FREE GUIDE · BRAIN-BASED TREATMENTS

Neurofeedback and tDCS: an honest guide from a neuropsychologist

What neurofeedback and brain stimulation are, what the evidence really says, who they might suit, and the questions to ask before you start.

I use neurofeedback and brain stimulation in my practice, and I spent my PhD stimulating people's brains in a lab. So you might expect this guide to be a sales pitch. It isn't. Brain-based treatments are interesting, they help some people, and they are surrounded by a lot of hype. You deserve to know what's solid, what's promising, and what isn't known yet, so you can decide for yourself.

The short version

- **Neurofeedback** is brain training: you learn to nudge your own brain activity using real-time feedback. It's safe and non-invasive. The research is mixed, and for ADHD the best-controlled studies are disappointing.
- **tDCS** (transcranial direct current stimulation) passes a very weak electrical current through the scalp. The evidence is strongest for depression, including a large home-based trial with encouraging results.
- **Neither is a magic fix.** Both work best as part of a wider plan that includes sleep, routines, therapy and, where appropriate, medication.

My view is practical. Medication is often the easiest way to change how a brain is running. Brain-based treatments are another route in, and learning new habits is a third. They can work together. What matters most is that you end up with your own cheat sheet for managing yourself, so the change lasts.

Neurofeedback: what it is

A headset records your brain's electrical activity (EEG). Software turns certain patterns into a game or display: when your brain produces the pattern you're training towards, the game rewards you. Over many sessions, the idea is that your brain learns to produce that pattern more easily. It's learning by doing, the same way you learned to ride a bike: nobody can explain exactly which muscle to move, but with feedback your system works it out.

In my practice, people train at home with a Muse headset and the Myndlift app, usually for 20–30 minutes a day over 4–8 weeks, after an EEG recording that helps me design the plan. I check in every week.

Neurofeedback: what the evidence says

ADHD is where neurofeedback has been studied most, and it's where I want to be most honest. In 2024, a large review in *JAMA Psychiatry* pooled 38 randomised trials and focused on ratings from people who didn't

know who had received neurofeedback. On those ratings, neurofeedback did not significantly reduce ADHD symptoms, though there was a small benefit for processing speed. The authors concluded there wasn't enough evidence to recommend it as a front-line treatment. Medication and practical strategies have much stronger evidence for ADHD.

For **other difficulties** (anxiety, sleep, recovery after brain injury, peak performance), there are encouraging smaller studies, but fewer well-controlled ones. Some people find it genuinely helpful. Part of that may be the training itself, and part may be what comes with it: daily routine, a sense of agency, attention to your own state, and regular support. Those things matter, but they're worth naming honestly.

tDCS: what it is

tDCS uses a headset with two sponge electrodes to pass a very weak, steady current (a couple of milliamps) across the scalp. It doesn't make neurons fire the way a seizure or electroconvulsive therapy does. It nudges how easily brain cells in the targeted area become active, a bit like tilting a table so the ball rolls more easily one way. A related method, tACS, uses an alternating current at a chosen frequency to work with the brain's own rhythms.

tDCS: what the evidence says

The strongest evidence is for **depression**. In 2024, a trial published in *Nature Medicine* gave 174 adults with depression either real or sham (inactive) tDCS at home for 10 weeks, supervised remotely. About 45% of the active group reached remission, compared with about 22% of the sham group. That's a meaningful result. It's worth knowing the study was funded by the device maker, FLOW Neuroscience, which is why independent replication matters. NICE has also issued guidance on tDCS for depression.

For other uses (focus, ADHD, memory, recovery after stroke), research is ongoing and results are mixed. My own PhD research used tACS in the lab and showed that stimulation can change brain activity and some aspects of behaviour, such as copying a sequence of movements. Lab effects are a long way from a guaranteed clinical benefit, and I treat them that way.

Is it safe?

Neurofeedback only reads your brain activity. Nothing is sent into the brain. The main "side effect" is tiredness after sessions, and occasionally headaches.

tDCS is generally well tolerated when it's used properly. Common effects are tingling, itching or warmth under the electrodes, skin redness, mild headache and tiredness. Poorly applied electrodes can irritate or burn the skin, which is why set-up matters. Before anyone starts, I check for things that make stimulation unsuitable or need extra caution, such as a history of seizures or epilepsy, metal in the head, implanted devices like pacemakers, significant head injury or neurosurgery, frequent severe headaches and certain medicines.

Who it might suit

- People who want a non-medication option, or something alongside therapy or medication.

- People whose difficulties haven't shifted with other approaches.
- People who like structure and can commit to short daily sessions for several weeks.
- For tDCS specifically: adults with depression, as one option to discuss alongside established treatments.

What it can't do

- Replace an assessment. If something is wrong, it's important to know what.
- Override an empty bucket. Brains learn badly when they're exhausted, so sleep, food and stress still matter.
- Work by itself forever. Changes need practice and a life that supports them.

Questions to ask any provider (including me)

- What exactly will you train or stimulate, and why for me?
- What does the evidence say for my problem, honestly?
- How will we measure whether it's working, and when will we stop if it isn't?
- What are the risks, and how will you screen and monitor me?
- Who supervises my sessions at home, and how often do we review?
- What is the full cost, including equipment and follow-up?

If a provider promises a cure, guarantees results or claims there are no limitations at all, be cautious.

You can read more about how I offer neurofeedback at home and tDCS at home, including fees.

Worksheets

You'll find these printable worksheets at the end of this PDF:

- **Is it right for me?**: a checklist to think through before you start
- **Questions for your provider**: take it to any consultation
- **Weekly tracker**: rate your goals each week, so you can see whether it's working

Further help

- King's College London: summary of the 2024 neurofeedback for ADHD review.
- King's College London: summary of the 2024 home tDCS for depression trial.
- NICE IPG530: guidance on tDCS for depression.

My own research: Berntsen, Cooper & Romei (2017), *Neuroscience*; Berntsen, Cooper, Hughes & Romei (2019), *Behavioural Brain Research*. Both studies used tACS in healthy volunteers.

Written by Dr Monica Berntsen, HCPC-registered Consultant Psychologist and Neuropsychologist. This guide is for general information and isn't a substitute for individual assessment or treatment.

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I offer online therapy across the UK. Get in touch at drmonicaberntsen.com/contact and I'll suggest the best next step.

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WORKSHEET 1

Is it right for me?

Think these through before you start, and bring your answers to a consultation.

What do I want to change? Be specific (e.g. falling asleep, focus at work, mood)

What have I already tried, and what happened?

Am I also getting the basics: sleep, food, routine, other treatment?

Can I commit to short daily sessions for 4–8 weeks? When in my day?

Any health history to mention (seizures, head injury, implants, metal in head, headaches, medicines)?

How will I know it has helped?

WORKSHEET 2

Questions for your provider

Take this to any consultation, including with me.

Question	Their answer
What will you train or stimulate, and why for me?	
What does the evidence say for my problem?	
How will we measure progress, and when will we stop if it isn't working?	
What are the risks, and how will you screen and monitor me?	
Who supervises home sessions, and how often do we review?	
What is the full cost, including equipment and follow-up?	

WORKSHEET 3

Weekly tracker

Choose up to three goals. Rate each one from 0 (not at all) to 10 (as good as it gets) at the end of every week.

Week	Goal 1:	Goal 2:	Goal 3:	Sleep /10	Notes