



By Renee Chillcott, LMHC

Sleep should be one of our most precious commodities, but for some people, the struggle of falling asleep and/or staying asleep and feeling rested can be a fruitless effort. Why does this happen? And what can you do?

You've tried everything from sleeping medication, natural teas to lavender baths and soft music but nothing seems to make sleeping any easier. There is help. Neurofeedback (Brain Biofeedback) teaches your brain how to shift into sleep patterns. Sleep is the one brain state or emotional state that we cannot fake. An anxious person can try really hard to be calm; a depressed person can try really hard to be upbeat; and a distracted person can try really hard to focus and concentrate; and they may be successful for a moment or two, but sleep cannot be altered by trying. In fact, the harder we try to fall asleep, the less likely that sleep will come. It is in this purest brain state, the sleep state, that Neurofeedback can be most successful.

FIRST, HOW DO WE DEFINE SLEEP?

Sleep is defined as a naturally recurring state of mind characterized by altered consciousness, relatively inhibited sensory activity, inhibition of nearly all voluntary muscles, and reduced interactions with surroundings.

During sleep, most systems in an animal are in an anabolic state, building up the immune, nervous, skeletal, and muscular systems. The internal circadian clock promotes sleep daily at night in humans. Interruption in the circadian clock or sleep cycle can cause multiple sleep disorders such as:

- Insomnia
- Nightmares/Night Terrors
- REM Behavior Disorder
- Sleep Talking
- Sleepwalking
- Circadian Rhythm Sleep Disorders
- Delayed Phase Sleep Disorder
- Non-24 Sleep Wake Disorder
- Shift Work Disorder
- Excessive Sleepiness
- Extreme Sleepiness
- Narcolepsy and Cataplexy

A lack of sleep can affect your **Mental Health** by:

- Increasing symptoms of psychiatric disorders
- Impairing memory and cognition
- Interfering with Learning
- Causing depression, anxiety, bipolar disorder
- Causing a resistance to medication or treatment

A lack of sleep can affect your **Physical Health** by:

- Putting you at an increased risk of Obesity, Heart Disease, Diabetes
- Increasing blood pressure and decreasing immunity
- Putting you at risk for accident or injury
- Decreasing Sexual drive
- Causing poor balance
- Decreasing digestion and circulation
- Causing pre-mature aging

WHAT ARE BRAIN STATES/NEURON PATTERNS?

The neuron is the basic working unit of the brain; a specialized cell designed to transmit information to other nerve cells, muscle, or gland cells through electric pulses. These electric pulses make up a Neuron firing pattern that can be measured through EEG (electroencephalogram) to determine the speed of the neurons firing and the amount firing at that speed. We give these speeds different names based on the role they play in the brain. DELTA waves are very slow waves that promote sleep and calmness; THETA waves are a little faster, also play a role in calming, and make us sleepy; ALPHA waves are a bit faster and are essential for feeling calm and introspective; BETA waves are alert/awake "get work done" waves; and HIGH BETA waves are very fast, stress, anxiety, reaction waves. It is normal for the human brain to shift through these stages automatically, effortlessly and without notice.

If the brain is "stuck" in a pattern or has an imbalance of neuron firing, there will be issues. So, for example, if a brain is stuck in a HIGH BETA state, it will not be noticed in stressful situations but will be noticed as an inability to shift into a healthy sleep pattern.

Neurofeedback teaches the brain how to shift through the brain states, thus improving functioning such as sleep.

WHAT IS A NORMAL SLEEP PATTERN?

In order to experience a "good" night's sleep and to wake feeling renewed and refreshed, our brains must follow a certain pattern of Neuron firing. The internal circadian clock is profoundly influenced by changes in light, since these are its main clues about what time it is. Therefore, as the sun goes down, our brains are signaled that it is time to sleep and we begin to wind down and produce ALPHA (calm) waves. By around 9 pm melatonin secretion starts and our brains shift into a THETA (sleepy) state, by around 10:30 bowel movements are suppressed and we are relaxed enough to go to bed and shift into a DELTA (sleep) state, and by 2:00 am we are in our deepest sleep state. As we sleep, we move in and out of sleep and waking states, easily shifting back to a sleep state, and not noticing that we awoke at all. After 6:00 am, our blood pressure starts to raise and melatonin secretion stops and we shift out of our sleep state to the THETA (sleepy but awake) state and then to a BETA (awake/alert) state to get the day going.

WHAT IS CAUSING ME TO HAVE A BAD SLEEP PATTERN?

There are several interruptions in this pattern that can lead us to an altered sleep pattern and thus cause a SLEEP DISORDER. Most over the counter or prescription sleep aids aim at calming the brain so that you can sleep. But interference in your sleep pattern can be a result of any imbalance in neuron firing. There may be too many slow neurons or not enough awake/alert neurons firing in your brain. Targeting the specific pattern in your brain that needs adjusting is what Neurofeedback can do.

WHAT IF I HAVE ALWAYS HAD TROUBLE SLEEPING? EVEN AS A BABY?

Neuron Patterns can be inherited. Although this is a genetic, inherited, or biological pre-disposition, it can also be changed, balanced, and improved through Neurofeedback. Sleep disruption is not specific to a certain age; it can occur at any stage of development and typically will re-appear at different times, throughout a person's life.

HOW LONG SHOULD I BE SLEEPING?

Children need many hours of sleep per day in order to develop and function properly: up to 18 hours for newborn babies, with a declining rate as a child ages. Early in 2015, after a two-year study, the National Sleep Foundation in the US announced newly revised recommendations as shown in the table below.

Age and condition

- Newborns (0–3 months)
- Infants (4–11 months)
- Toddlers (1–2 years)
- Preschoolers (3–5 years)
- School-age children (6–13 years)
- Teenagers (14–17 years)
- Adults (18–64 years)
- Older Adults (65 years and over)

Sleep Needs

- 14 to 17 hours
- 12 to 15 hours
- 11 to 14 hours
- 10 to 13 hours
- 9 to 11 hours
- 8 to 10 hours
- 7 to 9 hours
- 7 to 8 hours

WHAT ABOUT MELATONIN?

Light plays a significant role in our natural circadian rhythm for sleep. Decreasing light in the evening, causing a shift in the brain to increase Delta waves, triggers the pineal gland to release the hormone, Melatonin. Melatonin reaches the biological clock and tells it that it's time to sleep. As you can see from the sleep chart, Delta wave, or Melatonin secretion in the brain, is strongest when we are born (the reason why babies sleep a lot) and will decrease as we age, causing a natural reduction in the number of hours we need to sleep. Artificial lighting in the evening from television, cell phones, video games, or electronics will alter the brain's natural ability to produce Delta waves and Melatonin in the brain. Supplements alone will not correct this. Neurofeedback teaches the brain how to shift into the proper sleep state at the proper time and supplements help to support that learning.

HOW DOES NEUROFEEDBACK WORK?

Neurofeedback, also known as EEG biofeedback, 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. This allows you to be more "flexible" in stressful situations.

WHAT DO I HAVE TO DO?

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. The therapist adjusts a reward band to encourage more balanced activity and this encouragement or "reward" happens through an auditory reinforcement of "beeps" and sometimes through visual reinforcement of changes on the screen.

WHAT OTHER CONDITIONS CAN AFFECT SLEEP AND BE HELPED BY NEUROFEEDBACK?

- Anxiety • Autism/Asperger's
- Depression • ADD/ADHD
- Sensory processing disorder

- Bipolar disorder • Seizure disorders
- Auditory/visual processing
- Chronic pain/Fibromyalgia • Migraines/headaches
- Traumatic brain injuries • Stroke
- Cognitive decline • Oppositional defiant disorder
- Obsessive compulsive disorder
- Rages/mood swings • Attention/focus/concentration
- Reactive attachment 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 in a scheduled telephone consultation. 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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