Neuron-Spectrum-BOSLAB

software and hardware for performing
of trainings with biofeedback (BFB)

It is the joint product of **Neurosoft** Ltd and State Institution Research Center for Molecular Biology and Biophysics of Siberian Branch of the Russian Academy of Medical Sciences (RAMS) (chief medical coexecutive of BOSLAB product is M. Shtark, professor, RAMS academician).

- Correction of addictive behavior
- Correction of attention deficit disorder/hyperactivity disorder (ADD/HD syndrome)
- Treatment of psychosomatic disorders
- Treatment of posttraumatic and movement disorders and pain syndromes using facilities and techniques of biofeedback technology (BFB).

Neuron-Spectrum-BOSLAB — is a unique combination of modern diagnostic features of computer electroencephalography of the leading manufacturer and treatment technology developed by one of the best institutes RAMS.

NEUROSOFT

Medical Diagnostic Equipment Development and Manufacture

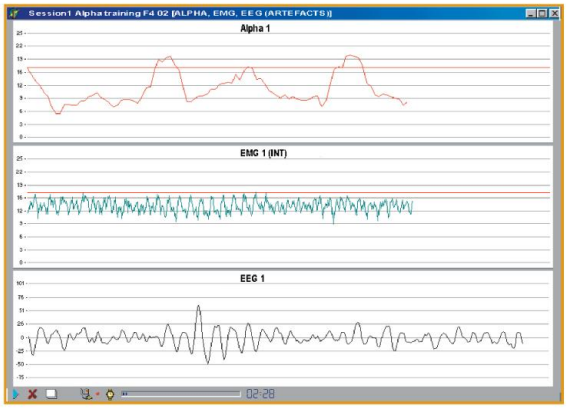
What is Biofeedback?

Biofeedback is a new health-improving rehabilitation technology based on the principals of the vital mechanism, i.e. adaptive feedback. During the biofeedback procedure the patient is provided with the information concerning physiological functions being examined by means of external feedback. Having received such information, the patient learns to control these functions and masters the control skills using them in everyday life.

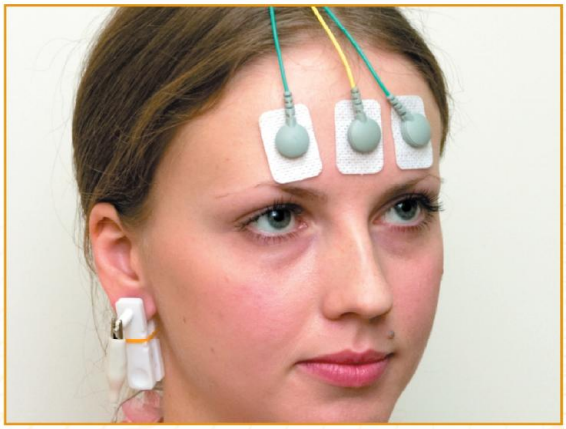
To perform the biofeedback session you need the equipment to record the signals from the patient and software to provide the patient with the information concerning her/his condition in the form of visual or audio images. One of the ways of audiovisual environment creation during the biofeedback session is animation or game. It relieves the procedure of monotony, increases the patient's motivation to its performing.

"Biofeedback is the only medical technology where the patient turns from the usual passive object of the medical interference into active subject of the health-improving rehabilitation process".

Mark Shtark, professor,
RAMS academician

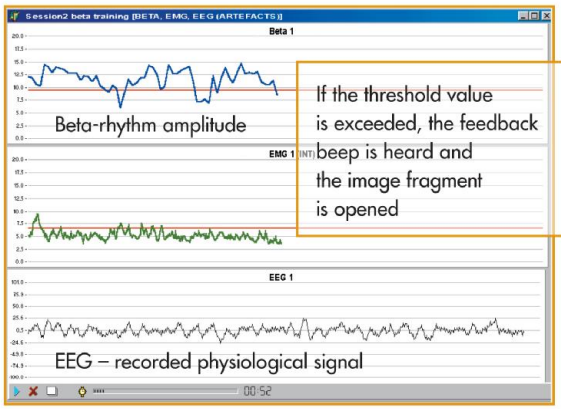


1. EEG biofeedback (alpha-theta training) for treatment and rehabilitation of addictive disorders (alcoholism, drug addiction, etc) and depressions

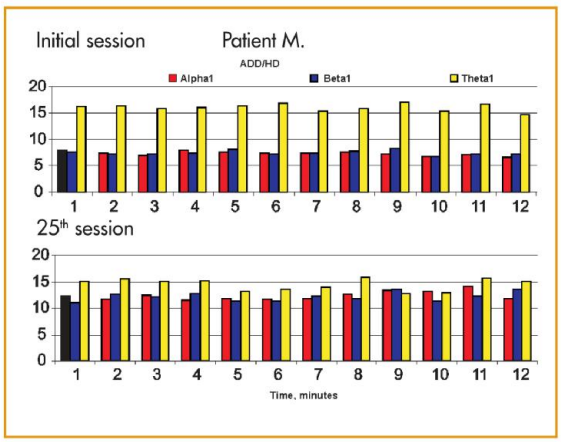


2. Treatment of psychosomatic disorders by temperature-myographic biofeedback technology

Neuron-Spectrum-BOSLAB Main Components



If the threshold value is exceeded, the feedback beep is heard and the image fragment is opened



3. EEG beta-stimulating training for treatment of ADD/HD syndrome and concomitant pathology

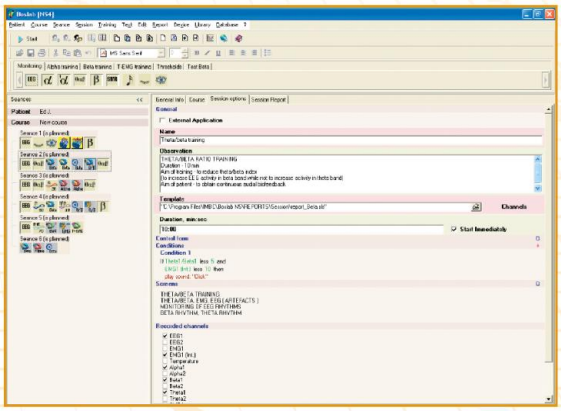
The ADD/HD syndrome is an inability of a child to concentrate on solving any tasks. At that the decreased intensity of beta-rhythm and increased intensity of EEG theta-rhythm are observed. The training purpose is to teach a child how to increase the intensity of beta-rhythm and to decrease the parameters of theta-rhythm.

The results of corrective course in medical center environment in different age groups

Age (number of patients)	EEG attention index (Theta/ Beta rate) before the correction	EEG attention index (Theta/ Beta rate) after the correction
Up to 9 years (147)	7,20	5,44
10–12 (138)	6,79	4,35

Reliability: $P < 0,01$

4. Myographic training* for treatment, prevention and correction of:
   - posttraumatic states;
   - movement disorders (infantile cerebral paralysis, postinsult states, consequences of craniocerebral and spinal traumas, multiple sclerosis);
   - orthopedic disorders (bearing abnormality, scoliosis, clubfoot, torticollis);
   - pain syndromes of different genesis (myogenic-fascial, ligamentous, arthritic or discogenic)



5. Generator of applications for treatment and rehabilitation procedures performing allows to master the biofeedback technology on two levels: level of concrete therapeutic technique and level of research experiment

* is possible only on **Neuron-Spectrum-4/EP** and **Neuron-Spectrum-5** digital systems

Delivery Set

- Cup electrode with cable – 5 pcs.
- Ear EEG electrode – 2 pcs.
- Electrode adhesive paste (100 g)
- Temperature sensor
- Software
- Software protection key
- User manual

Neuron-Spectrum-BOSLAB software can operate with digital EEG systems of **Neuron-Spectrum-2** model and higher. The maximum number of techniques is provided when you use digital EEG systems **Neuron-Spectrum-4/EP** and **Neuron-Spectrum-5**.

Neuron-Spectrum-4/EP Specifications

Number of EEG channels	21
Number of polygraphic channels	4
Parameters of EEG Channels	
Sampling rate per channel, up to	5000 Hz
A/D converter	16 bit
Common-mode rejection, not less than	110 dB
Suppression ratio of power frequency by notch filter, not less than	25 dB
Noise level, not more than	0.8 μV
Parameters of Polygraphic Channels	
Sampling rate per channel, up to	40000 Hz
High pass filter	0.05 – 200 Hz
Low pass filter	35 – 5000 Hz
Breath channel (can be used for temperature sensor connection)	yes
Supply Voltage	
Electronic unit	5 V DC
Desktop PC-based system	220/230 V AC (50 Hz) / 110 V AC (60 Hz)
Notebook PC-based system	220/230 V AC (50 Hz) / 110 V AC (60 Hz)/int. battery
Weight (with stand), not more than	14 kg
PC connection	USB
Safety	BF type

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Представител за България
Илан Медицинска Апаратура ООД
гр. Варна, ул. Кирил Шиваров 9 Б
тел. 0700 17373, факс 052 612258
e-mail: office@neurosoft.bg
www.neurosoft.bg

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