

GENERALIZED ANXIETY DISORDER (GAD) THERAPY WITH BELLABEE

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Categories: [Anti-Anxiety](#), [Case Studies](#)



DID YOU KNOW...

- Anxiety is the most common mental health problem across the world. It is a mental health *disorder* that causes extreme fear or worry.
- There are many different types of anxiety disorders including generalized anxiety disorder (GAD), panic disorder and panic attacks, agoraphobia, social anxiety disorder, selective mutism, separation anxiety, and specific phobias.
- Anxiety disorders are highly treatable, yet only 37% of those suffering receive treatment.
- People with an anxiety disorder are three to five times more likely to go to the doctor and six times more likely to be hospitalized for psychiatric disorders than those who do not suffer from anxiety disorders.
- Anxiety disorders develop from a complex set of risk factors, including genetics, brain chemistry, personality, and life events.

Disorder	Share of global population with disorder	Number of people with the disorder	Males with anxiety disorders	Females with anxiety disorders
<u>Anxiety Disorders</u>	3.8%	284 million	2.8%	4.7%



OVERVIEW:

Generalized anxiety disorder (GAD), the broadest anxiety disorder, is different from other types of anxiety disorders because it isn't triggered by a specific cause. With GAD, you may worry about many different things at once or over a period of time, and the worries are often constant.

DIAGNOSIS:

Your doctor or mental health professional may:

- Do a physical exam to look for signs that your anxiety might be linked to medications or an underlying medical condition.
- Order blood or urine tests (or other tests) if a medical condition is suspected.
- Ask detailed questions about your symptoms and medical history.
- Use psychological questionnaires to help determine a diagnosis.
- Use the criteria listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), published by the American Psychiatric Association.

EEG (ELECTROENCEPHALOGRAPHY) AND QEEG FINDINGS IN GAD:

Numerous studies and research papers are available on this topic. Some of the pertinent ones are shown below:

Physiological and Psychological Measures in Anxious Patients

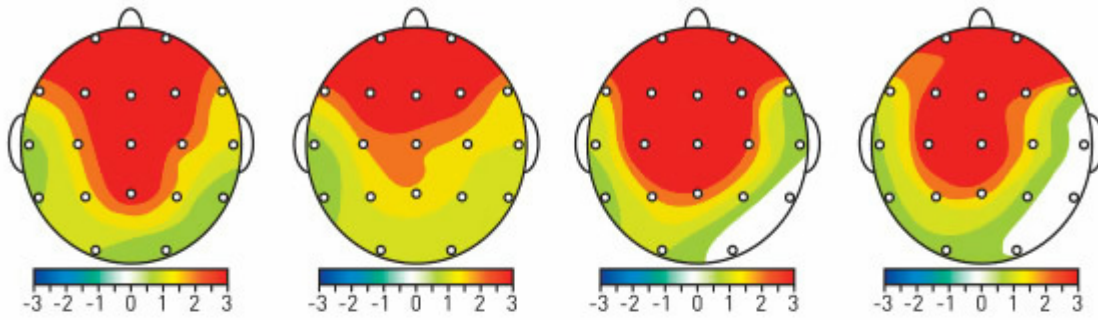
Thirty drug-free patients suffering from chronic anxiety states were compared with 30 normal controls matched for age, sex, and social class on a variety of physiological and psychological measures. The tests included the electroencephalogram, the auditory evoked response, and skin conductance recorded during a passive and an active condition and auditory reaction time, the digit symbol substitution test, and arithmetic. The patients showed increased EEG voltage, shorter latencies of the evoked response, higher skin conductance levels, higher pulse rate and less pupillary constriction, and they responded less to the increase in activation. They also showed impairment on complex psychological tests. It is concluded that pathological anxiety involves an increase in arousal irrelevant to the task and has a disorganizing rather than a facilitating effect on performance.

Worry, Generalized Anxiety Disorder, and Emotion: Evidence from the EEG Gamma Band

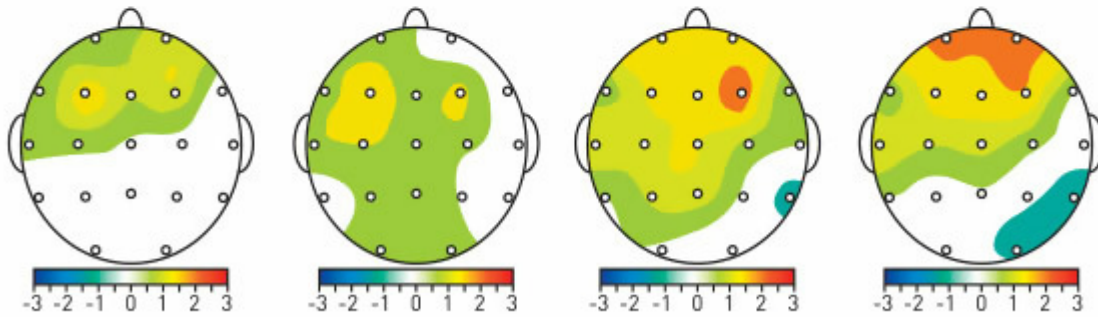
The present study examined EEG gamma (35-70 Hz) spectral power distributions during worry inductions in participants suffering from generalized anxiety disorder (GAD) and in control participants without a history of psychiatric illness. As hypothesized, the EEG gamma band was useful for differentiating worry from baseline and relaxation. During worry induction, GAD patients showed higher levels of gamma activity than control participants in posterior electrode sites that have been previously associated with negative emotion. Gamma fluctuations in these electrode sites were correlated with subjective emotional experience ratings lending additional support to interpretations of negative affect. Following 14 weeks of psychotherapy, the GAD group reported less negative affect with worry inductions and the corresponding gamma sites that previously differentiated the clinical from control groups changed for the GAD patients in the direction of control participants. These findings suggest converging evidence that patients suffering from GAD experience more negative emotion during worry and that the EEG gamma band is useful for monitoring fluctuations in pathological worry expected to follow successful treatment.

Appearance of Frontal Midline Theta Activity in Patients with Generalized Anxiety Disorder

The appearance of frontal midline theta activity (Fm θ), recognized as distinct EEG theta rhythm in the frontal midline area during performance of a mental task, reflects feelings of relief from anxiety in humans. In the present study, EEGs were recorded, and the Hamilton Rating Scale for Anxiety and the state anxiety scale of Spielberger's State-Trait Anxiety Inventory were evaluated once a week in 28 patients with generalized anxiety disorder. The Taylor Manifest Anxiety Scale and the trait anxiety scale of Spielberger's State-Trait Anxiety Inventory were used to assess anxiety before and after the tests. The present results suggest that the appearance of Fm θ might be closely related to an improvement in the anxiety symptoms associated with generalized anxiety disorder.



qEEG - BEFORE NEUROFEEDBACK



qEEG - AFTER NEUROFEEDBACK

Anxiety: before and after therapy qEEG

ANTI-ANXIETY THERAPY:

Treatment Options

Anxiety disorders are treatable, and the vast majority of people with an anxiety disorder can be helped with professional care. Several standard approaches have proved effective:

PHARMACOLOGICAL

- Antidepressants.
- Buspirone.
- Benzodiazepines.
- Beta-Blockers (Propranolol)

PSYCHOTHERAPY

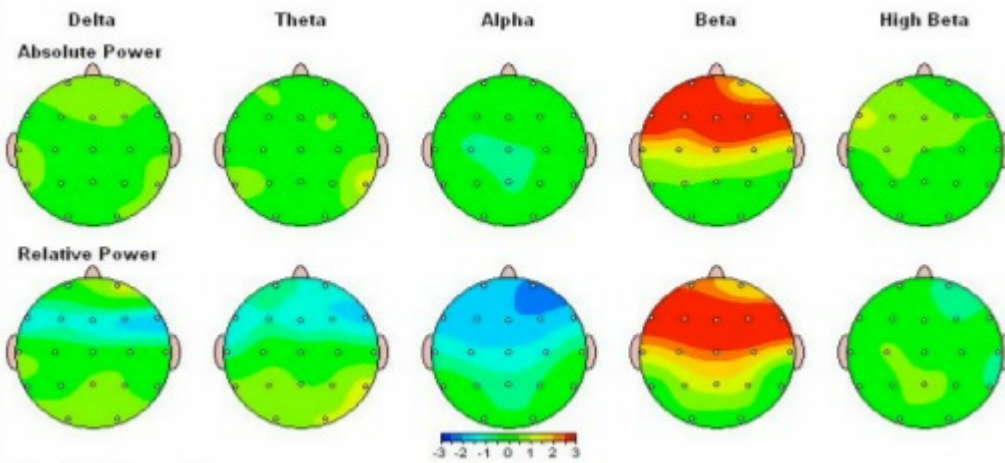
Sessions with a therapist to lessen symptoms of anxiety.

NEUROFEEDBACK (NFB)

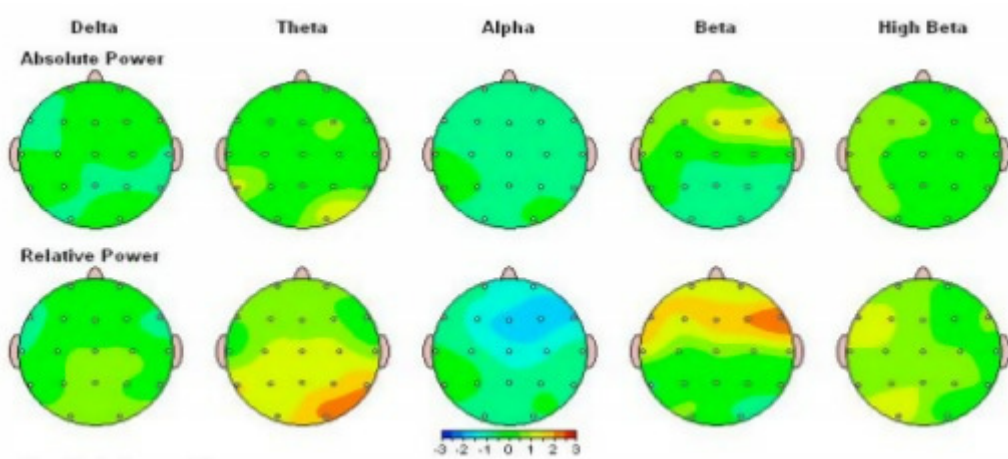
NFB trains the brain to change the brainwave frequencies to get the desired result. Usually, NFB sessions are conducted 2-5 times a week for a total of 40-50 sessions. Each session lasts 30-60 minutes. Although this seems like a lengthy procedure, but the results are more long-lasting. NFB is getting extremely popular and used as a stand-alone therapy or in combination to wean-off pharmacological agents that tend to produce undesirable side-effects.

QEEG Related Changes Following the Treatment of Anxiety Disorders: Case Series

According to the results, there appears to be an increase in the frontal beta and theta band in our cases, which has responded to treatment.



Z-scored topographical brain mapping of Case-1 before the treatment



Z-scored topographical brain mapping of Case-1 after the treatment

A Review of EEG Biofeedback Treatment of Anxiety Disorders

Statistically significant negative correlations were found between alpha and anxiety levels. Alpha-enhancement reduced both trait and state anxiety in high trait anxiety subjects, suggesting it would benefit anxious patients. As training progressed, alpha enhancement and state anxiety reduction became more strongly associated.

Electromagnetic Therapy

Some of the recent, modern electromagnetic techniques are TMS (Transcranial Magnetic Stimulation) and PEMF (Pulsed Electromagnetic Field) therapy. The use of electromagnetic therapy to alleviate many conditions has been used for over hundreds of years till the end of 19th century/ start of 20th century. Interest in it was subdued in the middle period of 20th century, but now the interest has again increased, as evidenced by increase in research and clinical studies in this field.

PEMF Therapy

TMS equipment is costly, needs a clinical set-up and treats with current in the range of 1-2 Tesla. On the other hand, PEMF cost in tremendously less, can be performed anywhere and anytime and the current used is in the range of 100-200 micro-tesla, significantly lower than TMS. This has led to popularity and preference for PEMF therapy, which is also used for other conditions like insomnia (sleep disturbance), anxiety, depression, stress, PTSD (Post-Traumatic Stress Disorder) and meditation. The beneficial effects of PEMF are increasingly growing and gaining popularity because of ease of use and simplicity of the apparatus.

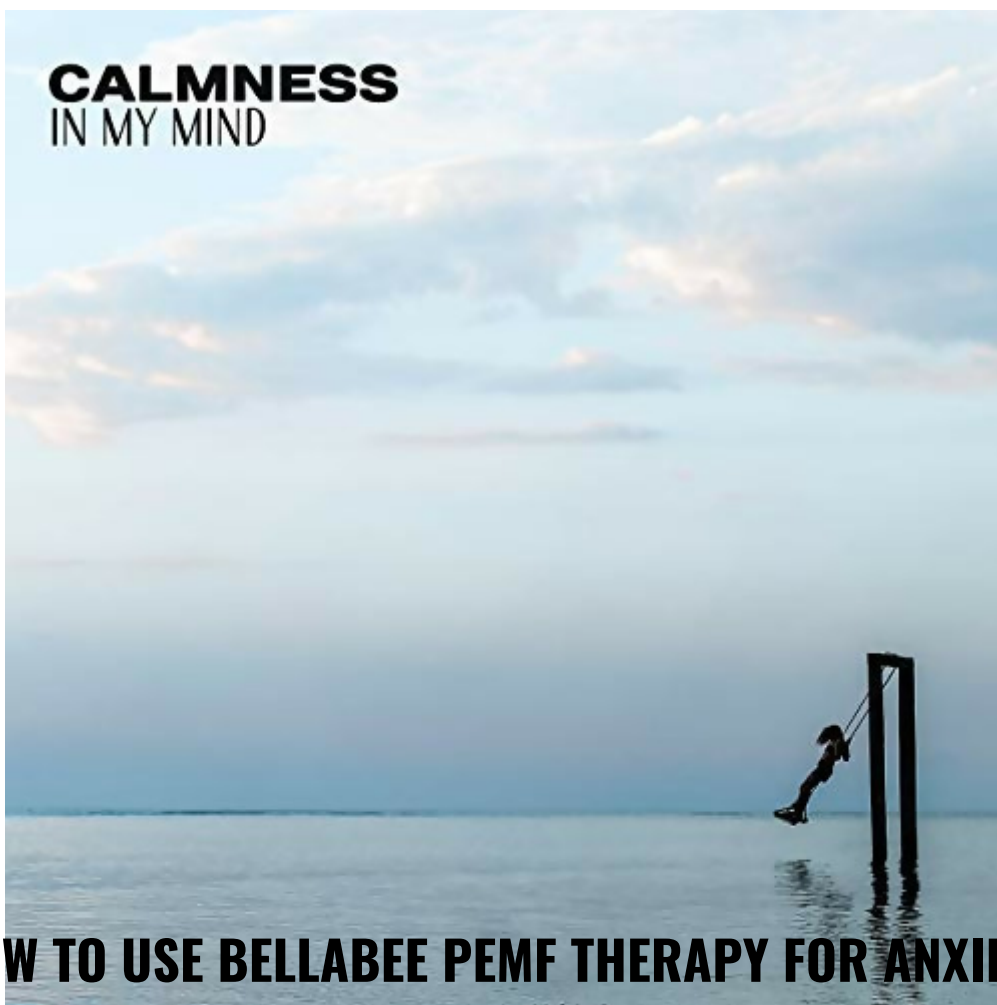
Pulsed Electromagnetic Field Therapy (PEMF): Indications for management

The benefits of PEMF are based on Evidence Based Medicine. It is a safe & noninvasive procedure & can be utilized in primary, secondary & tertiary care Institutes & the great benefit is that it can be used in home care. Neurological diseases : Depression, Anxiety, Cerebral Palsy, Migraine & Parkinson's disease. It is essential that guidelines for the management of these diseases include PEMF as an adjuvant therapy, with the existing evidence.

Brief Transcranial Pulsed Electromagnetic Stimulation In Patients With Anorexia And In Those With Anxiety

In a pilot study, 5 patients with severe anorexia (BMI < 17.5), 5 patients suffering from severe anxiety (Hamilton Anxiety Scale > 41), and 5 normal controls were exposed to one hour long biweekly sessions of transcranial exposure to a low frequency specific pulsed electromagnetic field (PEMF, < 1000 Hz, +/- 200µT) during one month. There was a statistically significant improvement following one month of biweekly PEMF in the anxiety group: the patients' scores on Hamilton Anxiety Scale, Hamilton Depression Scale, and Yale-Brown Obsessive Compulsive Scale significantly decreased (p<.05, 1-tailed). These trends were also in the expected direction in the group of anorexia patients, however, without reaching statistical significance, perhaps due to small sample size and to the short duration of PEMF.

**The FDA (USA) accepted the use of PEMF devices
in the healing of depression and anxiety in 2006**



HOW TO USE BELLABEE PEMF THERAPY FOR ANXIETY:

Open the Bellabee app on your mobile device and select **"Anti-Anxiety"** mode to use the pre-set protocol for ANXIETY or use **"Create Therapy"** mode to customize the wavelengths and duration for individual needs. This software can be used with any android or IOS device.

Evidence and Effectiveness

Both animal and human research has demonstrated the value of using PEMFs to treat depression and anxiety disorders. One study showed that mice treated with a pulsed low-frequency magnetic field had a reduction in "anxiety-like behaviours" after fifteen minutes of treatment (Choleris, et al). Similar results were found in a study using rats (Kalkan, et al).

One study of low intensity PEMF in healthy women showed that applying treatment to two areas of the brain for just nine minutes caused brain EEG changes. This indicates that PEMF stimulation can

decrease higher EEG frequencies, common in anxiety, making it very effective in treating anxiety (Amirifalah, et al).

A wide body of additional research demonstrates that PEMFs, both low and high intensity, can be helpful in treating a range of anxiety disorders, from mild to quite severe.



Bellabee is

- **Safe** – energy range is in micro-Tesla.
- **Portable** – just a headband connecting to your mobile device.
- **Wearable** – a band around the head and wired or Bluetooth connection to mobile device.
- **Customizable** – pre-set protocols with “Create Therapy” mode to make as many therapies as you want.
- **Validated** – numerous studies back-up the results.
- **Without Side Effects** – unlike pharmacological agents.
- **Versatile & Non-Invasive** – use alone or as a part of your ongoing therapy.
- **Easy to Use** – just download the software, plug the headband into microphone jack or use Bluetooth and start the therapy.



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