

What's in a brainwave?

Your brainwaves affect what you think about and how you feel.

Delta

Delta waves are slow (1-4 hz). They are prominent in deep sleep, but they also affect self-awareness and your sense of who you are. If there is a deficiency in delta, then training your brain to produce more of it can help you **sleep more easily** and deeply, and can help process experiences that are out of conscious awareness. Too much delta can leave you feeling like you are trying to think through a “fog,” and training your brain to make less can **improve clarity and focus**.

Theta

Theta (4-8 hz) is often associated with states such as meditation, hypnosis, creativity...and drifting off to sleep. Awareness is diffuse, rather than focused. Increasing theta can help with sleep, relaxation, creativity, musical and athletic performance. But too much theta means that instead of doing your assignment in math class, you get distracted by someone's pencil dropping, footsteps in the hallway, or a car starting out on the street — symptoms of common ADD. Training your brain to make less **can help you perform better in school** or at work.

The brain map below is from a child with AD/HD. Notice the excessive theta in the front of the brain (orange and red). A child like this probably will be easily distracted, and have a hard time finishing assignments in class. (Brain maps courtesy of Glenn Weiner, <http://www.biofeedbackforthebrain.com>)



Alpha

Alpha (8-12 hz) is where your brain goes to rest and rejuvenate. Alpha states include daydreaming and “spacing out”, but also that slow-motion, peak performance state when you know exactly what to do, and your actions are almost effortless. For some people, too much alpha can cause symptoms of ADD, with less hyperactivity and more of a social, chatty expression. For others, it can create anxiety. Too much or too little can make it hard, even impossible, to truly relax. Increasing your ability to go into alpha states is often used as part of peak performance training.

The brain map below is of a woman who struggles with anxiety. People with this pattern can find themselves ruminating over past events, especially emotional ones.



Beta

Beta (12-20 hz) helps you focus. It promotes an awareness of the world that you need while driving, reading, writing a report, doing homework, or planning your menus for the week. It gives you the **ability to block out distractions** and focus on the task at hand. Too little beta, and your attention wanders. Increasing it can **improve your productivity** and focus at work and school. Too much beta can create anxiety, and decreasing it can help you relax, let

go of worry, and **improve your sleep.**

High Beta

High beta (20-28 hz) puts your brain on high alert. It's helpful in times of crisis, when you have to act quickly, and when there's not a lot of room for emotion. A firefighter needs highbeta when heading toward a rescue. It can be lifesaving. It's protective, too, if you've been through an emotionally stressful event, and too little can make it hard to take a stand when you know something needs to change. But too much high beta, and you're in a **constant state of high alert**. You might feel disconnected from people you care about, or out of touch with how you feel. You might find it **hard to make decisions**, or find yourself worrying.

The brain map below is of an adult with OCD (obsessive compulsive disorder). Notice the excessive beta (red) and high beta (yellow) in the front and central areas. People with patterns like this tend to repeat thoughts or actions long after the thing that prompted them is over. (Brain maps courtesy of Glenn Weiner, <http://www.biofeedbackforthebrain.com>)



It's about flexibility

A healthy brain can shift from one state to another, depending on what you need. With flexibility, you'll be able to handle a crisis, then relax when it's over. You'll be able to finish your work for the day, then set it aside and get a good night's sleep.

It's also about communication. When some parts of the brain don't communicate well with other parts, the brain is inefficient. In the picture below, for example, there is a lack of communication between different parts of the frontal lobes (blue lines). This makes this adolescent's attention problem more challenging. Overcommunication (red lines) suggest lack of flexibility.

