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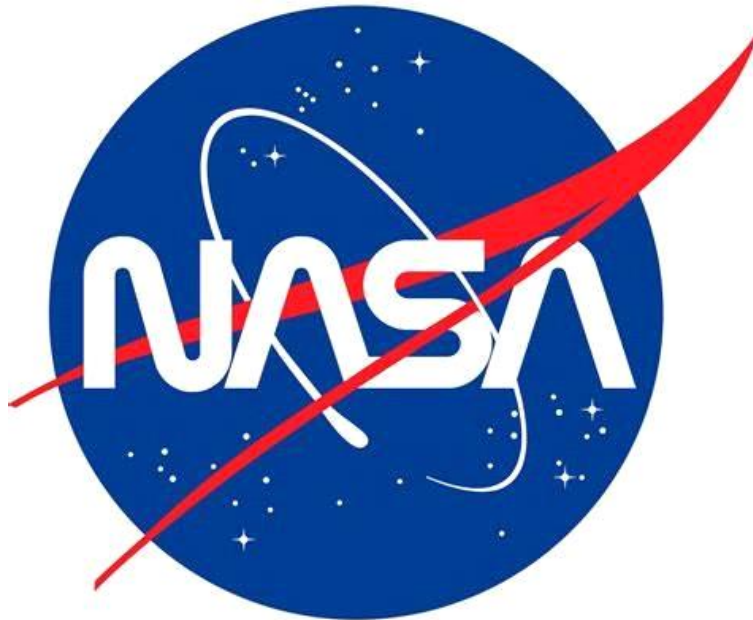
## **BIOFEEDBACK- BRAIN TRAINING**

Biofeedback is painless, easy to learn, in many cases constitutes an alternative to traditional treatment. It teaches conscious control and regulation of physical and mental changes. Biofeedback is a technique which allows you , among others, to exploit your creative abilities, it opens your mind, encourages relaxation, combats pain.

Biofeedback method (neurobiofeedback- EEG) is based on providing a patient feedback about his physiological state. Physiological changes of an organism are monitored by specialist systems which charge data from sensors in real time.

### History of Biofeedback:

At the beginning of XX century Autogenic training was used to deepen a state of relaxation (a patient used to follow a therapist's orders). Then, in the 1930s, scientists were focused on progressive relationship- exercises on muscle relaxation. A patient, during workout, was closely monitoring every movement and its influence on the sense of relaxation and stress reduction. The discovery of connections between the activity of the alpha waves and their influence on an emotional state of a human made in the 60s doctor Joe Kamyia. Already in the 80s, Peniston and Kulkowsky have developed and used this method in addiction therapy, depression assemblies and post-traumatic stress. For the first time real EEG training was applied in the USA in 70's. At the time astronauts from NASA were patients. For them, Biofeedback was a way to boost their concentration and make accurate decisions in a state of continuous stress.



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Training session:

To conduct EEG Biofeedback training we need a special apparatus and a therapist, who will supervise its course. There is an electrode ( or a few electrodes) connected to a patient's head. The electrode transmits signals from the brain to the therapists monitor, where we can see them as individual bands of cerebral waves. The assignment for the person who is trained is to "steer" a game presented on a monitor, through his own mind, without using a keyboard or a mouse. For example, he has to keep a high speed of his car in the game.

The system captures wrong mind's reactions of the patient, which result in stopping the game, reducing the image on a monitor or providing new, distracting elements (for example rain or fog) to the game.

When the game goes well and the brain power boosts, the practitioner gets points. On the other hand, when the game fails, the patient doesn't get any score. That way he knows when he's concentrated and when distracted.

One session last more or less 60 minutes and its frequency is recommended as two times a week. The bigger the problem is, the more trainings a week are required.

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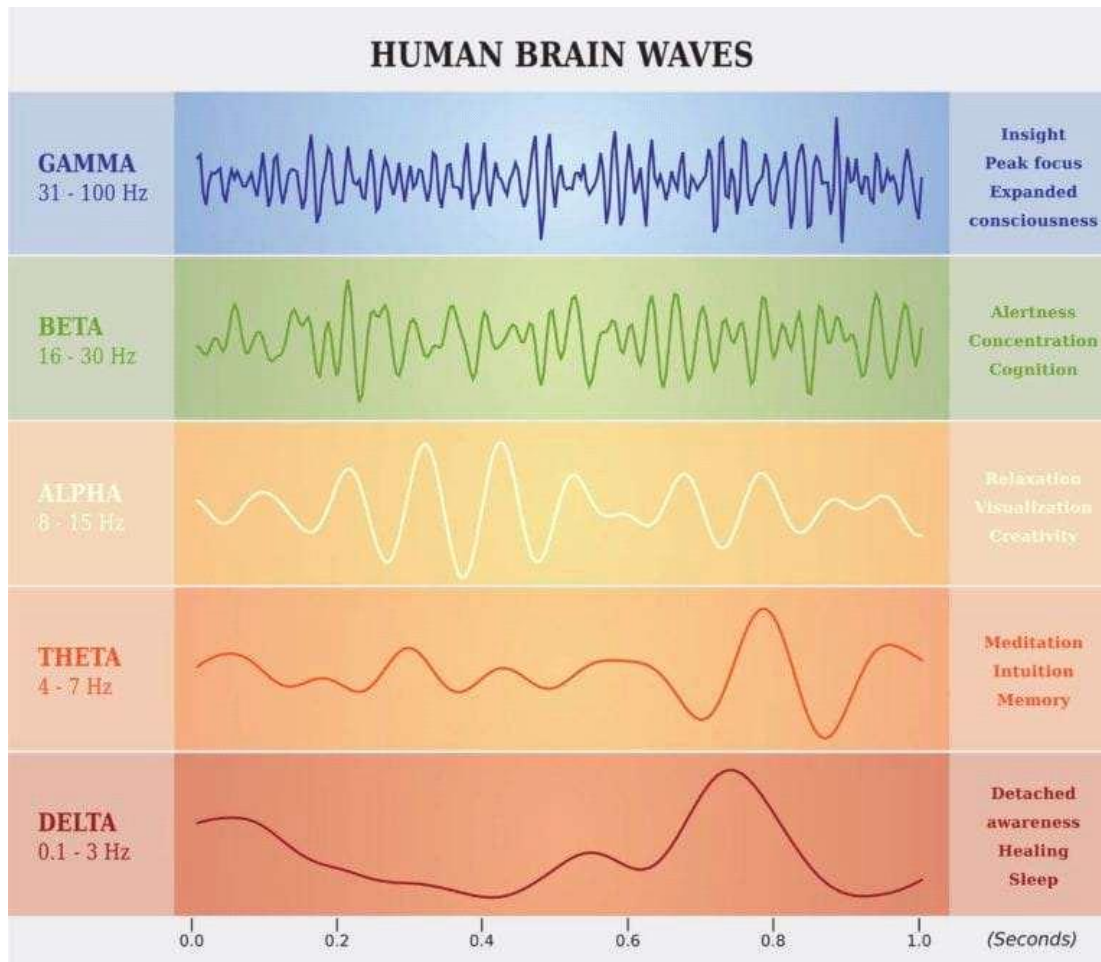


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### Alpha waves:

In EEG Biofeedback training, EEG apparatus records the waves generated by the brain. Their type and parameters are specific to different types of brain activity.

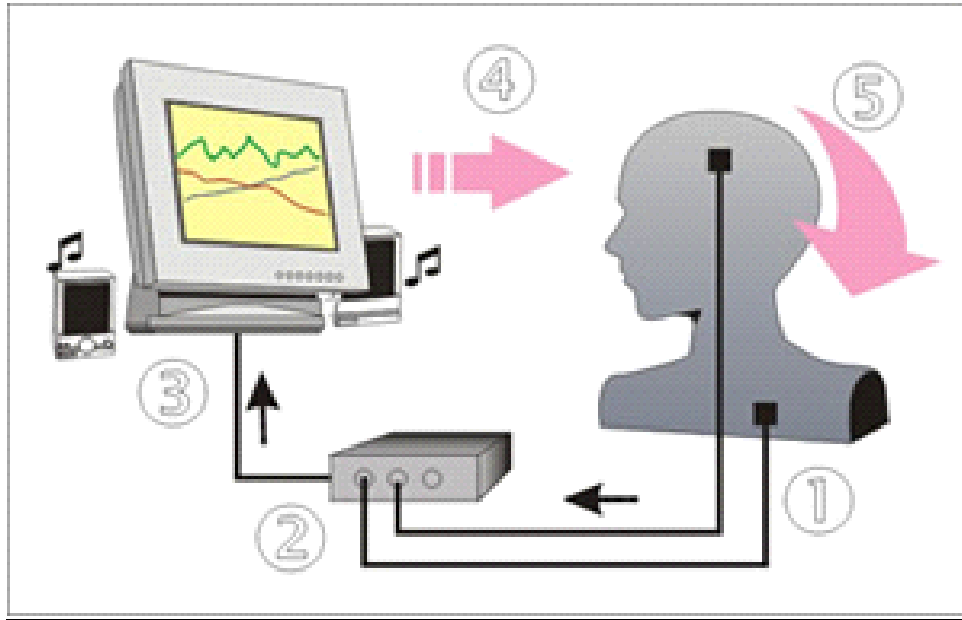
When we sleep, our brain products delta waves (1-3 Hz), when we have got dreams- theta waves (4-7 Hz), in a state of deep relaxation and positive thinking, just after we fall asleep and wake up- alpha waves (8-12 Hz), when we are concentrated and focused on something- beta waves (15-20 Hz) and when we are annoyed or upset, our brain emits higher frequency waves (20-35 Hz).



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In EEG Biofeedback training the most important are alpha waves.

During alpha state we focus on everything which is within us- on our feelings. We activate access to both cerebral hemispheres, silence and relax. Alpha is a symptom of a peace, positive thinking, rest, attitude creativity and drawing inspiration. Unfortunately, when the alpha state is excessive, it may be a cause of concentration disturbances and remarks. The condition for a valid "entry" to the alpha state is a feeling of a deep relaxation, focus and stress relief, which Biofeedback training is designed to help to achieve.



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How to control body and mind:

The main aim of Biofeedback is combating stress using breathing techniques.

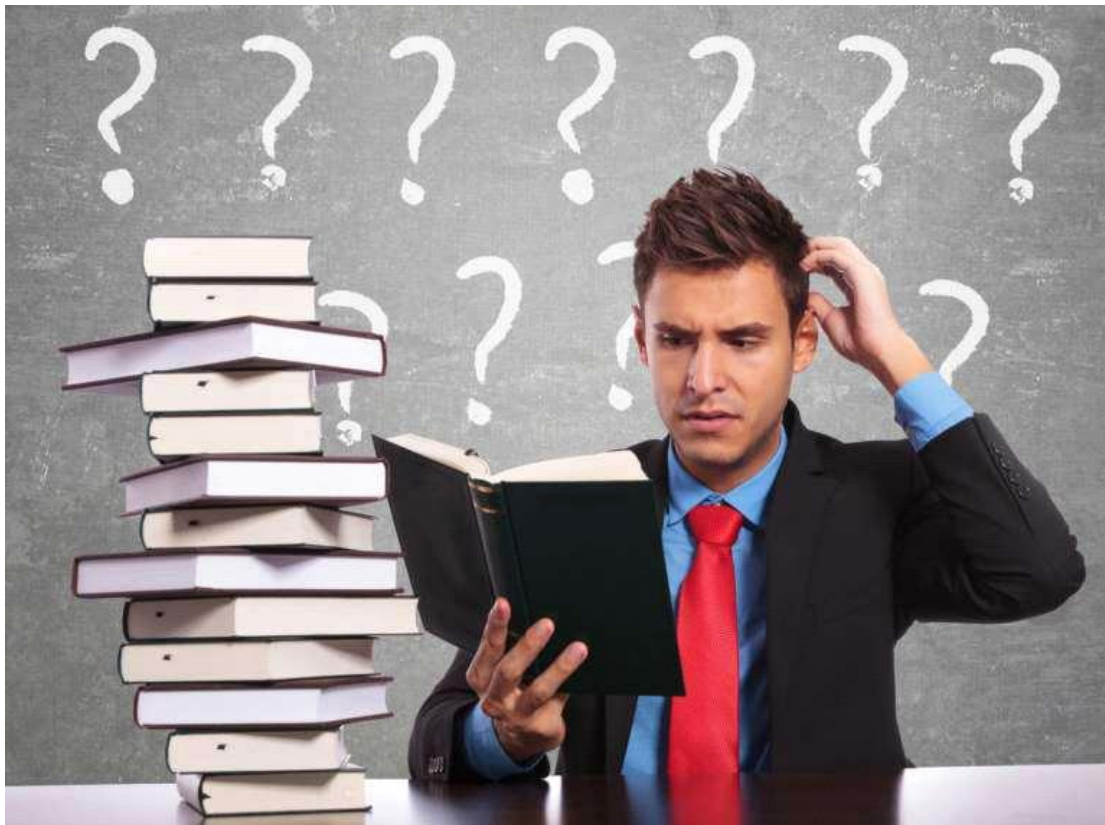
Conscious of respiratory manipulation, heart rate and other commonly "eccentric" functions, we can control the response of the body to stressful situations. That's why training sessions are recommended for people who suffer from chronic fatigue and stress, depression, traumatic stress disorder (PTSD), addictions, social phobia and burnout. Besides Biofeedback is a method appropriate for kids and teenagers who have problems with concentration and learning. The trainings greatly reduce the ease of scattering, rage and shyness of a child and improve the efficiency of his thinking and the speed of his tasks. In particular, children and young people suffering from ADHD and disorders of the spectrum of autism, dyslexia, discographia, dyscalculia and Asperer's syndrome should benefit from Biofeedback. Clinical experience has shown that EEG training can be used also in many other disorders and medical problems.

Its commonly used in:

- reducing stress level,
- muscle tone and relaxing muscle contractions,
- chronic aches,
- people, who faced with urinary incontinence,
- high blood pressure and heart diseases,
- migraine headache,
- troubles with falling asleep and insomnia,

- fear and depression,
- eating disorders,
- peptise issues,
- irritable bowel syndrome (IBS).

Often, EEG Biofeedback is used by fully healthy people. Most often, such people are very creative, set for success, very ambitious and they want to work to improve their cognitive functions. They care about upgrading concentration, memory, creative thinking, abilities of smooth planning and making decisions. For this reason, it is used by sports people, musicians, artists, businessmen, brokers, firefighters, pilots and doctors.



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#### Applications of Biofeedback:

Biofeedback is used in therapy for children and adults, which faced with

- Learning disabilities,
- ADHD,
- Dyslexia,
- Depression,

- Anxiety disorders,
- Inordinate stress,
- Sleep disorders
- Concentration impairment

Biofeedback practice, is also used scientific studies and in therapy for healthy people with the aim of improving a brain function (for example: athletes, managers)

Effects of therapy:

Biofeedback is an effective therapeutic method, allowing better:

- Memory and concentration
- Working under pressure
- Dealing with emotions
- Controlling stress and fear