Self-Help Video #7 Part 4:

How to Change Brain Wave State

<https://youtu.be/mnR3n179kXU>

(begin at 12:30 seconds to bypass Medical Disclaimer)

In Video No. 7 Part 2, you learned how to change from Beta to Theta brain wave state with the use of the Progressive Relaxation, Deep Breathing, and a Rocking Chair, accessing the brain wave through the vestibular system. There are many avenues through our body and brain systems for changing brain wave status. You will now learn other ways for altering your brain wave for the tasks you want to undertake.

Why is it beneficial to learn how to change your brain wave state? Per scientists, being able to identify specific oscillatory aberrations of diseases, and the types of interventions which can reverse those traits, could lead to electrophysiological-based treatments or other psychologically-based interventions. For example, the alpha and delta frequency bands are integral in sleep. Using brain-wave altering psychological techniques could be used to treat sleep disorders. Moreover, there are altered neural oscillations in neuropsychiatric disorders like depression, addiction, attention deficit hyperactive disorder, and bipolar disorder. Non-invasive interventions, such as meditation, could be successful treatments for these neuropsychiatric disorders.

More Information:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5804435/>

<https://www.slideshare.net/lorraineaud/train-the-brain-therapeutic-interventions-for-apd-and-other-brain-disorders>

What is the current science on Brain-Wave states? Our perceptions and actions are dependent upon our Brain-State. With awareness, we know two distinct brain wave states: Awake or Asleep. The other wave states are still mysteries to our awareness and our ability to change to various wave states. However, at any given moment, not all body-brain systems or subsystems are necessarily equally asleep or awake. Our various physiological and subjective operations, emotions, and levels of alertness change throughout our day and night. Even some trivial motor outputs, such as hand grip strength, and simple cognitive performance, such as math tasks, vary considerably over periods of minutes, seconds, and even finer time scales.

We use different “language terms” to describe our awareness of these brain wave changes: arousal, vigilance, attention, selective or focused attention, expectation, anticipation, mental set, mental search, evaluation, surprise, emotions, motivation, drive, novelty, familiarity, planning, preparation, decision, volition, plus many other terms introduced by psychometrics (the measuring of human cognitive skills).

Brain wave state is neither stationary nor random. Internally, the specific brain wave state will affect the reaction time between sensory inputs and motor outputs, as well as type of motor execution. The individual’s past experiences (memories) may create an alteration and impact the input interpretation as well as the output restraints. The current bio-psychological status can have an impact on brain wave state, for example, falling asleep at the car wheel due to fatigue. The “mind” by itself cannot control which brain wave may be primary at the moment. However, research has shown that a key way of “instructing” the brain to perform better (i.e., change brain wave) is to send it signals from the body and the environment. For example, if feeling fatigued while driving, then send new signals to the brain. “Fatigue” come from the brain “succumbing to its internally programmed oscillations.” So, challenge the brain with new stimuli: stretch the arms, move the head, take deep breaths, open the window for fresh air, turn on the radio, etc.

On the external side, the type of external environmental stimuli may not alter the current brain wave state, or may have such an impact that “event-desynchronization” will occur, causing a prompt brain wave shift. A “touch” on the arm may be so subtle that it does not consciously register on the brain wave state, though localized neurons are affected. Or a drug may be ingested which radically alters brain wave state, even causing death of the person.

For comprehensive reading on the current state of research on the brain’s cycles and waves, **download** the following pdf book:

<https://neurophysics.ucsd.edu/courses/physics_171/Buzsaki%20G.%20Rhythms%20of%20the%20brain.pdf>

There are many reasons for why people “meditate.” We are using these techniques for the “trauma-healing” potential of resolving psychological as well as bio-psychological (psychosomatic) distress. For that purpose, the ability to change brain wave state is important and such use of meditation has been termed “Neuro-somatic Mindfulness.” Research has compared the neural oscillatory patterns (brain waves) of meditation techniques of Focused Attention (FA), Open-Monitoring (OM), Transcendental Meditation (TM), and Loving-Kindness (LK). All of these show increases in neural oscillatory activity, and increase in Gamma activity in frontal regions, with the activity increasing as meditation training increases. FA and OM both show increases in anterior Theta activity and posterior brain regions of Alpha activity. FA also shows increases in posterior Theta and Alpha oscillations. OM shows a decrease in left-sided power. In all meditations, the increases are variable in parietal and occipital regions.

For more information:

<https://www.frontiersin.org/articles/10.3389/fnins.2018.00178/full>

<https://www.beyondthemind.com/how-to-meditate/basic-meditation/>

<https://www.youtube.com/watch?v=T7v9InRW9wk>

Most techniques for changing the brain wave rely upon the “Ear-Brain-Body” connection. The auditory system is the only sensory system to be fully functioning in utero, thus “entrained” with all the difference brain wave states. The ear is physiologically and neuro-physiologically connected to nearly every other organ in the human body as well as the auditory and language centers in the brain. There are two primary auditory pathways. Conscious perception requires the integration of both pathways. Trauma can suppress the conscious perception, while the body responds with vegetative reflex reactions, which affect emotional responses to aversive stimuli and create auditory fear conditioning. See the prior video’s instruction on the polyvagal theory and the “Safe and Sound” protocol for further information on interventions to correct auditory dysfunction.

More information:

<http://www.cochlea.eu/en/auditory-brain>

When we seek to change brain wave state, we look to the auditory system for a primary access point. We will continue your training on the “auditory entrainment” process.  Historically, we know that music is the most ancient human form of religion and medicine “technology” beginning with drumming and other ancient forms of sound creation and mimicking of nature. New research is focusing upon the ability of music to “entrain” with auditory systems and change brain wave state. Synchronized brain oscillation arising from “auditory entrainment” improves memory, concentration, creativity, and all functions of cognitions and mind.

For more information:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6130927/>

<https://www.open.ac.uk/Arts/experience/InTimeWithTheMusic.pdf>

<https://www.intechopen.com/books/complementary-therapies-for-the-contemporary-healthcare/musical-auditory-stimulation-and-cardiac-autonomic-regulation>

<https://www.youtube.com/watch?v=hRWzhQbgBew>

The practice of brain wave alteration with music will depend upon your own analysis of this format.

Here are some videos to begin your exploration.

<https://www.youtube.com/watch?v=EXDGbT6-KRo>

<https://www.youtube.com/watch?v=B_bDmpajw_A>

<https://www.youtube.com/watch?v=F5Tt3LoygCQ>

<https://www.youtube.com/watch?v=pJ5FD9_Orbg>

<https://www.youtube.com/watch?v=KXPIfMyj7mI>

We can also change brain wave state through circadian rhythms and entrainment of environmental stimuli. The individual has to adjust to nature’s rhythms, such as night and day rhythms, their body’s own changing temperatures, and hormonal rhythms. Circadian rhythms are also things such as physical, mental, eating cycles, and behavioral changes that follow a 24-hour cycle. Chronobiology is the study of circadian rhythms. Psychological interventions that aim to help you adjust your “life-style” are generally based upon this form of entrainment.

More information:

<https://www.nigms.nih.gov/education/fact-sheets/Pages/circadian-rhythms.aspx>

Current neuropsychological research is exploring the connections between auditory entrainment, brain waves, and language “meanings.” In this research, the questions of “how do we think” and “how do we develop obsessive thoughts” are also being explored. When you begin IN SYNC psychotherapy, we will address the “Inner Critic and Self-Judgmental Thoughts” which disrupt parasympathetic flow. You will also understand how the language process has created the way in which your thoughts have been developed to conform to cultural and societal belief systems. You will understand “why” and “how” certain psychotherapy techniques are either effective or ineffective in changing behaviors, emotions, thoughts, and beliefs that you want to change.

You have now completed the basic homework assignments of IN SYNC psychotherapy. Please visit this link to watch the descriptions of the Five Stages of treatment:

<https://www.cfcninc.org/treatment-process>