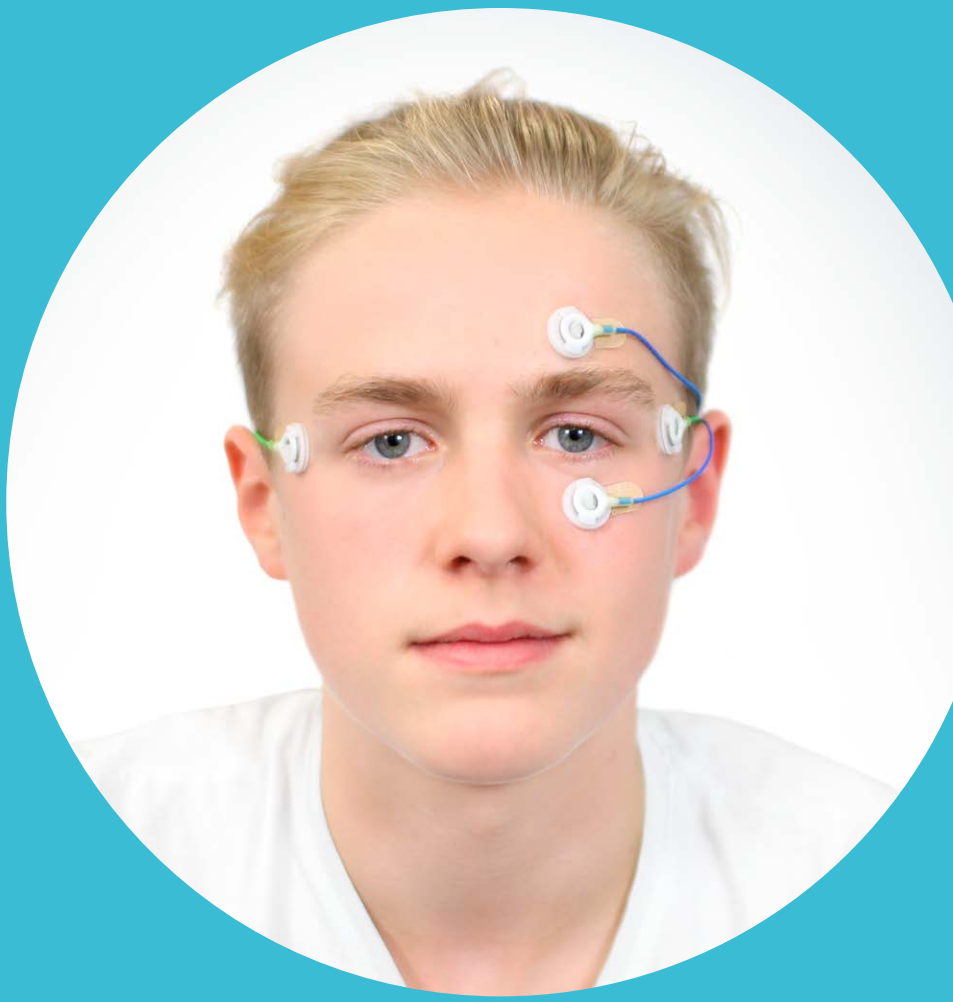
neurocare

Neuro-Feedback

method, evidence, technology



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Neurofeedback offers a long-term solution to help patients with mental health issues, sleep disorders and chronic stress. By measuring and modulating brain activity, you can offer a sustainable and medication-free solution to your patients.

Digital therapeutic techniques can help patients with a range of psychiatric disorders and neurorehabilitation problems like recovery from stroke and chronic pain. By measuring and modulating brain activity, neuromodulation has the potential to offer faster and longer-lasting outcomes than standard treatments, all with no to very minimal side-effects.

neurocare empowers clinicians to deliver best-practice by offering a range of neuromodulation-based solutions following the latest science and technology. We can support you with technology, equipment, advanced training, and further information for you as a professional. We also offer specific information to help your patients, your staff and further business advice.

Your clinical practice will benefit from neurocare's proven treatment protocols giving you, the practitioner, the ability to personalise foryour individual patients and offer a more sustainable solution in mental health and rehabilitation. Seeking training, advice or partnership with neurocare will help your practice be at forefront of innovative health solutions, delivered professionally and following best practice.

Content

Imprint

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NEURO FEEDBACK

Neurofeedback is an effective long-term solution for treating disorders of self-regulation and impulse control. After only a limited number of sessions, patients suffering from a variety of neuropsychological disorders can improve their quality of life. Throughout the therapy, your patient's brain activity is measured and visualized on a computer. This feedback makes subconscious neurophysiological processes obvious.

During the feedback process, you ask your patient to complete various tasks. To receive positive feedback, the patient's brain needs to achieve a certain level of activity. The activity level changes when the patient's concentration or perception increases. This principle of operant conditioning causes the brain to show beneficial activity more and more often. Guided by a licensed therapist, patients learn to observe and be aware of these neurophysiological processes. As a result, it becomes easier to recognise dysregulations and counter them effectively.

Effectiveness and sustainability of neurofeedback

Multiple scientific studies have examined Neurofeedback therapy and proven it to be effective and sustainable in the long term. The studies proved that patients can learn to control and direct their body processes. Patients receiving biofeedback or neurofeedback therapy can often reduce medication that only treats symptoms. Neurofeedback targets the root cause of the problem. Achieving effective and sustainable results depends on the correct application of neurofeedback. It is equally important to use proven and standardised protocols.

For more information visit neurocaregroup.com. Take a look at the scientific evidence here or join one of our neurofeedback courses.

Neurofeedback and self-regulation

Self-regulation refers to an individual's ability to deal with their feelings and moods, as well as realise their intentions through target-oriented and reality-based action. People suffering from certain neurological and psychological disorders such as addiction, obsessive-compulsive disorders, or ADD/ADHD struggle with self-regulation. Those limits can strongly impair a person's independence. Neurofeedback therapy has the potential to improve self-regulation abilities. Through operant conditioning, patients learn to recognise and positively influence their own dysregu-lations. Neurofeedback therapy aims to develop and improve self-control and self-regulation.

If your self-regulation is working, you can:

- direct and maintain attention,
- calm yourself down despite emotional excitement or stress,
- deal with frustration,
- reduce stress and relax after difficult situations,
- recognise and control impulses and react appropriately,
- pause between stimulus and reaction,
- realise intentions and pursue goals,
- socialise positively.


ORIENTATION
DECISION
awareness and realisation
improving attention & concentration
learning to self-control
FEEDBACK
FEEDBACK

How does the therapy work?

stress
perception
anxiety
thoughts
HEALTH
impulse control
awareness
self-control
behaviour
self-regulation
sleep
expactations
concentration
emotions
relaxation



Neurofeedback training should take place in a room with a comfortable and welcoming atmosphere. Generally, your patient sits relaxed in a comfortable chair or an armchair. Consider a short, introductory talk whilst applying the electrodes. Observe your patient as well as the feedback curves on the screen during the whole session. This allows you to provide appropriate assistance. If necessary, you can pause the training. After a neurofeedback training session, evaluate the results together with your patient and perform transfer exercises. These exercises help your patient implement the learned self-regulation skills into everyday life.

Studies have shown that neurofeedback can be beneficial for the treatment of various disorders, including:
ADHD, addiction disorders, migraine, sleep disorders, autism, depression anxiety disorders, epilepsy, stroke

Neurofeedback Training

SCP training (slow cortical potentials)

SCPs are slow potentials of the brain current curve. They are the momentary result of an unstable balance between excitation (negativation) and inhibition (positivation). SCP training aims to consciously induce states of attention or relaxation. The processing of information in the corresponding networks in the brain should expand. If the training is successful, the patient's self-regulation abilities improve. SCP training can also help improve a patient's willingness to engage in therapy. As a result, SCP can open up opportunities for further interventions.

Frequency band training

Frequency band training uses the wave patterns known from the EEG (see figure on page 13). Certain symptoms can often be attributed to changes in frequency. With frequency band training, patients can achieve a normal frequency. Studies have shown that this training led to a significant reduction in symptoms. Many successful neurofeedback therapists prepare their patients with SCP training for successive frequency band training.

ADHD

The most recent German S3 guideline for AD(H)D recommends the three protocols for neurofeedback treatment - SCP, SMR, and Theta/Beta. Numerous studies have linked these protocols to improved symptoms in patients with ADD/ADHD.

Sleep

The role of sleep as the basis of our motivation is becoming increasingly important. SMR and SCP training can successfully treat difficulties with falling asleep or sleeping.

Addiction disorders

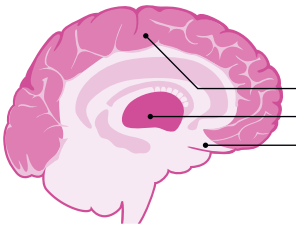
Compromised self-regulation ability is a central element in addiction. Using SCP training as part of addiction treatment has proven successful in reducing patients' severity of addiction, according to numerous therapists.

Migraine and epilepsy

When it comes to migraines and epilepsy, current research assumes a lack of inhibition in the self-regulating mechanisms of the brain. Studies have shown that SCP training helped participants with either disorder reduce the number of seizures they suffered.

Are you unsure whether neurofeedback fits into your practice?
We would be happy to advise you!

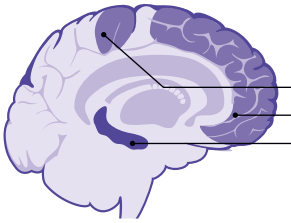
Frequency bands in the EEG



Delta waves

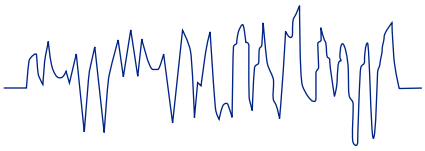
cortex
thalamus
suprachiasmatic nucleus

normal:
deep sleep
pathological:
brain lesion,
epilepsy

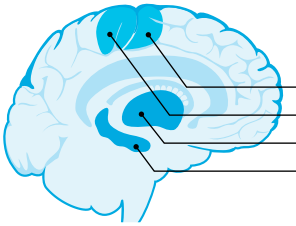


Theta waves

sensory cortex
prefrontale cortex
hippocampus

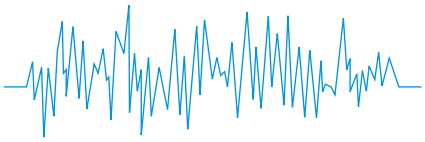


normal:
drowsiness
pathological:
inattention,
day dreaming,
anxiety,
ADHD

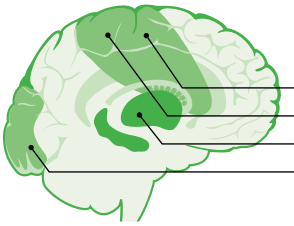


Alpha waves

motor cortex
sensory cortex
thalamus
hippocampus

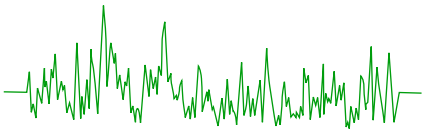


normal:
relaxation,
meditation
pathological:
depression,
ADHD

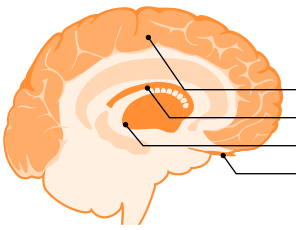


SMR waves

motor cortex
sensory cortex
audio fields
fields of vision

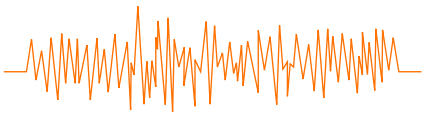


normal:
calm motor function,
mentally focussed

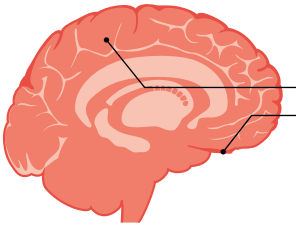


Beta waves

cortex
basal ganglia
luys body
bulbus olfactorius

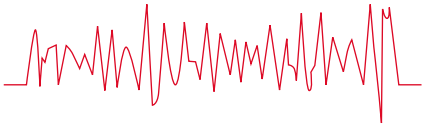


normal:
concentration,
aktivity
pathological:
compulsion,
sleep disorder



Gamma waves

all brain structures
bulbus olfactorius



normal:
neuronal connection,
consciousness,
complex thoughts

Procedure of a therapy session

1 Introduction and application of the electrodes (5 min)

2 Selection of neurofeedback protocol and artifact correction (2 min)

Psychotherapy

Neurofeedback is being used successfully in treating stress, anxiety, depression, and addiction. Biofeedback can be a useful supplement for these conditions.

Occupational therapy

SCP neurofeedback is a promising treatment for concentration and learning problems within the framework of occupational therapy. Conditions associated with hyperactivity or impulsiveness can also be treated with neurofeedback.

Physiotherapy

EMG biofeedback or neurofeedback has the potential to improve cases of paralysis, cranio-cerebral trauma, or strokes. The treatment can also determine whether there is residual brain activity in the affected regions and whether patients may be able to regain control over affected muscle groups.

Sports

Peak performance training can help increase concentration at the right moment. The treatment can also help control problems like stage fright more effectively. Biofeedback with ECG or respiration parameters is a useful supplement to this training.

Increasing the quality of life

Neurofeedback can treat stress, muscle tension, or symptoms of burnout. In addition, biofeedback of the galvanic skin response (GSR feedback) helps visualise states of tension that can then be treated further.

3 Neurofeedback training
(35 min)

4 Summary and evaluation
(5 min)

How long?
A session takes about 45 - 60 minutes, including preparation and review.

How may sessions?
Depending on the disorder, successful treatment requires 30 - 40 sessions in total, based on 2 sessions per week

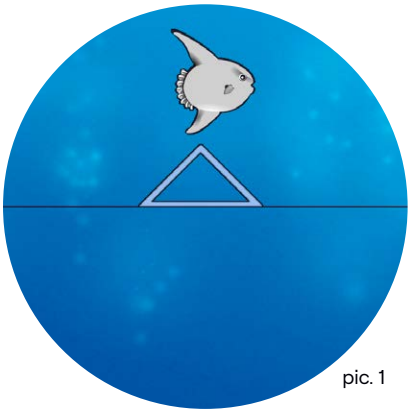
Progress?
Positive changes can occur as early as your patient's 6th session.

What can be achieved?

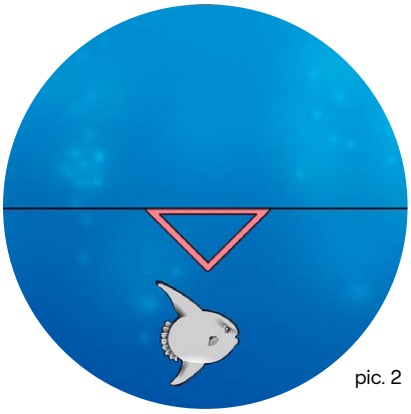
Develop strategies to positively influence brain activity;
Apply those strategies in everyday life - even without EEG feedback;
Contribution to a reduction of attention and concentration problems

Evaluation and progess of therapy

The triangle in the middle of the image indicates the direction in which the feedback object should be moved. If the patient concentrates, the object rises (pic. 1). If their concentration decreases or the patient relaxes, the object moves downwards (pic. 2).

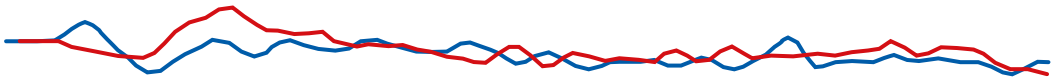


pic. 1



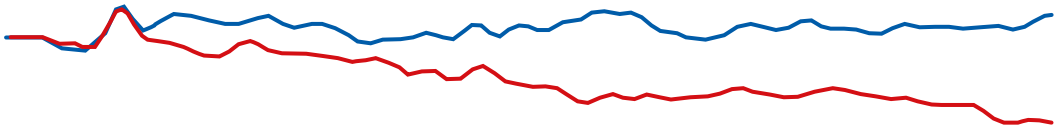
pic. 2

session 2



session 15

session 25



session 2: It is not yet possible to differentiate between states of activation and relaxation.

session 15: Different levels of activation can be achieved more often.

session 25: This patient has learned to control the level of activation, even if the feedback object is invisible to them. This would be the ideal learning curve during a programme of therapy.

More information on evidence-based neurofeedback: :
www.neurocaregroup.com

Neurofeedback with THERA PRAX®

neurocare

The THERA PRAX® MOBILE is a neurofeedback and biofeedback system suitable for therapists, clinicians, and researchers. As a certified medical device, it is safe to use. Standardized treatment protocols are included, allowing practitioners to start immediately with neurofeedback training that corresponds to the recommendations of the German S3 guideline for AD(H)D.

Thirteen freely definable channels allow for demanding neurofeedback applications. Moreover, clinicians can measure skin conductance, respiration, body temperature, and pulse and report them using the biofeedback extension. With this extension, body signals can be perceived and influenced during training.

The complete THERA PRAX® MOBILE package includes:

- a computer with two monitors (for the therapist and the patient)
- EEG amplifier incl. lithium-ion batteries and charger
- easy-to-use EEG software by neuroConn incl. protocol templates
- connecting cable, mouse, and keyboard
- manual
- starter set incl. electrodes
- technical instructions for the medical device and technicals support

made in Germany

Accessories and extensions

Skin conductance sensor for biofeedback

The skin conductance sensor can be used to determine the galvanic skin response and the electrical skin resistance. Changes indicate conditions like high stress or anxiety.

Respiration sensor including chest strap for biofeedback

The respiration or breathing sensor is used to monitor breathing. This allows clinicians to understand the respiratory frequency and relative respiratory depth.

Pulse wave sensor for biofeedback

The sensor is used for recording and visualising cardiological parameters. It is available as a finger clip sensor or without attachment (see illustration).

Temperature sensor for biofeedback

The sensor measures the temperature on the skin surface. This allows conclusions to be drawn about the psychological strain on a patient. In combination with other biosignals such as breathing and pulse, you can adjust the training to reduce stress.

Electrodes

Electrodes translate the bioelectric potentials measured on the head into a technical current. These silver-silver-chloride electrodes have particularly good transmission properties. They enable derivations of the highest quality combined with long service life. The electrodes are available in black, red, green, and blue.

Transfer cards for everyday practice and use

Transfer cards allow patients to recall the strategies learned during the neurofeedback sessions more easily and implement them in their everyday life.

Batteries for the amplifier

For safety reasons the amplifier is battery-operated and therefore electrically isolated from the mains. The recharge-able batteries have a long runtime and a long life. A charger is included in the package.

Electrode adapters and adhesive rings

Adhesive rings and electrode adapters facilitate positioning and attachment of the electrodes.

Abrasive paste for neurofeedback recordings

Nuprep provides the optimal skin preparation by slightly roughening the scalp, similar to an exfoliation treatment. This improves the electrical resistance and the quality of the derived signals.

Electrode paste for signal transmission

Ten-20 is a beige opaque and water-soluble adhesive con-duc-tive paste intended for use with silver-silver chloride electrodes.

Q-tips for skin preparation

Q-Tips are used to comfortably apply the abrasive Nuprep® paste. They are also suitable to help distribute the Ten-20 paste beneath the electrode more evenly. beneath the electrode.

References

"For 20 years, we have been supporting the world's leading scientists in the field of neuromodulation. We strive to sustainably advance neurofeedback and transcranial direct current stimulation in research and therapy. We will continue to devote all our attention to our goal of helping patients everywhere."
Klaus Schellhorn, Managing Director of neuroConn GmbH and Chief Technology Officer, Germany

"I have been working with the neurocare product THERA **PRAX**® for 10 years. The success I've had with the system, especially the SCP protocol, is absolutely remarkable."
Johannes Späker,
Occupational Therapist, Germany

"I have been working with the THERA **PRAX**® device for 5 years in therapeutical practice. As a psychologist, I particularly value the SCP protocol and have seen substantial improvements in attention, impulse control, ability to regulate emotions, and quality of sleep in a diverse group of patients aged between 6 and 75 years. It is also a very good tool to help patients shift initially into a state of mind that allows them to access and be open to further interventions and therapies."
Susanne Mechtersheimer, Psychologist, Australia

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Department of Clinical Psychology

LWL University hospital Hamm of the Ruhr University Bochum, Germany
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Studies on efficacy

The THERA PRAX® is the most frequently used neurofeedback device in research. In all studies conducted with the THERA PRAX®, symptom improvements were achieved. Here are the most important publications:

Strehl U. et al, 2017: Neurofeedback of Slow Cortical Potentials in Children with Attention-Deficit/Hyperactivity Disorder: A Multicenter Randomized Trial Controlling for Unspecific Effects

Metaanalyse: Arns M. et al., 2009: Efficacy of Neurofeedback Treatment in ADHD: the Effects on Inattention, Impulsivity and Hyperactivity: a Meta-Analysis

Geladé K. et al., 2017: A 6-month follow-up of an RCT on behavioral and neurocognitive effects of neurofeedback in children with ADHD

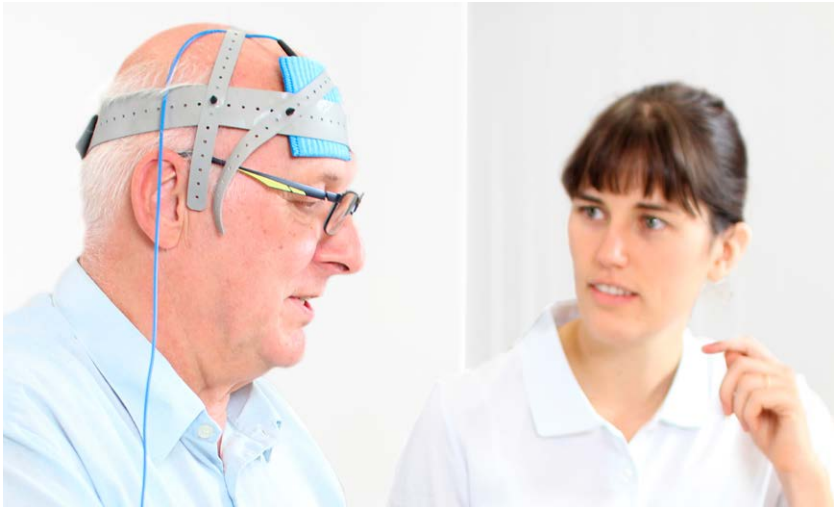
Christiansen H. et al., 2014: Slow cortical potential neurofeedback and self-management training in outpatient care for children with ADHD: study protocol and first preliminary results of a randomized controlled trial

van Doren J. et al., 2018: Sustained effects of neurofeedback in ADHD: a systematic review and meta-analysis – 10 Studien mit Follow-up nach 6 bis 12 Monaten

Gevensleben H. et al., 2010: Neurofeedback training in children with ADHD: 6-month follow-up of a randomised controlled trial

For further studies please visit: www.neurocaregroup.com/science

Further solutions for therapy



DC-STIMULATOR MOBILE

transcranial direct current stimulation in a clinical routine

Transcranial direct current stimulation (tDCS) is a non-invasive, well-tolerated neuromodulation treatment method. Numerous studies show positive effects in stroke patients as well as those with depression, addiction, pain, and many other disorders. When used in addition to standard therapies, neuromodulation can improve patient outcomes.

The DC-STIMULATOR MOBILE offers a safe and painless addition to your range of treatments. You can find examples of application as well as studies proving its effectiveness here:

www.neurocaregroup.com/dc-stimulator-mobile.html

ActTrust

efficient therapy support through sleep profile analysis

The ActTrust actigraph provides you with unique insights into your patients' quality of sleep. Detailed analysis and statistics provide you with information about the wearer's movement and sleep profile. ActTrust can continuously record different wavelengths of light, temperature, movement, and other parameters for several weeks. This information helps to improve the wearer's quality of life significantly. Find out more about the effects of sleep on your health in our free webinars now!

www.neurocaregroup.com/acttrust-actigraphy.html

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Learn how to apply evidence-based neurofeedback

Professionals who seek training through neurocare academy join a global network of professionals delivering best-practice neuromodulation. With online courses and practical workshops held each year throughout the world, the neurocare academy offers training in a range of applications including neurofeedback, applications of EEG, TMS, tDCS and Advanced Neurostimulation techniques.

Our new online learning platform means more practitioners from all over the world can access insights and know-how from a range of leading practitioners and scientists in the field. Professionals can register for instant access to learning modules and resources with the flexibility to complete a course at their own pace. This can then be followed by a practical workshop at one of our training centres worldwide.

We are a preferred training partner for private practices and hospitals worldwide and also offer custom in-house training and remote supervision for individuals and teams.

Learn more about your training options and special training events on our website or get in touch with our training center for further advice.

www.neurocaregroup.com

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