

BRAIN WAVES

by Renee Chillcott

Some people walk in the rain, others just get wet. ~ Roger Miller

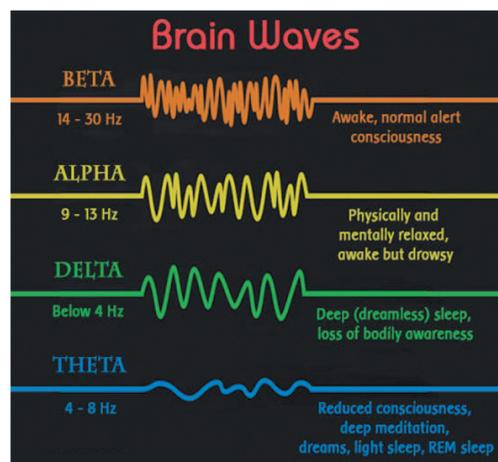


Have you ever wondered why a rainy day makes one person sad and depressed and another happy and full of energy? The answer lies in the idea that Brain Waves control our thinking, emotions, and feelings rather than the environment, events or weather.

What are Brain Waves? The dictionary defines Brain Waves as electric impulses in the brain or a sudden, clever idea. But is that all they are? Why are they so important to us? Brain waves are generated by the building blocks of your brain – the individual cells called neurons. Neurons communicate with each other by electrical changes. We can see these electrical changes in the form of brain waves as shown in an EEG (electroencephalogram).

Brain waves are measured in cycles per second (Hertz; Hz is the short form). We describe this as “the number of times the neurons go up and down in a second”. Brain Waves are described in categories based on HZ. Delta, Theta, Alpha, BETA, High BETA, we also refer to these as firing patterns or “Brain States”. Although we need these brain waves to function, if they are not balanced or if the firing patterns are disproportionate, we can experience problems with functioning or “Dysfunction”. Let’s take a look at the different Brain States.

Delta waves travel at about 0-4 HZ or 2-5 HZ. Delta waves are the slowest of the brain waves and have their biggest role during sleep. Delta waves help us regulate into deep, restorative sleep. Delta waves are also responsible for unconscious body processes such as hormone production (melatonin and HGH are among a few) as well as heartbeat regulation, kidney functioning and digestion. While awake Delta waves play a role in calming, empathy, intuition and learning. An excess of Delta waves can be associated with seizures and learning disabilities. A lack of Delta waves can be associated with attachment disorders and early development trauma.



Theta waves travel at about 4-8 HZ or 4-7 HZ. Another slow moving wave, Theta also has a role in sleep. Theta makes us sleepy and causes us to doze off in front of the TV before going to bed. Theta also plays a role in calming us down and thus can affect focus and concentration. “In order to be focused, we must be calm”. Theta also has the job of regulating bodily functions such as digestion and healing. It is believed that slower waves produce more blood flow in the brain, a response that can heal injury or illness. When we have an increased amount of blood flow, we may experience and uncomfortable feeling in our heads (headaches, migraines) that is also known as inflammation. And an increase in Theta waves needed for digestion after a big meal can make us sleepy. Increased Theta in the brain compared to its counterpart, BETA, can cause difficulties with focus and concentration leading to symptoms of ADHD and if too many are located in the frontal lobe, we can feel depressed.

Alpha waves travel at about 8-11 HZ or 8-12 HZ. The last of our slow moving brain waves Alpha’s major role is in calming. Alpha and Theta are closely connected when it comes to meditating and finding an “inner calm” state. When the brain is calm, creativity, insight, productivity, positive mood, positive thinking, relaxation and learning are all increased. Alpha waves also help us with our internal dialogue. This happens when you’re thinking of something in your head before you do it or say it. Self-reflection and self-esteem are also closely linked to Alpha waves. Therefore, if we have too many Alpha waves or an imbalance of them, we may experience too much daydreaming or internal dialogue. We may have trouble connecting externally and be “in our heads too much” as is often the case with Autism. Although Alpha waves can promote relaxation, an excessive or disproportionate amount in the brain can cause anxiety.

BETA waves are divided into at least 3 categories: Low BETA, Middle BETA, and High BETA. For our purposes, I am going to describe High BETA waves separately.

Low BETA waves range from 12 HZ - 15 HZ and Middle BETA waves range from 15 HZ – 20 HZ. Both of these BETA ranges are what we call our “Alert and Awake” brain states. BETA waves are also known as “working waves” and are responsible for several “behind the scenes” processes in the brain and body. BETA waves keep blood flow moving and can help reduce inflammation, detoxify, promote cellular repair and restoration, as well as keeping us mentally “sharp”. BETA waves aid in our regulatory functions such as hormone production, thyroid, and autonomic nervous system as well as improving our memory, attention and focus, performance



and energy levels. BETA waves are important in sleep and wake and decreased amounts can cause insomnia, ADHD, learning problems, memory issues, depression and anger among other issues. Increased BETA disproportioned to calming waves can cause anxiety, hyperactivity, and overactive thyroid/adrenal system.

High BETA waves range from 18 HZ to 40 HZ. High BETA waves are very important in our brain but are most easily out of balance. Fear, anxiety, excitement, and stress are necessary and important functions of our brain and nervous system. We must be afraid to cross the street without looking both ways and need to feel stress and anxiety about meeting work deadlines. After a stressful or exciting event, calmer neuron patterns are supposed to take over and High BETA is supposed to reduce. Problems occur if this doesn’t happen and/or if the brain stays in a state of high arousal. Trouble with sleep, anxiety, hyperactivity, impulsivity, anger and learning can result.

If I can’t feel or see these brain waves, how do I know if they are balanced or firing properly? Neurofeedback or EEG Biofeedback can determine and fix these patterns.

WHAT IS NEUROFEEDBACK? Neurofeedback, has been studied and practiced since the late 60’s. It is exercise for your brain; allowing you to see the frequencies produced by different parts of your brain in real-time and then through visual and auditory feedback, teaches the brain to better regulate itself. Neurofeedback can be used to help detect, stimulate, and/or inhibit activity in the brain safely and without medication.

It can help restore a wider “range of motion” in brain states, much like physical therapy does for the body. While the client sits comfortably watching a movie or pictures appear on the screen (a calm and focused state), the EEG equipment measures the frequency or speed at which electrical activity moves in the areas where electrodes have been placed. This information is sent to the therapist’s computer. The therapist is then able to determine what frequencies are out of balance. For example, when the EEG shows that you are making too many “slow” or “sleepy” waves (delta/theta) or too many “fast” waves (high beta), the therapist adjusts a reward band to encourage more balanced activity. This encouragement or “reward” happens through an auditory reinforcement of “beeps” and sometimes through visual reinforcement of changes on the screen.

WHAT TYPES OF CONDITIONS DOES NEUROFEEDBACK HELP? Symptoms of these conditions, among others, can improve through neurofeedback training:

- Anxiety
- Sleep disorders
- Depression
- ADD/ADHD
- Sensory processing disorder
- Bipolar disorder
- Seizure disorders
- Auditory/visual processing
- Chronic pain/Fibromyalgia
- Migraines/headaches
- Traumatic brain injuries
- Stroke
- Cognitive decline
- Peak performance

- Oppositional defiant disorder
- Rages/mood swings
- Attention/focus/concentration
- Reactive attachment disorder
- Autism/Asperger’s
- Learning disabilities
- Obsessive compulsive disorder

HOW DO I GET STARTED?

Getting started is easy, just give us a call. The Brain and Wellness Center staff will answer all of your questions, and help you get scheduled. If you are wondering what services are best for you? We can help determine that at the time of the intake, in a telephone consultation, or you can schedule a face to face consultation and see our facility. Call, email or message us today! Brain and Wellness Center, 7301 W. Palmetto Park Rd., Suite 102A, Boca Raton, FL 33433. (561) 206-2706, e-mail us at info@bocabraincenter.com, or text us at (561) 206-2706 or visit our website at www.BocaBrainCenter.com.



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Renee Chillcott is a Licensed Mental Health Counselor that has been practicing Neurofeedback training since 2005. Renee holds a BA degree from The University of Central Florida and a Master’s Degree in Psychology from Nova Southeastern University. She is a Licensed Mental Health Counselor and is the owner/operator of The Brain and Wellness Center, located in Boca Raton. At The Brain and Wellness Center, adults, teens, children and families enjoy a variety of services from multiple providers. Neurofeedback, Brain Mapping, Nutritional Counseling, Learning Programs, and counseling are among a few of the services offered.



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