NEUROFEEDBACK THERAPIES
A CUTTING-EDGE THERAPY
FOR THE TREATMENT OF ADDICTION
Our team of expert clinicians utilize innovative Quantitative Electroencephalography (qEEG) technology in addition to other Neurofeedback interventions to assess your brain’s electrical activity and produce brain maps. These maps allow our team to see departures from the patient’s brain as compared to a normative database and then train the patient’s brain to be more closely aligned to a healthy brain.

Comprehensive data are collected and analyzed during each one-on-one session so that our team may select the most effective exercises for your Neurofeedback therapy or performance-oriented goals.
Introduction:

**NEUROFEEDBACK THERAPY**
The missing piece in recovery is the brain

Addiction is a by-product of many of the systems that define the individual: genetics, mental perceptions, behavioral habits, family functioning, physical health and a host of other variables including, exposure to toxins, nutrition, education, finances, etc. But one system is involved with all of these – the nervous system, and most importantly, the **BRAIN**.

The brain becomes dysfunctional under the tyranny of addiction. Paradoxically, the brain, when not functioning in a healthy, typical manner, can drive addiction and other problems.

We employ many clinical interventions to address addiction. One of the ways we change dysregulated neuroplasticity in the addiction network is through the use of LORETA Brain Training. **This is the specialty and expertise of our Neurofeedback Therapy Unit.** Society understands that the brain plays a role in addiction and related problems; many would be surprised to learn that the brain has its own craving network. This craving network is activated under normal circumstances when it is appropriate, such as when we are hungry, thirsty or tired. But in addiction and/or while engaged in a compulsive behavior, the craving network is overactive.
Brain Mapping: Identifying Dysregulation in Brain Function via qEEG

qEEG
qEEG stands for Quantitative Electroencephalography. It is a method of analyzing the brain function by comparing the electrical “signature” of a given individual’s brain to a normative database of typical, healthy people of all ages. The differences between the two signatures are then expressed as comparison scores and used to generate brain maps.

Brain Maps
qEEG data are used to create brain maps, which are topographic images of the brain. Different colors represent functional dysregulation in the brain in terms of too much or too little activity as compared to a normative database. The maps are important both in guiding treatment via neurotherapy and showing when treatment has worked as planned. When treatment has been successful, the maps demonstrate the normalization in brain function through pictures and numbers. These graphics and numeric results motivate patients in therapy and provide tangible proof of improvement.

LORETA Imaging
LORETA is an acronym for “Low Resolution Electromagnetic Tomography Analysis.” LORETA images use GPS-like calculations to localize problem areas of functioning inside the brain’s cortex. LORETA Brain Training is used to treat the brain. qEEG is used to diagnose where problems lie.
Neurotherapy:
Stimulation and Feedback to Restore Brain Function to the Norm

**Before Treatment**

Neurotherapy refers to normalizing the brain’s functioning through treatment. It is guided by the patient’s symptoms as well as an individual’s qEEG data. In the case of a primary substance use disorder, qEEG-guided neurotherapy may be used to target and regulate the brain’s craving network. This helps a struggling individual quiet their obsessive and compulsive demands to use drugs and alcohol long enough so that traditional therapeutic interventions can be successfully introduced. qEEG-guided neurofeedback brain training can help resistant, uncooperative or anxious patients become more receptive and amenable to the evidence-based therapies that are already provided to our patients. It does not replace existing therapeutic interventions. Instead, it prepares our patients to receive currently administered intervention strategies. Neurofeedback Therapy can contribute to the recovery interventions currently being provided during treatment by potentially enhancing the patient’s sense of well-being and by helping to reduce anxiety, depression and cravings. Additionally, Neurofeedback Therapy can help reduce sleep disorder symptoms which can often plague those who are newly recovering.

**Treatment**

Neurofeedback Therapy involves the regulation of this dysregulated brain by providing feedback while the patient works to normalize dysregulation in real time. This modality of treatment is noninvasive and safe.

“I definitely feel that my stress level is so much lower than it was. From day one of my sessions in neurofeedback, my stress has started to decrease.”

— Pam received inpatient Neurofeedback for her anxiety while in substance use disorder treatment.
After Treatment

qEEG-guided neurofeedback has been shown to be a promising practice and is gaining empirical support for being described as an evidence-based intervention for treating substance use disorders and psychiatric illnesses. It has the capacity to positively change neuroplasticity and restore the addicted brain to a more regulated state. The changes are limited to specific symptom areas and do not change a person's personality or unique character. The need to escape or use a substance is changed in the brain itself. In recovery, this can make the difference between success or relapse. The true benefit of Neurofeedback Therapy is that it has been found to improve other forms of therapy when used in an integrative model. The chances of relapse have been found to decrease as a function of the addictive network's memory, craving and reward cycle being interrupted and neuroplasticity being repaired. Additionally, as a result of increased levels of concentration and sleep, as well as reduced levels of impulsivity and anxiety, relapse rates have been found to decrease in those who have been presented as being challenged by abstinence.

“My mood is much more stable; sleep patterns, being able to get to sleep, feeling calmer during the day. I don’t have the hunger to drink.”

– John received inpatient Neurofeedback Therapy for his alcohol addiction.

“It made me much more comfortable and present. The most dramatic change I experienced was in the reduction of anxiety and chronic pain which helped me stay in chemical dependency treatment long enough to hear their message and get better.”

– Jon received inpatient treatment for his cocaine addiction and gambling compulsivity.
Questions You May Have About Neurofeedback Therapy:

What happens in my initial evaluation session?

A cap with special electrodes will be placed on your head. These sensors will then be applied one-by-one to your scalp with a small amount of gel. You’ll be sitting in a comfortable chair in a private room and completely awake the entire time.

Next, our neuro-technicians take multiple 3-D images of your brain’s electrical activity that look similar to those of an MRI. These images are called brain maps.

How long will my Neurofeedback training sessions last?

The initial assessment of your brain’s electrical activity requires about an hour to complete. Real-time recordings will be taken with your eyes open as you watch a video monitor. Baseline readings with your eyes closed will also be gathered. Follow-up treatment sessions may be slightly shorter in length, depending upon your recovery progress and your individual treatment goals.

Why is Neurofeedback Therapy so effective?

Each type of brain wave frequency - Delta, Theta, Alpha and Beta - relates to a specific mental state. Every one of these bandwidths may be positively affected through focused mental training.

As you watch selected videos with your electrode cap in place, you will be asked to interact with the graphics that appear on the screen in various ways. Your clinician, who is seated at a computer behind you, will be providing specific verbal cues based on the real-time data of your brain’s electrical activity received via the cap’s sensors.

Your responses will cause the images on the screen to speed up, slow down, lighten or darken or move to the left or right. Your brain waves directly impact what you are watching and become, in a sense, the video game controller. All the while, you are being taught new ways of self-regulating your brain’s function unique to your specific issues.

With repeated sessions and employing the skills learned during Neurofeedback brain training along with other clinical interventions the patient will be more likely to obtain and maintain recovery and enjoy a sense of well-being.
How is my data assessed?

Data from your qEEG and LORETA evaluations provide Neurofeedback Therapy personnel with valuable information regarding your brain's function by examining the magnitude, coherence and phase shift and lock as compared to a normative database.

Visible, Proven Success

Ample data exists to illustrate neurofeedback’s success in helping patients complete treatment programs for drugs and alcohol, including one notable 2005 study from the American Journal of Drug and Alcohol Abuse in which neurofeedback patients were compared to those simply receiving extra therapist time.

The results revealed the neurofeedback patients:

- Increased their rate of program completion by 41%
- Improved their ability to sustain attention and inhibit impulsive behaviors
- Decreased their rates of anxiety and depression
- Increased by 75% their rate of sustained recovery during the 12 months follow-up (see graph)

*Results based on a 2005 study by Scott and Peniston published in the American Journal of Drug and Alcohol Abuse
As of 2015, there are many updates and improvements to the Peniston/Scott protocol (i.e., LORETA Training).

In fact, the table is displayed, only, to demonstrate foundational preliminary efficacy results from a Randomized Clinical Trail (RCT).

“I didn’t really realize how imprisoned I was by my own out-of-control anxiety until I was picked to take part in this program. The neurofeedback program was instrumental in alleviating my relentless stress and letting me get on with my recovery. I found myself with much more energy and the ability to truly focus on treatment.”

– Sam received inpatient treatment for his alcohol and cannabinoid addictions and anxiety disorder.
Promising Potential Benefits of Neurofeedback Training

- Increase in abstinence rates
- Alleviate symptoms due to concussive events
- Lengthened periods of abstinence from addictive chemicals and behaviors
- Reduction of the brain’s reactive “fight or flight” state
- Greater enthusiasm for other activities
- Lower reported levels of general distress and discomfort
- Increased active participation in residential treatment programs
- Reduced sense of depression, alienation and defensiveness
- Positive changes in attention and ability to focus
- Improved peak cognitive performance
- Reduced headaches and chronic pain
- Related to decrease in patients prematurely leaving treatment
- Decreased insomnia

- Improved reported function in cases of
  - ADD (Attention Deficit Disorder)
  - ADHD (Attention Deficit Hyperactive Disorder)
  - PTSD (Post-Traumatic Stress Disorder)
  - Epilepsy
  - Autism spectrum disorders
  - TBI (Traumatic Brain Injury)
Process

1. 20 sessions for one hour each session

2. Three sessions include qEEG data acquisition, artifacting, symptom checklist development, brain mapping, and protocol determination

3. All 20 sessions include Neurofeedback brain training sessions

4. Two primary challenge areas will be addressed: the primary presenting challenge will be addressed in the first five sessions; the secondary challenge in the second 10 sessions and then the primary presenting challenge will be re-trained in the last five sessions.

5. Each of the 20 sessions will have a confirmatory check to determine progress and to see if the patient is improving.
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