management:
Klaus Schellhorn

Trade register: Amtsgericht Jena
HRB 500 207
VAT-ID: DE 247982733

International sales:
Rogue Resolutions Ltd.
Sophia House
28 Cathedral Road
Cardiff, CF11 9LJ
Great Britain

Phone: +44 2920 660 198
Fax: +44 2920 660 199

E-Mail:
info@rogue-resolutions.com
web:
www.rogue-resolutins.com