

What Is Neurofeedback?

Alternative ADHD Therapy FAQ



From the ADHD Experts at

ADDITUDE
Strategies and Support for ADHD & LD

ADDITUDE

Strategies and Support for ADHD & LD

A trusted source of advice and information for families touched by attention-deficit disorder—
and a voice of inspiration to help people with ADHD find success at home, at school, and on the job.

ADDitudeMag.com

TERMS OF USE

Copyright © 2018 by New Hope Media. All rights reserved. No part of this report may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, faxing, e-mailing, posting online, or by any information storage and retrieval system, without written permission from the Publisher.

All trademarks and brands referred to herein are the property of their respective owners. All references to *ADDitude* magazine and ADDitudeMag.com are trademarks of New Hope Media.

CONTACT INFORMATION

New Hope Media 646-366-0830
108 West 39th St, Suite 805
New York, NY 10018

LEGAL NOTICES

ADDitude does not provide medical advice, diagnosis, or treatment. The information offered here is for informational purposes only and is not intended to substitute or replace professional medical advice, diagnosis, or treatment. Always consult with your physician or other qualified health-care professional or educational consultant for questions about your health and education, or the health and education of your child and family members. Do not disregard, avoid, or delay obtaining medical or health related advice from your health-care professional because of something you have read here.

If you think you may have a medical emergency, call your doctor or 911 immediately. *ADDitude* does not recommend or endorse any specific tests, physicians, products, procedures, opinions, or other information that may be mentioned in *ADDitude* publications or websites. Reliance on any information provided by *ADDitude* is solely at your own risk.

FOUNDER: Ellen Kingsley (1951-2007)

EDITOR IN CHIEF: Susan Caughman

EDITOR: Wayne Kalyan

STAFF

CONSULTING CREATIVE DIRECTOR: Joseph Caserto

CONSULTING ART DIRECTOR: Ron Anteroine

MANAGING EDITOR: Eve Gilman

REPORTER: Devon Frye **SENIOR DIGITAL EDITOR:** Janice Rodden

SOCIAL MEDIA EDITORS: Rebecca Brown Wright, Penny Williams

DIGITAL MARKETING DIRECTOR: Anni Rodgers

ADVERTISING: Anne Mazza

CIRCULATION: Sue Sidler

COPY EDITOR: Gene Jones **WEB EDITOR:** Hope Goodrich

CONTRIBUTING EDITORS:

Carol Brady, Ph.D., and John Taylor, Ph.D. (Children)

Edward M. Hallowell, M.D. (Life)

Sandy Maynard, M.S. (Coaching)

Michele Novotni, Ph.D. (Adults)

Ann Dolin, M.Ed., and Sandra F. Rief, M.A. (Education)

ADMINISTRATIVE ASSISTANT: Alex Viola

SCIENTIFIC ADVISORY BOARD

Russell Barkley, Ph.D.

Medical University of
South Carolina
Charleston, SC

Peter Jensen, M.D.

The REACH Institute
New York, NY

Thomas E. Brown, Ph.D.

University of Southern California
Los Angeles, CA

Harold Koplewicz, M.D.
New York University Medical School
New York, NY

William Dodson, M.D.

Dodson ADHD Center
Greenwood Village, CO

Sandy Newmark, M.D.

Osher Center for
Integrative Medicine,
University of California
San Francisco, CA

Ross W. Greene, Ph.D.

Lives in the Balance
Portland, ME

Michele Novotni, Ph.D.

The Villages, FL

Edward M. Hallowell, M.D.

The Hallowell Center
Sudbury, MA

Roberto Olivardia, Ph.D.

Harvard Medical School
Boston, MA

Stephen P. Hinshaw, Ph.D.

University of California
Berkeley, CA

J. Russell Ramsay, Ph.D.

Perelman School of Medicine
University of Pennsylvania
Philadelphia, PA

Peter Jaksa, Ph.D.

ADD Center of America
Chicago, IL

Jerome Schultz, Ph.D.

Harvard Medical School
Boston, MA

What Is Neurofeedback?

Alternative ADHD Therapy FAQ

How much does it cost? What studies confirm its benefits? Will it work for me? In this overview, two neurofeedback experts explain everything you need to know about this confounding ADHD treatment.

By David Rabiner, Ph.D., and Edward Hamlin, Ph.D.

The human brain is a highly malleable organ. Research shows that, with concerted effort, we can make positive, concrete changes in the structure and function of our brains. This concept is known as neuroplasticity — and it's the core principle behind neurofeedback training, a non-medical treatment for ADHD that claims to boost brainwaves, reduce symptoms of inattention and impulsivity, and improve overall brain function in children and adults.

Use this free resource to learn the facts about neurofeedback, including how it works for patients with ADHD, what the science says, and what a typical session looks like.

What is neurofeedback?

Neurofeedback is a form of biofeedback — the process of learning how to change physiological activity using real-time monitoring of biological data — that uses electroencephalography (EEGs) to help patients train their brains to improve focus, impulse control, and executive function. Since the 1970s, when neurofeedback was introduced, proponents have claimed that it helps patients with ADHD increase their ratio of high-frequency brain

BOOST YOUR BRAIN

Learn about 6 brain-training therapies for ADHD at

<http://additu.de/boost>

waves — linked to focus, engagement, and self-control — and simultaneously reduce low-frequency brain waves, which are linked to inattention, drowsiness, and the sleep cycle.

Why is neurofeedback used to treat ADHD?

Brain scans show that ADHD brains produce more low-frequency delta or theta brain waves than do neurotypical brains, and often show a shortage of the high-frequency beta brain waves linked to focus and impulse control. The goal of neurofeedback is to increase the brain's capacity for beta waves, while diminishing the frequency of delta and theta waves.

Who does neurofeedback help the most?

The brain remains plastic throughout life, but younger brains can more quickly change and adapt than can older brains. In other words, adults and children alike can use neurofeedback to treat ADHD. But children often require fewer sessions, are less skeptical of the treatment, and may make improvements more quickly.

What does neurofeedback treatment look like?

In a session, which typically lasts no more than 30 minutes, sensors are placed on a patient's scalp to monitor their brain waves. These sensors pick up the brain's activity and relay it so that the therapist and patient can see exactly when and how brain waves reach an optimal level. The participants work with the therapist to recognize when and how the brain is operating in its optimal zone — and then to learn, repeat, and consciously sustain the behaviors that lead to this ideal brain state.

The goal, in essence, is to turn behaviors that produce high-frequency brain waves into second nature — a process that takes, in most cases, approximately 20 to 40 training sessions, practitioners say. The patient's brain waves and ADHD symptoms are assessed periodically throughout, with treatment methods adjusted accordingly by the therapist to produce the greatest possible improvements and to correct for any imbalances.

STEP ONE: ASSESS

A neurofeedback practitioner should first conduct an assessment of the patient's natural brain wave patterns, to understand his or her unique strengths, weaknesses, and overall brain function. This assessment typically uses one or two EEG sensors to obtain a baseline snapshot of the brain. ADHD rating scales are also used to gauge a patient's everyday ability to focus, control impulses, and complete tasks.

ADDITUDE DIRECTORY

Find neurofeedback clinicians near you at directory.additudemag.com

What Is Neurofeedback? Alternative ADHD Therapy FAQ

from the editors of

ADDITUDE
Strategies and Support for ADHD & LD

STEP TWO: PERSONALIZE

While many patients with ADHD have an excess of low-frequency brain-wave activity, others actually have an excess of fast frequency brainwave activity. Your practitioner should customize a training program based on the brain wave patterns established in the initial assessment in order to target your specific symptom challenges.

STEP THREE: REVIEW AND REASSESS

A therapist should also regularly compare each patient's new EEG readings to his or her baseline assessment, as well as gather patient feedback about real-world behavior patterns, to assess the type and scale of changes taking place in brain waves. This helps the practitioner adjust treatment going forward and push the patient's brain towards its highest efficacy.

What makes a good neurofeedback practitioner?

Which clinician you choose does matter, especially if you're treating a child. Hyperactive, fidgety children may require multiple sessions before settling down, engaging, and truly training their brains. Parents (and adults) should seek out an experienced clinician who is certified by the Biofeedback Certification International Alliance. Qualified practitioners are designated by the letters "BCN" on BCIA.org.

How much does neurofeedback cost?

Each neurofeedback session costs \$40-\$150; treatment is not typically covered by insurance, and the total cost can reach as much as \$6,000. Computer-based, at-home alternatives do exist, and are significantly less expensive; however, research linking these home-based alternatives to sustained brain-wave improvement does not yet exist.

What are the positive outcomes of neurofeedback?

According to its proponents, the supposed benefits of this alternative therapy are twofold:

1. The changes to a patient's brain waves are *measurable*, and evidence suggests that they endure well beyond the therapy's end.
2. Improving brain waves improves behavior — most notably, sustained focus, diminished impulsivity, and reduced distractibility out in the real world.

TOTAL SCORE!

Find video games that train the brain to focus at <http://additu.de/score>

**What Is
Neurofeedback?**
Alternative ADHD
Therapy FAQ

from the editors of

ADDITUDE
Strategies and Support for ADHD & LD

What does the research say about neurofeedback?

Neurofeedback has been studied since 1976, but lacks much of the in-depth, double-blind research that ADHD medications or other more established alternative treatments have enjoyed. Numerous studies — although few that were truly blind — show that neurofeedback therapy can result in improved attention, diminished hyperactivity, and enhanced executive functions, including working memory. Notable results include:

Monastra, et al. (2002): One hundred 6- to 19-year-olds with ADHD were treated for one year with various combinations of Ritalin, behavior therapy, school accommodations, and neurofeedback. The youth receiving neurofeedback did better than did the other subjects on parent and teacher reports, and on computerized attention tests. EEG scans showed that their brainwaves had normalized. After discontinuing medication, only the patients who received neurofeedback saw persistent results. This study is criticized, however, because its participants were not randomly assigned to treatment groups.

Levesque, et al. (2006): Twenty 8- to 12-year-old children with ADHD were randomly assigned to receive 40 weekly neurofeedback treatment sessions, or to a waitlist control condition with no treatment. At the end of 40 weeks, the children who had received neurofeedback showed noteworthy improvement, as captured by parent ratings and laboratory measures. fMRI scans showed significant change in brainwave patterns for the treated children, but no change for control children. This study, though randomized, was limited by its small sample size.

Gevensleben, et al. (2009): More than 100 8- to 12-year-olds with ADHD were randomly chosen to receive neurofeedback or computerized attention training. Researchers tried to keep parents and teachers from knowing which treatment the children received. This study sought to remedy shortcomings of previous research with a randomized control group, along with a larger sample size. At the end of the study, the children in the neurofeedback group showed greater reductions in ADHD symptoms when compared to the computer-training group. Six months later, the differences remained, and parents of the children treated with neurofeedback reported fewer homework difficulties.

Meisel et al. (2013): Twenty-three 7- to 14-year-olds were randomly assigned treatment with methylphenidate or 40 neurofeedback sessions. Both groups showed significant and equivalent reductions in parent and teacher ratings of ADHD symptoms immediately after training ended,

AMAZING APPS

Our picks for top brain-training tools you can use on your phone, at <http://additu.de/bt-apps>

**What Is
Neurofeedback?
Alternative ADHD
Therapy FAQ**

from the editors of

ADDITUDE
Strategies and Support for ADHD & LD

two months afterward — and the improvements persisted through a six-month follow-up. Teachers reported significant academic improvements in reading and writing skills for only the neurofeedback group. However, it's not clear if teachers were blind to which group received which treatment, which could have skewed the results.

Keeser et al (2016): Twenty-one healthy male subjects between the ages of 19 and 30 were randomly assigned to 30 minutes of either neurofeedback or a placebo “sham” activity. The group who underwent neurofeedback experienced significant increases in beta and alpha waves and decreases in delta and theta waves. Subjects who underwent the sham condition showed significantly less improvement. The comparative lack of results from the sham activity seemed to rule out the placebo effect, the researchers said. Though it was small and didn't focus specifically on people with ADHD, this study was significant in that it was randomized and double-blind.

What do other patients say about neurofeedback?

In a 2017 survey of 4,000 ADDitude readers, just 11 percent said they or their child had tried neurofeedback. Nearly 33 percent of those people said neurofeedback was “extremely” or “very” effective; more than 25 percent said it was “not very” or “not at all” effective; 41 percent called it “somewhat” effective. Though their experiences were mixed, 78 percent of respondents who had tried neurofeedback said they would recommend it to another patient with ADHD. Here's what some of them said:

“For a period of 8 months, 3 times weekly, 40 minutes each time, my daughter used neurofeedback, which turned her life around 180 degrees. After it's completion, she's much calmer, pays attention in class and is able to collect herself without a problem.”

“I don't know if the evidence is conclusive that neurofeedback really helps. I loved the clinician overseeing my neurofeedback and I definitely didn't get the sense she was selling snake oil or anything. She believed in what she was doing and I believe this treatment likely helps some people. However, it didn't help me at all and it was quite expensive.”

“Even though our child is in the early stages of treatment, he can already tell a difference in his ability to focus and follow through with activities.”

TREATMENT SURVEY

Learn more about how readers treat ADHD at <http://additu.de/treatment-survey>

What Is Neurofeedback?
Alternative ADHD Therapy FAQ

from the editors of

ADDITUDE
Strategies and Support for ADHD & LD

“Our son completed a protocol of two treatments each week for 18 months. While his brain patterns improved and were more balanced, it was not sufficient to transition our son off of prescription medications.”

“My ADHD symptoms were most clearly reduced in social interactions. I became better at listening without interrupting, and my thoughts were more able to slow down from their previous rapid-fire pace.”

“It was relaxing and calmed me, but I did not see much help outside of each session.”

“The clinician was ineffective, and our child did not feel it was worth the time or effort involved.”

How do we know if the neurofeedback is working?

Patients should initially commit to no more than 6 to 10 neurofeedback sessions and insist on frequent evaluation. If brain-wave and behavior improvements take place in this time, most experts recommend completing 20 to 40 sessions total in order to achieve the most long-lasting changes. Sometimes, children or adults will attend several sessions before seeing positive results, so experts advise patients in the beginning stages of neurofeedback treatment not to cease treatment after just a handful of sessions. But if you or your child see no improvement after 10 sessions, it's time to stop.

What's the bottom line?

Neurofeedback may be a promising treatment for ADHD, but the current research suggests that it functions best as a complement to medication and/or behavior therapy, rather than as a standalone treatment. Research support for both stimulant medication therapy and behavior therapy is significantly stronger than it is for neurofeedback.

Many studies, including the ones cited above, convince patients to expect benefits from neurofeedback training. However, many notable experts in the ADHD field believe that the efficacy of neurofeedback for ADHD has not been conclusively established, and that the practice should be treated with caution. It's important to keep that in mind as you decide whether or not to pursue a course of neurofeedback treatment for yourself or your child.

FREE RESOURCE

Learn more about alternative treatments for ADHD at <http://additu.de/guide>

**What Is
Neurofeedback?**
Alternative ADHD
Therapy FAQ

from the editors of

ADDITUDE
Strategies and Support for ADHD & LD

ADDitude eBooks Available Now

additudemag.com/shop

ADHD Medication and Treatment

The latest information on managing medication, starting therapy, evaluating alternative treatments, and more.

You're relieved to know, finally, that your lifelong symptoms are due to ADHD. But now, you have questions — on everything from which medications are available to how to tell if they're working properly. In this comprehensive special report, you'll learn how to seek an accurate diagnosis and map out a treatment plan that's right for you.

>> Learn more about this eBook: <http://additu.de/treatment>

Mindfulness and Other Natural Treatments

The best non-medical treatments for ADHD, including exercise, green time, and mindful meditation.

Learn how mindfulness works on ADHD brains, and how to begin practicing it today. Plus, research the benefits of other alternative treatments like yoga and deep breathing exercises — including some designed especially for kids — as well as the science behind each natural therapy

>> Learn more about this eBook: <http://additu.de/mindful>

Video Games and the ADHD Brain

A parent's guide to understanding video game addiction, setting limits on screen time, and choosing brain-building games.

Whether it's Minecraft or Candy Crush, kids with ADHD are prone to extreme gaming — playing as much as they can and responding poorly to limits. Tired parents want to strike a fair balance without waging war — which is where this eBook comes in. In it, you'll learn how video games affect the ADHD brain, how to set better limits, and how to choose games that do your child good.

>> Learn more about this eBook: <http://additu.de/videogames>

FREE ADDitude Downloads

Secrets of the ADHD Brain

Learn why we think, act, and feel the way we do.

Music for Healthy ADHD Brains

8 of the best songs to help you or your child focus.

13 Questions to Ask Before Starting ADHD Medication

The best questions to ask your doctor before starting or tweaking any ADHD medication regimen.

Fish Oil 101

Learn how omega-3 supplements can help improve focus in kids and adults with ADHD.

The Essential ADHD Monitoring System

How to know if your medication is working — and how to catch warning signs before they become problems.

Executive Function Worksheet

Common executive function challenges — and easy-to-use solutions.

11 ADHD Coping Mechanisms

Dr. William Dodson's 11 ADHD-tested treatment strategies that really work.

Find these and many more free ADHD resources online at:
<http://additu.de/freedownloads>

Expert Webinar Replays:

Neurofeedback and Cognitive Training for Kids

>> <http://additu.de/neuro>

Is brain training — including neurofeedback and cognitive training (CT) — really all it's cracked up to be? Is it safe for kids? Is it worth the money? Naomi Steiner, M.D., shares the research behind some computer-based alternative therapies so you can make an informed decision before treating your child.

Sound Medicine for Your Child's ADHD Brain

>> <http://additu.de/sound>

Music can be a powerful catalyst for learning in children with ADHD or LD — but most parents aren't sure how to harness it. In this expert webinar, with Sharlene Habermeyer, M.A., learn how music develops three key areas of the brain, how music can improve your child's reading and math skills, and which songs work best.

The Good, the Bad, and the Ugly of Video Games

>> <http://additu.de/vglimits>

Video games can be engaging, challenging outlets for kids' creativity and energy — when chosen carefully. However, they also stimulate the pleasure centers of the brain and deliver dopamine — meaning teens and young adults with ADHD can easily fall into an unhealthy obsession. In this webinar, learn to tell the difference between good and bad gaming, as well as how to set healthy limits for your child.

Healing the ADHD Brain: Interventions and Strategies that Work

>> <http://additu.de/healing>

There's no one-size-fits-all approach for treating ADHD. Here, Daniel G. Amen, M.D., explains treatment options ranging from medication and supplements to diet and exercise.

The ADHD-Executive Function Connection

>> <http://additu.de/efunction>

We've all heard of executive functions — the brain-based skills that affect how we plan, organize, and carry out tasks. But how do executive functions relate to ADHD — and how can children and adults with the condition compensate for natural deficiencies in these critical skills? Thomas Brown, Ph.D., explains the ins and outs of executive functions and how they affect your focus in this expert webinar.

FREE ADHD Newsletters from ADDitude

Sign up to receive critical news and information about ADHD diagnosis and treatment, success at school, adult ADHD, and parenting strategies: <http://additu.de/newsletter>

Adult ADHD and LD

Expert advice on managing your household, time, money, career, and relationships

Parenting Children with ADHD and LD

Strategies and support for parents on behavior and discipline, time management, disorganization, and making friends.

ADHD and LD at School

How to get classroom accommodations, finish homework, work with teachers, find the right schools, and much more.

Treating ADHD

Treatment options for attention deficit including medications, food, supplements, brain training, mindfulness and other alternative therapies.

For Women with ADHD

Managing ADHD on the job, running a household, dealing with challenging emotions, and much more.