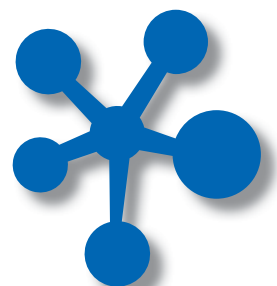


**Biofeedback / Neurofeedback**  
Your new therapy module in your clinic and practices



# Biofeedback and Neurofeedback



Biofeedback and Neurofeedback have been familiar topics in science, research and practical application for many years – and each discipline understands the terms and the topical contexts a bit differently. Let's begin by clarifying the terminology:

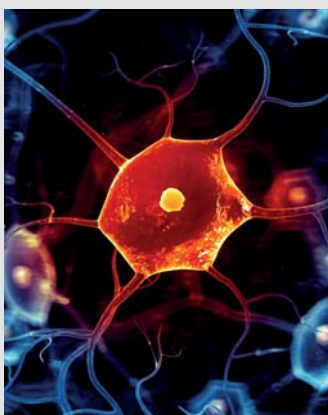
## Biofeedback



**Biofeedback** is a term describing the feedback from the body's own biological signals which under normal circumstances are not rare only very vaguely perceived. How fast is your heart beating, how warm is your index finger, how tense are your shoulder muscles? The biofeedback process makes you aware of the processes at work in your body; this enables you to train yourself to improve your health, performance and well-being through awareness of your body's signals.

The effectiveness of this behavioral-medical procedure has been confirmed scientifically and practically in numerous studies and presents an attractive alternative/supplement to traditional (medication-based) forms of treatment. To this date, no side effects or complications have been associated with this treatment method

## Neurofeedback



**Neurofeedback** is a scientific method of behavioral medicine that makes it possible to measure brain activity, consciously influence it and modulate it. This affects, for example, alertness and concentration but also relaxation.

The process uses technological means to measure and record various parameters of brain activity such as brain waves (EEG), slow cortical potential (SCP) and oxygen saturation (HEG), and then report them back to the client either with audio or visually.

The objective of neurofeedback-therapy is to improve perception and deliberately influence psycho-physiological processes.

# Use by area of application ...

Biofeedback and neurofeedback are used for various applications depending on the branch of study. The individual abilities and the clinical picture as well as the objective that the patient wants to achieve are in the foreground. This training is highly adaptable and brings with it the ability to react rationally to changes at any time.

Use under the following specifications:

Target Groups	Area of application
<b>Ergotherapy</b>	Primarily with ADS / ADHS, inability to concentrate and learning disabilities, as well as pain and migraine treatment and treatment of stroke patients.
<b>Pain treatment</b>	For treatment of back pain, migraines, tension headaches, neuropathy and the depression that frequently accompanies these.
<b>Psychotherapy</b>	For anxieties and phobias, compulsive disorders, for treating depression and PTSD (post-traumatic-stress-disorder).
<b>Psychosomatic</b>	Tinnitus, blood pressure, including pain and stress therapy and the accompanying after-effects (e.g. burnout).
<b>Research and teaching</b>	Recording and analysis (live and subsequent) physiological and neuro-physiological data in combination with other scientific questions. Possible combinations i.a. with eye-tracking or measuring equilibrium.
<b>Sport / high performance training</b>	Recording significant parameters for awareness, focusing and relaxation, most of all for high-performance athletes (e.g. reaction time, directing prefrontal awareness, heart rate variability (HRV), ...).
<b>Market research</b>	Observation of changes in physiological parameters such as skin conductance, pulse or respiration rate (e.g. while watching video advertisements or using a website). Frequently in combination with eye-tracking data recorded simultaneously.
<b>Physiotherapy</b>	Treatment i.a. of hemiplegia patients, head-brain-trauma-patients and stroke patients primarily by means of EMG-biofeedback and relaxation training.
<b>Coaching</b>	Concentration and relaxation are re-assessed in specific (often very stressful) situations by means of biofeedback training and regulated. This can be achieved through HEG-neurofeedback training and most of all through targeted cardiac coherence training.
<b>Other</b>	Health management Continence training Supporting learning ...

# Biofeedback Applications

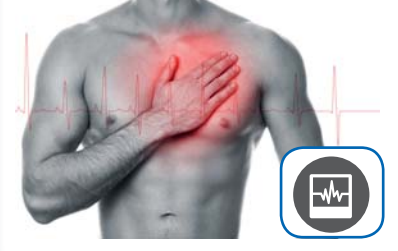
**Skin conductance**



**Skin temperatur**



**Heart rate variability (HRV)**



**Respiration**  
(amplitude and respiratory rate)



**Pulse / heart rate**



**EMG (ElectroMyoGraphy)**  
Muscle ton lead



**Dynamometry**



**Eye movement**



To train a skill without taking other parameters into account or to train it only as an afterthought can be counter-productive, as well as a complete waste of time. For this reason training is focused on the clinical pictures. The individual influencing variables are combined in balanced proportions and coordinated with each other.

Area of application	Combined Training of Multiple Parameters
Relaxation / stress treatment	Skin conductivity, temperature, EMG, respiration
Anxieties and phobias	Skin conductivity, cardiac coherence (HRV) with regulation of respiration / pulse
Migraine treatment	Vasoconstriction to control the vessel width of the temporal arteries
Spasticity and paresis	EMG-based muscular tension and relaxation
Pain	EMG-based relaxation, temperature, respiration
Stress	Skin conductivity / temperature, respiration / pulse, EMG / EMG, ECG
Tinnitus	EMG, general relaxation
Urology / gynecology	special EMG-measurements as continence



# Neurofeedback Applications

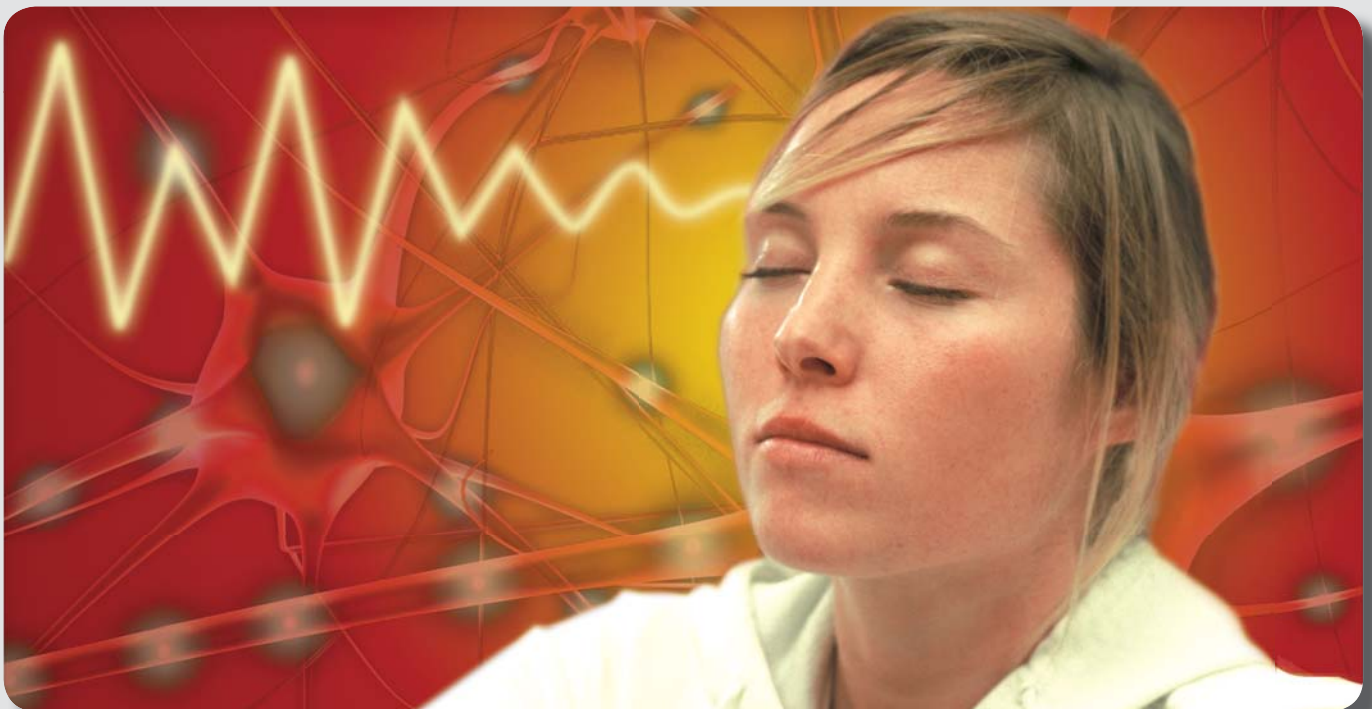
**HEG** (HemoEncephaloGraphy)



**EEG** (ElectroEnzephaloGraphy)



**SCP** (Slow Cortical Potentials)



Even if externally actions by the patient are hardly observable in neurofeedback, he can consciously activate or suppress brain waves. The patient discovers for himself which strategies achieve this best and can use them in everyday life during the therapy and afterward.

Area of application	Combined training of multiple parameters
Relaxation	Alpha-Training, HEG-Training
Peak Performance	Alpha-Beta-Training, HEG-Training
Anxiety	Alpha-Training, Alpha-Theta-Training
Depression	Alpha-Training, HEG-Training
ADS/ADHS	Beta-Theta-Training, SMR-Training, HEG-Training

# System and Technology

## ProComp Infiniti



- 8 channel ProComp Infiniti™ encoder unit
- 14 bit resolution

Also available ...

### FlexComp Infiniti

- 10 channel FlexComp Infiniti™ encoder unit



The ProComp Infiniti™ is a multi-modal-encoder with eight channels, which has the options and capabilities required for real-time based computer supported biofeedback and neuro-feedback and for collecting the data in a wide variety of clinical applications.

The first two sensor channels provide a highly professional resolution with 2,048 measurements per second to produce raw-EEG-, EMG-, and EKG-signals. The remaining six channels have a sampling rate of 256 measurements per second. All eight channels can be used with different sensors. They make it possible to measure:

- EEG (ElectroEncephaloGraphy)
- HEG (HaemoEncephaloGraphy)
- EKG (ElectroCardioGraphy)
- EMG / SEMG (Electro-MyoGraphy)
- Skin conductivity and skin temperature
- Cardiac rhythm and pulse frequency
- Respiration, power and voltage ...

Put briefly, the ProComp Infiniti™ offers the full spectrum of physiological signals, which are used in everyday work in clinics, in practice, in research and therapy.

## ProComp 5



- 5 channel ProComp 5™ encoder unit
- 14 bit resolution

The five, available channel-inputs in a ProComp5™ are identical with the first five channels of the ProComp Infiniti™. The first two sensor-channels offer a high sampling rate (2,048 measurements/second), of the EEG, (surface-) EMG, EKG and HR/BVP smoothly as raw data and facilitate an FFT-analysis.

The remaining three channels record the data with a sampling rate of 256 measurements/seconds, in order to record slower signals like respiration, temperature, power or any movement. In essence, all five channels of the system can be assigned as needed.

## ProComp 2



connection field



- 2 channel ProComp 2™ encoder unit
- 3 bit resolution

The ProComp 2™ is a compact and simultaneously high performance 2-channel-device, which offers clinical users the option of installing an additional, affordable biofeedback-system.

Additionally, a domestic training system can be used for patients which can be comfortably worn with a headband or on a shirt collar.

The ProComp 2™ includes a built-in EEG-sensor which is easily connected using an extension cable, to enable the display EEG-signals or biofeedback. Alternatively, you can connect any two sensors from the entire Thought Technology Sensor Program and then used. The system has all necessary connections, in order to establish a connection with PC or laptop, in order to transfer the data collected in real time.

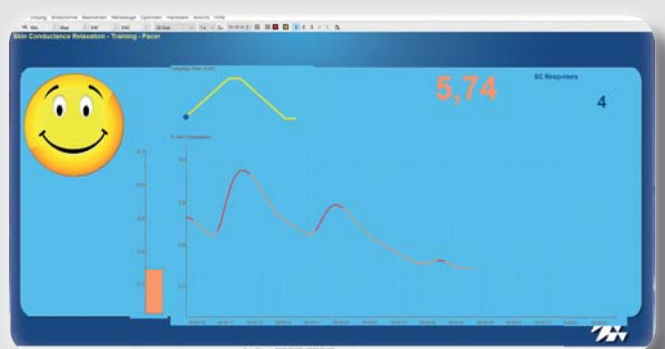
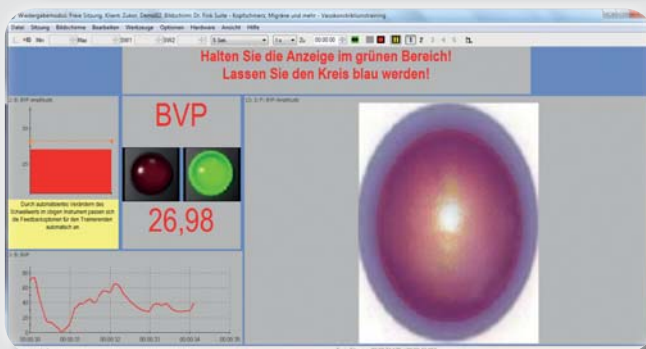
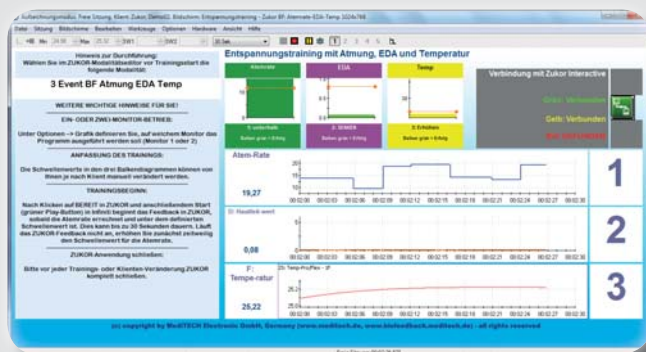
### Also included in all encoder units:

- Software-platform BioGraph Infiniti™ incl. an expansion suite of your choice,
- customised carrying and storage bags, and/or boxes with space for extensive accessories, e.g. sensors, electrodes, ...
- Capacious ring binder with operating instructions

# Sensor and Software Selection



Sensors can be combined in any configuration depending on the intended use. Pre-prepared protocols can be used directly. Moreover, some protocols can be configured to match the requirements and combined with sensors. The parameters which are important to your patients in training ...





# The characteristics of your new INFINITI system

- \* PHYSIO-MODUL with 4 protocols, 340-trainings- and analysis screens
  - \* NEURO-MODUL with 21 protocols, 498-trainings- and analysis screens
  - \* Simple and rapid neurofeedback training with HEG-technology
  - \* All neurofeedback variants are possible: EEG, SCP, HEG (NIRS and pIRS)
  - \* Rapid starts make it possible to start training with just a few mouse clicks
  - \* Numerous trainings protocol for specific clinical pictures clearly simplify the administration of the therapy session
  - \* Professional 3D-feedback games for promoting motivation in training
  - \* Blood pressure measurement system
  - \* Three editors for a multi-faceted (nearly infinite) adaptation and drafting protocol- and screen applications
  - \* Practical and compact training on biofeedback- / neurofeedback trainer according to EGBNV
  - \* Cost-free PREMIUM-support for special support during its start-up phase
- \* Competent support in implementation your particular wishes and requirements for protocols and training screens
  - \* Numerous analysis protocols create foundations for the subsequent biofeedback-/ neurofeedback training
  - \* Signal transmission either using USB or Bluetooth
  - \* All channels in the Infiniti-system can be assigned and combined as needed (e.g. 8 x EMG for pain analysis or eight different physiologies for stress/ load analysis)
  - \* Group training is also possible with one system for two to eight persons individually is available
  - \* Data evaluation as well as in the program itself as well as a for data export for Excel, SPSS, Matlab, etc. possible
  - \* Sessions can be recorded and evaluated completely with image and sound
  - \* Some feedbacks (audio- and video-files) can be integrated into the system easily

**You are looking for an individualized or unconventional solution for your application?  
We will be glad to give you advice...**





# Training and Continuing Education

Biofeedback and neurofeedback are exciting and highly versatile, which has been highly developed in recent decades and which have spread.

In order to work with the procedure effectively and efficiently from the very start, we recommend participation in the courses we offer. Here you can learn as little theory and as much practice as possible.

Comprehensive range of training programs that leave nothing to be desired –entirely based on your needs ...

## Webinar

- Online-intensives
- 8-to 10-times a year
- A one-hour training session
- Practical presentation and Q-and-A on specific topics
- e.g. ADS/ADHS, pain treatment, stress analysis and much more



## Training at your place of business

- One or two-day training events or day-long courses
- We give you and your team an intensive introduction to the background and concrete use of your biofeedback/ neurofeedback system.
- You define your own key topics and concerns.



## Individual courses

- We can train you in small groups in the expertise in this field in numerous basic, advance and special topic courses. You will gain deeper knowledge in practical competence:
  - What physiologies do you use for which treatment objectives?
  - How do you develop and design your treatment plan?
  - How do you go in-depth with specific clinical pictures?



## Biofeedback- / Neurofeedback-Trainers compliant with EGBNV

- In our courses, carefully coordinated with each other and which have a high practical component and solid professional foundation, you will gain the requisite knowledge for competent application of Biofeedback and Neurofeedback in practice.
- On passing a written test you will receive your certificate as a Biofeedback- and / or Neurofeedback-Trainer compliant with EGBNV.
- Well-grounded in science ...



# Long-time users on application of biofeedback

Why did I decide on a biofeedback / neurofeedback system from *MediTECH*®?

I intensively studied the various providers and spoke with them. The presentation by the *MediTECH*® employees at our business location (the others didn't even bother to come) was skilled, entertaining... and just convincing. Our questions were answered consistently, the demonstration with the equipment showed how quickly and easily one could operate it.

The one-day training course which we later booked as continuing education for the EGBNV-certified courses was worth every Euro: Very practice-oriented, not loaded with jargon, just bringing the participants up to the current state of knowledge. After that we were able to take the first steps for and with our patients directly.

Since then biofeedback and neurofeedback have been fixed elements in our practice; our patients and our employees are both pleased with it – not least of all thanks to the ZUKOR-feedback games. The chance to be able to use these, customized to individual clinical pictures, is a gigantic help for our everyday practice.

In the case of neurofeedback; I was hesitant at first, when HEG-neurofeedback was recommended to me. Other providers had spoken of it negatively. When I tested it on myself, I found it terrific. Since then we have been very pleased to use it – no preparatory treatments like those needed with EEG-Neurofeedback and really fast and impressive progress in the patients. And for later we will supplement it with EEG-and SCP-based neurofeedback training ... and the *MediTECH*® system provides that as well, happily enough.

**In sum:** it was the right decision for the right partner and I would make it again in a heartbeat.

Thomas Emler, Practice for Ergotherapy,  
Wetzlar (Germany)



We have been using the biofeedback and neurofeedback system ProComp-Infiniti, sold by *MediTECH* since 2007.

The real customer-orientation and skill won us over from their first contact. Technical skill, knowledge of biofeedback methods and rapid comprehension of our professional challenges were typical of Mr. Warnke and his whole team. They gave us rapid and skilled support in response to our questions and showed real empathy for our concerns.

The Infiniti-system is not only characterized by good signal quality but also by high-grade cables and the robustness of the unit which is required for the frequently changing use locations, like in sports psychology. If – and this happens rarely – a technical problem does occur, we quickly get a replacement system thanks to the maintenance contract.

We use biofeedback and neurofeedback in our consultations in businesses, in cooperation with professional athletes and also in clinical situations: chronic stress, headaches, back pain and anxiety disorders, just to name a few examples. To our clients and patients this method is often an eye-opener to the psychophysiological interconnections, and we experience a very high rate of acceptance in these various fields of application. We are very satisfied with Infiniti and *MediTECH* as partners – and now we have started using a second Infiniti system.

Dr. Karl and Simone Kubowitsch, Psychologists, GAP  
Karl Kubowitsch and partners, Regensburg (Germany)



*MediTECH* and the Clenia Privatklinik Schlössli are united by a common goal: The most rapid recovery possible for our patients and their return to their regular social environments.

The clinic offers people who have fallen into a serious crisis in their lives or who are suffering from a mental illness a broad and diverse spectrum of psychiatric and psychotherapeutic treatment methods. *MediTECH* supports the clinic in the framework of a cooperative



continuing education program and thereby establishes the highest skill with the awareness-based procedure of biofeedback in a clinical setting. In this context patients frequently report that their complaints decrease and perceive an increase in their own self-efficacy.

Martin Schmid, Pflegeexperte MSc HE,  
Clenea Privatklinik Schlössli,  
Oetwil (Switzerland)

## ... and neurofeedback

In my practice, I create therapy programs for patients with developmental problems and disabled patients, mostly children. The psychomotor holistic training program I have developed (PMG) includes a precise diagnostics regime, examination, drafting a treatment plan and training the parents in all areas of sensory and motor development.



The actual treatment can then be carried out by the family at home with the child. For my patients with auditory processing and perception disorders (AVWS) as well as visual processing disorders, I have been integrating elements from the Warnke® procedure into PMG for years.

So for me there was no question about choosing to use the HEG-System from *MediTECH* in neurofeedback. I have never regretted this decision because using the system in practice is simple and uncomplicated, and the findings can be easily communicated to the parents. Finally, the collaboration with *MediTECH* is not only excellent as far as everyday problems are concerned but so exciting that I have already been given the opportunity to present my work with HEG at the Biofeedback-Congresses (BFE) in Venice (2014) and Rome (2015): Since most of the patients who undergo PMG do not live near my practice, I developed my own HEG-concept –so-called compact training: The patients train for several days in a row, up to three units every day. This is usually done during school holidays. I use HEG mainly for improving concentration and endurance, learning habits and language.

You can find more information about this in a special chapter on HEG in my book *ADS, LRS und Co* (2015) as well as in an article about HEG from the professional journal *Praxis Ergotherapie* (1/2017).

More articles and lectures in collaboration with *MediTECH* will likely follow.

Dr. Christel Kannegießer-Leitner, MD,  
Rastatt (Germany)

Biofeedback is an ingenious supplement to our range of practical services. Our patients get feedback that they would otherwise never experience/learn of. Targeted movement can be explained and guided significantly better and more simply – without my having to talk all the time. I have achieved great results in treating tension headaches and vertigo as well.



Steffen Weidenhaupt, Ergotherapist,  
Holzminden (Germany)

We operate a neurological practice in which all neurological and psychiatric-psychosomatic clinical pictures are represented and treated – especially severe clinical pictures with complex progressions. From the very beginning the use of neurofeedback and biofeedback was a core component of our practice. We combine the therapeutic procedures in the framework of a multimodal concept very effectively in the treatment of therapy-resistant clinical pictures, and/or to limit or complete avoid the use of medication with additional neuro-modulatory methods such as repetitive transcranial magnetic stimulation, transcranial direct current stimulation and numerous other procedures.



Since, to date, we have had our best experiences with SCP- and frequency band training, we were looking to expand our treatment options. HEG-Training offers a very good option that can be combined with other procedures that we use. After some initial skepticism and some need to be convinced of the efficacy of EEG-driven feedback, I broadened my views after extensive testing and use of HEG training in practice. Implementation is uncomplicated, which supports the application in practice and creates time for therapeutic work and supporting the patient. Additionally, the different approach makes the procedures a solid alternative and effective supplement when we hit the limits with other neurofeedback methods.

The *MediTECH* system is very reliable and most of all it is adaptable and effective in its application – to this date it has effectively supported smooth procedures in the practice. The results of this therapy likewise speak for the system, and we have especially seen the best results in work with children, though also in the area of gerontopsychiatry e.g. as supporting treatment for cognitive deficits in old age or in peak performance training as well as in treating headaches. Currently we are looking for additional applications.

I have found the *MediTECH* team to be very practice-oriented, skilled, amicable and most of all reliable. The support in setting up and introducing the systems was exemplary and helped us a lot. Even after we purchased the system we continue to receive experienced, rapidly-reacting technical support. Since we are pursuing new pathways in the practice, I appreciated the opportunity to make use of new approaches in therapy or combinations with technical developers on-site without any time pressure. We are very pleased.

Frank Schmidt-Staub – Neuropsychiatry –  
Psychotherapie-Zentrum, Hanover (Germany)



## Training the senses effectively – Training awareness with *MediTECH*®



### Biofeedback / Neurofeedback:

- Scientifically well-founded
- Interdisciplinary applications
- Indispensable for your daily practice

MediTECH Electronic GmbH  
Langer Acker 7  
D-30900 Wedemark (near Hanover)

Phone: +49 (0) 5130-97778-0  
Fax: +49 (0) 5130-97778-22  
Mail: [service@meditech.de](mailto:service@meditech.de)  
Internet: [www.meditech.de](http://www.meditech.de)