Neurofeedback

Frequently Asked Questions

What is Neurofeedback?

Neurofeedback is a type of biofeedback in which information about neurological function is given to the brain using interactive computer software. The brain uses this information to change the way it functions. Neurofeedback operates on the principles of classical and operant conditioning, as neural processes change based on behavioral learning mechanisms.

During neurofeedback sessions, the patient watches a movie or listens to music while a technician observes their brain function. As brain function changes, so does the music or movie, providing feedback about neurological function. Over time, the brain learns to operate more efficiently, and clinical symptoms such as poor focus or depression, decrease.

Because the changes to the brain occur on the neuronal level, they are often sustainable over time. The analogy we use is that learning to function more efficiently is a little bit like learning to ride a bike. Once the brain has figured out the best way to do it, it doesn't really forget.

What does the initial assessment look like?

The initial assessment before starting neurofeedback is called a quantitative electroencephalogram, or qEEG. Traditionally, EEG is used in the field of medicine to measure the brain's electrical activity in order to detect seizure activity. When these EEG signals are broken down into component pieces and analyzed quantitatively, we are able to create colorful brain maps that indicate functionality and connectivity of various neural networks. These maps are compared to an age-referenced database of several hundred brains, which helps to indicate areas that may be dysregulated.

The qEEG is a simple, non-invasive procedure that takes about 30 minutes to complete. The patient wears a special cap which has electrical sensors sewn into it. These sensors measure the electrical activity of the brain and transmit that activity to the computer. During the recording process the patient should sit as still as possible for about 10 minutes with their eyes open and 10 minutes with their eyes closed.

How many sessions before I see results?

Every brain is different, which means every person responds to the neurofeedback process differently. On average, most people begin to see gradual positive changes around 6-8 sessions, with bigger ,more noticeable results occurring around 10-12 sessions or so. We recommend that patients complete 20 sessions initially in order to ensure maximum efficacy.

How many sessions will I need in total?

The answer to this question varies depending on a number of factors. Each patient's ability to learn to self-regulate is different. Their ability to retain information is different. Their brains are different. Most people need between 20-40 sessions to achieve the maximum desired results. These results are typically sustained over long periods of time, with the longest published research showing lasting gains at a 10-year follow up.

How often do I need to come for NFB?

In the perfect world, patients come in for training two to three times a week. This allows for the brain to build on the new activity patterns it is learning while also allowing for time to rest and recover. However, we understand that schedules can be tricky, and sometimes patients can only come once a week, or need to come four or even five times a week in order to finish quickly. We are happy to work around scheduling needs. We see patients from 8-7 Monday through Friday and from 8-5 on Saturdays.

Do results last long-term?

Yes. The longest changes that have been published in the literature indicate results that last a full ten years.

Neurofeedback creates lasting changes because of the phenomenon known as auto-reinforcement. This means that new pathways, once formed, are used and re-used thereby reinforcing the strength of their connections.

How long as neurofeedback been around?

Hans Berger discovered EEG in 1924, but the foundational members of the neurofeedback community began conducting animal studies and publishing research in the 1950's and 60's. In the 20 years since then, methodology and technology have become even more refined, allowing for more effective diagnostic and training methods.

In addition, over the past 40 years, several databases have been constructed containing the data from several thousand neurotypical brains. These databases allow for reliable comparison to a scientifically sound standard database of typically developing individuals of the same age and gender. These comparisons allow us to identify variations in frequency, phase, amplitude, and coherence, which are of statistical significance and representative of the complex network connectivity that exist within the brain.

What is the research backing for NFB?

NFB has been researched extensively to document its therapeutic efficacy and excellent tolerability. We are happy to provide research papers on the effects of neurofeedback in treating a variety of neurological and psychological conditions. Although strongest evidence exists for neurofeedback in order to improve attention, there is also evidence that neurofeedback can improve short-term memory, sleep, anxiety, pain perception, mental clarity, alertness, creativity, and emotional regulation.

What happens after 20 sessions?

At the end of a round of training, we conduct an interview with the patient and parents (when appropriate) in order to assess changes. We also administer subjective rating scales, and an objective test of attention and executive function, the CNSVS. Finally, we record an additional qEEG assessment in order to compare the first and second qEEG and to determine what aspects of brain function changed. We use all they data points to determine whether additional training may be beneficial.

Does my prescribed medication affect NFB?

Neurofeedback is to safe to undergo while taking medication. However, as the brain begins to heal through the neurofeedback process, it may be helpful to reduce the amount of medication prescribed. We work closely with staff members here and with outside providers in order to ensure that medication is optimized throughout the process.

How does neurofeedback compare to TMS?

The goal of TMS is to activate areas of the brain that may be underactive using an invasive, magnetic pulse. While neurofeedback can help to activate areas of the brain, it does so in a non-invasive manner. In addition, neurofeedback has the potential to train areas of the brain to be less active. This makes neurofeedback a potentially more versatile intervention, in addition to a non-invasive one.

Does my insurance cover NFB?

This varies by insurance carrier and individual plan. We are out of network with all insurance providers, but we will happily help you submit your claims to your insurance company. At that point, if they reimburse it will be to you directly. We are also happy to provide relevant research papers when it comes to submitting appeals.