

# DIRECT NEURAL FEEDBACK AND ANXIETY / PTSD / ADDICTION

## Anxiety and PTSD

### 1. Symptoms of Anxiety

It is extremely important for us as a species to have an immediate response to threats. We are more likely to survive by over-responding to a threat than to under-responding to one. When a lion leaps out from behind a tree, we are less likely to survive if our response is gradual and relaxed. If we over-react to a potential threat — such as branches suddenly rustling in the wind — by immediately leaping up, we increase our speed in identifying danger and stay alive. This global response to threat (the “fight or flight” mode) is regulated by the sympathetic branch of the autonomic nervous system. Anxiety is what happens when the brain is either locked into this mode, or goes into it at inappropriate times.

Anxiety is sometimes called “The Great Imitator” because it can manifest in a vast variety of ways. There are more than 100 symptoms which can be attributed to anxiety, some much more common than others. Below are some of the most common negative symptoms, mental and physical, that are easy to notice and track:

PHYSICAL SYMPTOMS	MENTAL SYMPTOMS
<ol style="list-style-type: none"><li>1. Cold, sweaty, numb or tingling hands or feet.</li><li>2. Shortness of breath.</li><li>3. Heart palpitations (heart beating faster or harder).</li><li>4. Dry mouth.</li><li>5. Nausea.</li></ol>	<ol style="list-style-type: none"><li>1. Panic, fear, uneasiness.</li><li>2. Trouble concentrating.</li><li>3. Intrusive thoughts, or inability to think about anything other than the present worry.</li><li>4. Insomnia.</li></ol>

Feelings of calm and relaxation are expressions of parasympathetic function. Regardless of the disorder, it is virtually always a sign of improved health.

## 2. Symptoms of Post-Traumatic Stress Disorder (PTSD)

Post-Traumatic Stress Disorder (PTSD) is a condition of persistent mental and emotional stress occurring as a result of injury or severe psychological shock. Symptoms of PTSD include negative thoughts or feelings that began or worsened after the trauma, such as feeling isolated or alone, and avoidance of negative thoughts and feelings. As with anxiety, most symptoms are manifestations of “fight or flight”. These symptoms may manifest as:

1. **Risky or destructive behavior**
2. **Hypervigilance**
3. **Heightened startle reaction**
4. **Difficulty concentrating**
5. **Difficulty sleeping.**

Those with PTSD, particularly veterans, may have extreme challenges in their day-to-day lives, with work, relationships, and housing. It may be difficult to improve their situation unless the underlying PTSD is effectively addressed. Helping with housing and work may not be very long lasting without the PTSD symptoms addressed. Similarly, people with PTSD often turn to substance abuse to help them deal with it. DNF can be helpful with addiction as well (see below).

*\*\*\*Many people claiming to suffer from PTSD do not in fact have PTSD. They assume that if they were exposed to traumatic events then by definition they must have PTSD. That is often not the case. Even during war time only a small percentage of those exposed to trauma develop PTSD. Most people respond to trauma without any PTSD symptoms. \*\*\**

## 3. What are signs of improvement?

### a. Scaling Questions

1. Do you feel heart palpitations? How bad are they on a scale of 1-10?
2. Do you notice that your palms get sweaty in certain situations? Social situations? When you wake up in the morning?
3. What are things that you want to accomplish when you feel less anxiety/what has it been holding you back from?

**b. Results-driven questions**

1. Do you notice a decrease in (physiological symptom), even if it is only temporary post-session?
2. When was the last time you felt normal in a social setting?

**c. Other open-ended questions that will help the client assess progress**

1. Are you able to sleep through the night without any nightmares?
2. Are you able to walk through a crowd at the airport without medication/having to fly at certain hours when it's not busy?

**4. How does DNF help with each of these symptoms?**

By lowering the sympathetic nervous system response, the physiological symptoms of PTSD typically decrease. Sign of improvement may be indirect. Some may not have a noticeable “feeling” component, and behavioral changes are a better mark of progress. Some people are much more self-aware than others. Although there are exceptions, symptoms generally improve as a group, not in isolation. For example, with PTSD symptoms like insomnia, heightened startle reflex, poor concentration and many other symptoms tend to improve as a group at generally the same rate, and that is why it is not necessary to track each symptom every session.

TNF typically takes about 6-8 sessions before the client notices a change. With DNF, you can start to see changes right away, usually in the first session but certainly within the first 3 sessions. To feel immediate relief, however temporary, is often a profound experience for someone suffering from severe PTSD and anxiety.

# ADDICTION

There are many different ways to think about addiction. It can be viewed as a genetic defect, a social model, an illness, a moral weakness, and more. In applying direct neurofeedback to addiction, we take a simple and blunt approach to a complex problem — a large majority of addiction is self-medication for anxiety, depression and pain. In this view, craving is not a major component of addiction other than the discomfort associated with withdrawal.

DNF is helpful for addiction because it addresses the root cause; the underlying anxiety and depression. CDN can help with the underlying feeling that the substance helps to temporarily relieve.

### **\*\*\* Important Notes on DNF and Addiction \*\*\***

- It is important that these clients have additional resources and support while they are undergoing sessions. An obvious and severe substance abuse issue should signal to a practitioner that further resources are needed. Be sure that clients have a therapist and/or doctor monitoring their progress.
- Rehab facilities are increasingly including neurofeedback as a part of their program. Studies have shown decrease in cravings and better abstinence rates.<sup>1</sup>
- Clinical observations suggest that DNF could help to make detox quicker and easier. It is possible that it prevents seizures in those that typical have them when detoxing.
- Though CDN can help tremendously with withdrawal, it should always be done under medical supervision.

## 1. Symptoms of Addiction

1. Anxiousness, depression
2. Temporary blackouts or memory loss
3. Lack of motivation
4. Irritability, mood swings, or argumentativeness
5. Emotional and mental withdrawal
6. Enlarged or small pupils, bloodshot eyes

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<sup>1</sup> Tato M. Sokhadze PhD, Rex L. Cannon MA & David L. Trudeau MD (2008) EEG Biofeedback as a Treatment for Substance Use Disorders: Review, Rating of Efficacy and Recommendations for Further Research, Journal of Neurotherapy, 12:1, 5-43.

7. Headache, anxiety, insomnia or nausea upon cessation of substance
8. Continuing use of substance to relax, to cheer up, to sleep, to deal with problems, or to feel "normal."

## 2. How DNF can help with Addiction

Treatment for substance addiction can be difficult — there is no one cure. The best results happen when a combination of treatment and a support structure (such as a 12-step program, inpatient or outpatient rehab) are available. DNF does not treat addiction directly. What DNF *does* do is offer relief from stress, anxiety and depression which may trigger the substance abuse. It can also alleviate some of the symptoms of withdrawal, lessening the chances of relapse. Additionally, patients undergoing DNF often see increased emotional *resilience*; when they encounter triggering circumstances they are not as overwhelmed by them and so are less likely to turn to a substance to ease their depression/anxiety.