



Dear reader,

Here is our current neuroConn newsletter with the latest information on our work, our devices, the latest progress in development, as well as forthcoming events.

For further information please visit our website: [www.neuroconn.de](http://www.neuroconn.de)

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## Efficacy of neurofeedback in the treatment of ADHD

### Neurofeedback training of SCP in adults

Several publications have shown that the training of the slow cortical potentials (SCP) in children improves the core ADHD symptoms attention, impulsiveness and hyperactivity. [[neuroConn Newsletter 01/2012](#)]

In 2012 the University of Tübingen (Germany) ran a study to find out if the SCP training in adults leads to comparable results.

In the past ADHD was regarded to be typical for childhood and adolescence only. Recent research discovered that the disorder persists into adulthood in up to 60% of the affected children. Approx. 5% of all adults show symptoms of an ADHD but only 11% of these actually receive treatment.

The study of the University of Tübingen was run with adults between 18 and 60 years of age. After 30 sessions attention and impulsiveness improved significantly. Hyperactivity reduced slightly. The general behavior was evaluated better by 25% compared to the time before the training.

Thus, for the first time neurofeedback has been proven to be efficacious and of value to adult patients with ADHD.

These results were presented by Kerstin Mayer and Dr. Ute Strehl (University of Tübingen) during the DGPPN congress in Berlin in November 2012. The evaluation of the long term effects will be done in 2013.

### Meta-analysis on the efficacy of non-pharmaceutical interventions for ADHD in the child and adolescent psychiatry

The [meta-analysis](#) published in the "American Journal of Psychiatry" of the leading American and European child and adolescent psychiatrists showed a significant standardized mean difference of 0.6 for not entirely blinded assessments of neurofeedback.

With regard to the reduction of the symptoms of ADHD - impulsiveness, hyperactivity and inattention - this is an outstanding outcome. In addition, there is still a statistical tendency for the efficacy in best blinded assessments. It has to be pointed out, though, that studies based on SCP neurofeedback, such as those run by Dr. Ute Strehl [[study](#)] reaffirming the positive effects on the ADHD symptoms even after 6 months and 2 years [[study](#)], or the study by Dr. Renate Drechsler (University of Zürich, Switzerland), showing that neurofeedback was superior to a group therapy [[study](#)], were not included in the meta-analysis due to methodical reasons.

Now the clinical relevance of the results needs to be assessed thoroughly. On the other hand the results underline the necessity of further careful research into neurofeedback as well as its professional application in everyday practice.

Since we launched our THERA PRAX<sup>®</sup> and NEURO PRAX<sup>®</sup> systems, neuroConn committed to validated protocols and procedures that are consistent in terms of methodology and that can stand up to the critical clinical assessment.

The results of the study „Neurofeedback in children with attention-deficit / hyperactivity disorder (ADHD) – a controlled multicenter study of a non-pharmacological treatment approach" run by Prof. Martin Holtmann (Bochum University, Germany) and Dr. Ute Strehl, which are due in early 2014, will provide further insight into whether neurofeedback treatment can stand up to the critical clinical assessment. neuroConn provided all the neurofeedback systems for this study.

## Latest research findings

### Neurofeedback for the therapy of Parkinson's disease?

The journal [Clinical Neurophysiology](#) is about to publish a review by the group of Dr. Ikeda (University of Kyoto, Japan) about the influence of SCP neurofeedback on the Bereitschaftspotential (BP). [[abstract](#)]

It was shown for the first time that decreased early components in the BP in patients with Parkinson's disease can be restored by means of neurofeedback training, without externally driven modulatory stimuli or medication.

The scientists assume that the neurofeedback training of negative SCP shifts (negativation) increases excitatory field potentials of pyramidal cells in the supplementary motor area. Further research is due to show if this improvement can be put into relation with the improvement of the motor activity in patients with Parkinson's disease.

### Neurofeedback of local brain activity

Based on a cooperation with Prof. Dr. Herbert Bauer from Vienna University, a [new lab](#) at the RWTH Aachen University was equipped with a 64 channel NEURO PRAX<sup>®</sup> system allowing the feedback of [local brain activity](#) of regions of interest to investigate new methods in rehabilitation, psychotherapy and training of cognitive functions.

### Neurofeedback in forensic science

[A case report](#) of a successful neurofeedback treatment for a severely disordered and treatment-refractory forensic patient was published recently by Prof. Rick Howard from Nottingham University. For the first time, neurofeedback therapy of slow cortical potentials was given as an intervention method for 5 days a week over 6 weeks in total. Three additional sessions were given 3 month later. The patient's Go/No Go contingent negative variation (CNV) was reported to change in the direction of reduced impulsiveness during and after neurofeedback. Similarly, he made progressively fewer errors on a bio-behavioral Flanker task. The patient reported significant improvements in thinking, attention, impulsiveness and affective control. Comments on this case report underline the need for further investigations in the field of forensic psychiatry whether the biobehavioral and neurophysiological changes translate into improvements in clinical outcome (e.g. length of stay; recidivism) since this challenging group of patients are often treated unsuccessfully with medications and/or traditional psychotherapy.

### Transcranial brain stimulation – German Society of Child and Adolescent Psychiatry, Psychosomatic and Psychotherapy (DGKJP)

First insights into the research of brain stimulation in child and adolescent psychiatry were presented in March during the annual meeting of the German Society of child and adolescent psychiatry, psychosomatic and psychotherapy in Rostock, Germany.

The researchers not only explained how to use TMS evoked potentials in the diagnosis of ADHD, but they also presented first results of the application of tDCS in adolescents with ADHD. [\[read article in German\]](#)

### Neurofeedback in professional sports

Sprinters of the German Athletics Association tried neurofeedback of the slow cortical potentials as an additional preparation for competitions. The sports-women trained to switch between activation and deactivation using the THERA PRAX<sup>®</sup> MOBILE. The training was supervised by a psychologist. They were satisfied with the results and plan to continue the training.

### New website

You are invited to visit our new English website which presents itself in a completely new layout.

The website provides you a better overview and easier access to information on our entire work, our products, the latest news on neurofeedback, DC-EEG & NIRS, TMS-navigation and transcranial brain stimulation, workshops as well as forthcoming events that we and/or our partners attend. We look forward to your visit at: [www.neuroconn.de](http://www.neuroconn.de)

### neuroConn – upcoming events 2013

#### Workshops

3 – 5 June, 2013: Introduction to tDCS in Neuropsychiatric Research and open-lecture day, Barcelona, Spain [\[read more\]](#)

8 June, 2013: How to do neurofeedback in ADHD?, Milan, Italy [\[read more\]](#)

24 – 25 October, 2013: Introduction to tDCS in Neuropsychiatric Research, Beth Israel Deaconess Medical Center, Boston, USA [\[read more\]](#)

2 – 3 December, 2013: 2-day [Rogue Resolution's BESA Research workshop](#) at UCL, London, UK [\[read more\]](#)

#### Exhibitions

6 – 8 June, 2013: 4<sup>th</sup> World congress in ADHD, Milan, Italy [\[read more\]](#)

4 – 5 July, 2013: Horizons in Clinical Neurophysiology, Oxford, UK [\[read more\]](#)

13 – 14 June, 2013: DGHP, Annual Meeting of the German Society for Brain Stimulation in Psychiatry, Düsseldorf, Germany [\[read more\]](#)

16 – 20 June, 2013: OHBM, Annual Meeting of the Organization for Human Brain Mapping, Seattle, USA [\[read more\]](#)

9 – 13 November, 2013: SFN, Annual Meeting of the Society for Neuroscience, San Diego, USA [\[read more\]](#)

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