

Brain Waves

101



A foundational guide to understanding the science and significance of brainwave patterns, and their application in the Brain Wave Expansion Protocols for the VIBE device by Resona Health.

Discover the rhythms that shape your mind

Introduction

Right now, as you read these words, your brain is alive with electrical activity. Millions of tiny signals are flashing between your brain cells like sparks in a lightning storm creating what we call brainwaves. These brainwaves are the language of your mind, constantly shifting as you think, feel, focus, and rest.

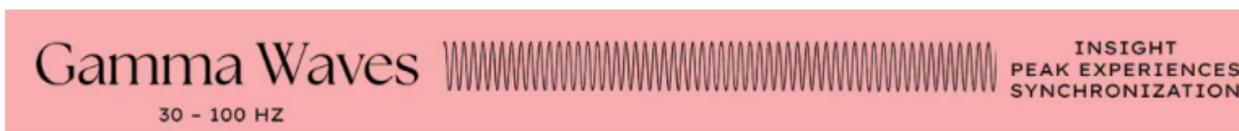
Brainwaves are patterns of electrical energy generated by the brain's neurons when they communicate. When neurons fire in large groups, their collective activity creates rhythmic pulses or waves that can be measured using devices called EEGs (electroencephalograms, tough to write, even tougher to say). These patterns differ in speed and strength. The speed, or *frequency*, is measured in hertz (cycles per second), while the strength, or *amplitude*, reflects the depth and consistency of that brainwave activity.

You can imagine this energy like the changing weather of your inner world. Sometimes calm and reflective, sometimes bright and focused, and sometimes charged with inspiration. At any given moment, your brain blends multiple frequencies to support what you need most whether that's creativity, alertness, deep rest, or emotional balance.

The VIBE device by Resona Health is designed to help bring these rhythms into harmony. It includes five specialized Brain Wave Expansion Protocols, each targeting a specific brainwave frequency to support general wellness. These protocols are associated with different mental states and can be used for various purposes such as relaxation, focus, emotional grounding, creativity, and mental clarity. Together, these five brainwave protocols greatly enhance the versatility of the VIBE, offering a unique way to support your body and mind through frequency-based wellness technology.

In the sections ahead, you'll explore each brainwave type—**Gamma, Beta, Alpha, Theta, and Delta**—what they do, how they influence your mental state, and which VIBE protocol helps optimize each one.

Gamma Waves - 30 Hz and above



Gamma brainwaves are the fastest measurable brain frequencies and are often described as the rhythm of heightened perception and peak mental performance. These waves operate between 30 and 100 hertz (Hz), with the 40 Hz range playing a particularly important role in memory, learning, and information processing.

Although they are difficult to measure due to their high frequency and small amplitude, Gamma waves are believed to represent moments when the brain is firing on all cylinders. They occur when multiple areas of the brain work together in harmony, allowing us to process information, problem-solve, and stay deeply focused. Well-regulated Gamma activity, especially around 40 Hz, is associated with strong working memory and efficient cognitive performance, while deficiencies in this range have been linked to learning challenges and reduced focus.

Gamma waves tend to appear during states of intense concentration, learning, creativity, and REM sleep. They are also found in long-term meditation practitioners, such as Buddhist monks, who exhibit remarkably strong and synchronized Gamma activity, suggesting a link between Gamma coherence and higher states of awareness or consciousness.

- **Frequency Range:** 30–100 Hz (most significant around 40 Hz)
- **Associated State:** Peak focus, insight, and cognitive clarity
- **Subjective Feeling:** Alertness, engagement, mental sharpness
- **Common Activities:** Learning, problem-solving, strategic thinking
- **Physiological Correlate:** General activation of mind and body functions

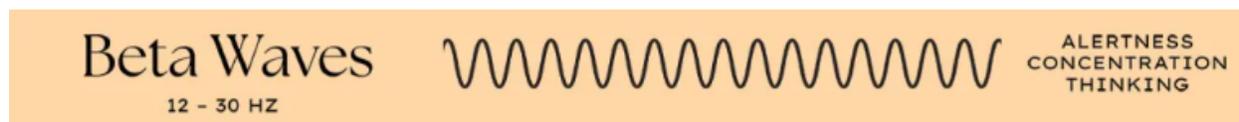
Best For: Enhancing mental performance, supporting memory, improving focus, and expanding higher consciousness.

VIBE Gamma Protocol:

The Gamma Brain Wave Expansion Protocol on the VIBE device by Resona Health is designed to help stimulate these high-frequency states. It may support mental clarity, deep learning, and optimal cognitive function, making it a favorite for those seeking to perform at their mental best or access deeper levels of insight and creativity.

Condition/Symptom & Frequency/Range	
Dental and Oral Diseases 30 Hz	Herniated Disc 30 Hz

Beta Waves - 12 - 30 Hz



Beta waves represent the brain's state of active engagement, the fast, focused rhythm of thinking, problem-solving, and interacting with the world. When you're reading, listening, planning, or making decisions, your brain is primarily in a Beta state. This is the rhythm of alert consciousness and everyday wakefulness, the mental gear that drives analytical thinking and sustained attention.

Beta activity is typically seen across both sides of the brain, especially in the frontal regions, and reflects desynchronized, active brain tissue. It's a normal and healthy pattern when balanced, but excessive Beta activity can push the brain into overdrive manifesting as restlessness, tension, or anxiety.

Within the Beta range, frequencies are often divided into Low, Mid, and High Beta bands, each representing a different level of mental intensity:

- **Low Beta (12–15 Hz):** Calm focus and relaxed concentration (Sensorimotor Rhythm or SMR). Enhancing this range supports steady attention and self-control.
- **Mid Beta (15–18 Hz):** Engaged, productive thinking and active learning.
- **High Beta (18–30 Hz):** Heightened alertness and quick processing under pressure ideal for performance tasks, but too much may trigger agitation or stress.

Together, these frequencies form the foundation for mental performance, motivation, and cognitive control. Beta activity also plays a key role in movement planning and self-regulation, increasing when we prepare for action and helping synchronize thought with physical response.

- **Frequency Range:** 12–30 Hz
- **Associated State:** Alertness, active thinking, focused engagement
- **Subjective Feeling:** Concentrated, motivated, mentally sharp
- **Common Activities:** Reading, conversation, decision-making, studying, problem-solving
- **Physiological Correlate:** Activation of the mind and body, readiness for action

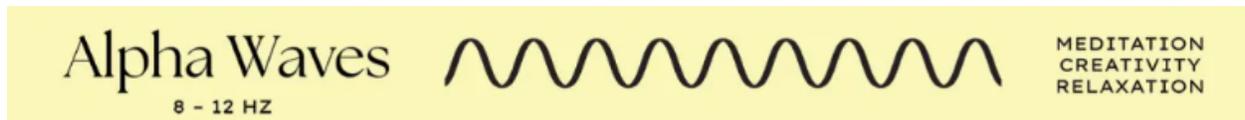
Best For: Active thinking, focus, problem-solving, and cognitive performance

VIBE Beta Protocol:

The Beta Brain Wave Expansion Protocol on the VIBE device by Resona Health is designed to support alertness, sustained concentration, and efficient information processing. It promotes mental clarity, balanced energy, and cognitive sharpness—ideal for work, study, or any activity requiring clear and focused thinking.

Condition/Symptom & Frequency/Range	
Bruises 10-14 Hz	Neurodermatitis 10-15 Hz
Cervical Vertebra Pain 15-20 Hz	Nonunion Fractures 20 Hz
Crohn's Disease 12-22 Hz	Osteoarthritis 18 Hz
Depression 20 Hz	Osteonecrosis / Osteochondrosis 19-20 Hz
Diabetes 12-22 Hz	Osteoporosis 15-19 Hz
Dizziness 10-15 Hz	Pain from Wound Healing 11-15 or 17 Hz
Eczema 10-15 Hz	Parkinson's Disease 20 Hz
Fibromyalgia 18 Hz	Phantom Pain 16-19 Hz
Fractures 20 Hz	Poor Circulation 20 Hz
Glaucoma 12-22 Hz	Psoriasis 12-22 Hz
Hepatitis 12-22 Hz	Psoriatic Arthritis 12-22 Hz
Herniated disc 16-20 Hz	Psychosomatic Syndrome 22 Hz
Hyperactivity 20 Hz	Raynaud's Syndrome 15 Hz
Immune System Enhancement 24 Hz	Respiratory Diseases 12-22 Hz
Ligament Injuries 10-15 Hz	Rheumatoid Arthritis 20 Hz
Low Blood Pressure 20-24 Hz	Sciatica 16-20 Hz
Lumbago (lower back pain) 20 Hz	Skin Allergies, Decubitus, Ulcus Cruris 10-15 Hz
Lymphatic Disorders 12-22 Hz	Spinal Injuries 12-22 Hz
Multiple Sclerosis 20 Hz	Stomach Aches 10-12 Hz
Muscle Strains 11-15 Hz	Stroke 20 Hz
Neuralgia Trigemini 15-20 Hz	Systemic Lupus Erythematosus (SLE) 12-22 Hz

Alpha Waves - 8-12 Hz



Alpha waves bridge the gap between relaxation and alertness. They are often described as the “neutral gear” of the brain, calm, centered, and ready to shift smoothly into action when needed. Alpha activity typically peaks around 10 Hz and reflects a state of mental coordination, creativity, and balanced awareness. When Alpha waves dominate, you feel relaxed yet focused, peaceful yet alert, a state ideal for learning, reflection, and mindful productivity.

Alpha is the major rhythm seen in relaxed, awake adults, most prominent when the eyes are closed and the mind is at ease. These waves are strongest in the occipital (back of the head) and frontal cortex, linking sensory awareness with inner calm. Neuroscientists believe Alpha rhythms originate in the brain’s white matter, the connective network that integrates communication between different brain regions, making Alpha waves a bridge between the conscious and subconscious mind.

Healthy Alpha production supports mental resourcefulness, emotional balance, and a positive outlook. People with strong Alpha activity tend to experience greater creativity, improved mood, and an enhanced ability to learn and retain information. Conversely, reduced Alpha activity is often associated with stress, fatigue, or overstimulation.

Alpha can be increased naturally through deep breathing, meditation, creative visualization, yoga, or closing the eyes—all activities that quiet external focus and invite inner harmony.

- **Frequency Range:** 8–12 Hz
- **Associated State:** Relaxed alertness, calm focus, mental clarity
- **Subjective Feeling:** Peaceful, centered, open, and creative
- **Common Activities:** Meditation, deep breathing, yoga, light reflection, daydreaming
- **Physiological Correlate:** Relaxation response, improved coordination, and balanced nervous system activity

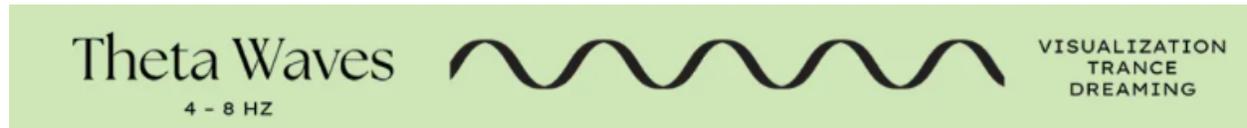
Best For: Calm focus, stress reduction, mental clarity, and creative flow

VIBE Alpha Protocol:

The Alpha Brain Wave Expansion Protocol on the VIBE device by Resona Health is designed to promote a relaxed yet alert state of mind. It may help reduce stress, enhance clarity, and support creativity—making it ideal for mindfulness practices, learning environments, and overall mental balance.

Condition/Symptom & Frequency/Range	
Arrhythmia 8 Hz	Muscles Strains 11-15 Hz
Alzheimer's 8 Hz	Musculoskeletal pain 10 Hz
Angina 8 Hz	Neurodermatitis 10-15 Hz
Arteriosclerosis 7-10 Hz	Nonunion Fractures 10 Hz
Bruises 10-14 Hz	Osteoarthritis 8-12 Hz
Circulatory Dysfunction 7-10 Hz	Osteonecrosis / Osteochondrosis 10 Hz
Dizziness 10-15 Hz	Osteoporosis 8-10 Hz
Eczema 10-15 Hz	Pain from Wound Healing 11-15 Hz
Fractures 10 Hz	Rheumatoid Arthritis 10 Hz
Glaucoma 12-22 Hz	Skin Allergies, Decubitus, Ulcus Cruris 10-15 Hz
Joint Dislocations and Sprains 10 Hz	Stomach Aches 10 Hz
Ligament Injuries 10-15 Hz	Stroke 7-10 Hz
Lumbago (lower back pain) 10 Hz	Swelling (Edema) 10 Hz
Migraines 4-10 Hz	Tendinitis 8 Hz
Multiple Sclerosis 13 Hz	Tinnitus 10 Hz
Varicose Veins 7-10 Hz	

Theta Waves - 4-8 Hz



Theta waves are slow, rhythmic patterns that represent the bridge between the conscious and subconscious mind. They are most commonly seen during deep relaxation, meditation, daydreaming, and light sleep, reflecting the state where imagination, emotion, and intuition come alive. When Theta activity increases, the mind drifts inward, toward memory, imagery, and creative insight.

Theta waves are strongest when the brain is deeply relaxed but still awake, such as during prayer, visualization, or spiritual reflection. This state connects you to your inner world, where creativity, intuition, and emotional healing often occur. In children, Theta is a dominant and natural rhythm, but in adults it typically appears during rest, meditation, or the transition between wakefulness and sleep.

Originating in areas like the limbic system and hippocampus, Theta waves are associated with memory formation and emotional integration. Healthy Theta activity promotes learning, adaptability, and psychological well-being. However, when imbalanced, Theta dominance in waking states can lead to daydreaming, distractibility, or mental fog.

Like a manual car has gears, so does our brain. Theta represents second gear, not as slow and deep as Delta, but still far from the high-speed focus of Beta. It is the gear that allows you to coast, reflect, and restore.

- **Frequency Range:** 4–8 Hz
- **Associated State:** Deep relaxation, meditation, emotional connection, subconscious awareness
- **Subjective Feeling:** Dreamlike, intuitive, creative, calm, and internally focused
- **Common Activities:** Meditation, visualization, daydreaming, light sleep, spiritual practice
- **Physiological Correlate:** Integration of mind and body, emotional processing, healing response

Best For: Meditation, creativity, deep relaxation, emotional healing, and intuitive awareness

VIBE Theta Protocol:

The Theta Brain Wave Expansion Protocol on the VIBE device by Resona Health is designed to promote emotional balance, stress reduction, and creative flow. It helps quiet the analytical mind, fostering intuitive insight, visualization, and deep relaxation. Many use the Theta protocol to support meditation, inner reflection, and overall mental rejuvenation

Condition/Symptom & Frequency/Range	
Arrhythmia 7-8 Hz	Menstrual pain 5-7 Hz
Alzheimer's 2-8 Hz	Migraines 4-10 Hz
Angina 2-8 Hz	Multiple Sclerosis 5 Hz
Arteriosclerosis 7-10 Hz	Nerve Pain or Neuropathy 6 Hz
Chronic Pelvic Pain 5-7 Hz	Periostitis 6 Hz
Circulatory Dysfunction 7-10 Hz	Poor circulation 2-6 Hz
Cystitis 5-8 Hz	Prostatitis 3-8 Hz
Erectile Dysfunction 6 Hz	Sleep Disorders 1-5 Hz
Frozen Shoulder 7-8 Hz	Stress 5 Hz
Headache 6-10 Hz	Stroke 7-10 Hz
High Blood Pressure 1-5 Hz	Tuberculosis (TB) 4 Hz
Menopause 5-8 Hz	Varicose Veins 7-10 Hz
Wound Healing 1-5 Hz	

Delta Waves - 4 Hz and below



Delta waves are the slowest and deepest of all brainwave frequencies. They occur primarily during dreamless, restorative sleep and are closely linked to the body's natural healing and regeneration processes. Delta activity reflects the state of complete physical and mental rest, when consciousness drifts below awareness and the body can fully repair itself.

These slow, high-amplitude waves dominate in infants up to one year old and remain present throughout adulthood during stages 3 and 4 of non-REM sleep, also known as slow-wave sleep. When Delta waves are strong, the body releases growth hormones, repairs tissues, balances neurotransmitters, and restores vital energy reserves.

In waking life, elevated Delta activity is rare but can occur in states of deep meditation or trance. Healthy Delta patterns are essential for recovery and rejuvenation, but excess Delta activity while awake can lead to mental fog, fatigue, and difficulty focusing. For example, individuals with attention challenges often exhibit elevated Delta when trying to concentrate—essentially keeping the brain in a “sleepy gear” when alert focus is needed.

Returning to our car analogy, Delta represents first gear, the slow, steady rhythm that allows you to idle, repair, and refuel before accelerating again.

- **Frequency Range:** 0.5–4 Hz
- **Associated State:** Deep, dreamless sleep; physical and emotional restoration
- **Subjective Feeling:** Unconscious or trance-like; profound stillness and rest
- **Common Activities:** Deep sleep, restorative rest, healing states, advanced meditation
- **Physiological Correlate:** Tissue repair, immune regulation, hormone balance, and cellular regeneration

Best For: Deep sleep, cellular recovery, physical healing, and total relaxation

VIBE Delta Protocol:

The Delta Brain Wave Expansion Protocol on the VIBE device by Resona Health is designed to promote restful sleep and deep restoration. It may help support the body's natural healing mechanisms, enhance recovery, and encourage calm before rest. This protocol is especially beneficial for individuals seeking better sleep quality, nighttime relaxation, or overall rejuvenation of mind and body.

Condition/Symptom & Frequency/Range	
Alzheimer's 2-8 Hz	High Blood Pressure 1-5 Hz
Angina 2-8 Hz	Poor Circulation 2-6 Hz
Chronic blepharitis 1-2 Hz	Prostatitis 3-8 Hz
Depression 3 Hz	Sleep Disorders 1-5 Hz
Headache 3 Hz	Stress 3 Hz
Wound Healing 1-5 Hz	

The Rhythm of the Mind

Your brain is an intricate orchestra of rhythms, shifting smoothly from one frequency to another throughout the day. Each brainwave type plays a distinct role in balancing thought, emotion, and energy.

Gamma waves sit at the top of the range, driving high-level processing, insight, and peak mental performance. **Beta waves** follow as the rhythm of everyday focus, problem-solving, and active engagement.

When it's time to unwind, the brain transitions into **Alpha**, promoting calm awareness and relaxed alertness. A little deeper still, **Theta waves** emerge, guiding creative insight, meditation, and the early stages of sleep. At the foundation lies the **Delta state**, the slowest rhythm, where the body rests, heals, and restores its natural vitality.

Together, these five wave patterns form a dynamic system that continuously adjusts to meet your needs in every moment. By understanding and nurturing these rhythms, you can harmonize mental energy, support emotional balance, and enhance overall well-being.

The VIBE Connection

The **VIBE device by Resona Health** is designed to work in harmony with your brain's natural rhythms. By gently stimulating specific brainwave frequencies, it helps guide your mind toward desired mental states, whether that means boosting focus, encouraging relaxation, or deepening restorative rest.

Each of its **five Brain Wave Expansion Protocols** aligns with one of the primary brainwave types, supporting wellness through balanced neural activity. When you use the VIBE device, you're essentially tuning your brain to the right frequency for the task at hand:

- **Need clarity and concentration?** Gamma or Beta protocols can energize mental performance.
- **Feeling stressed or restless?** Alpha or Theta protocols guide your brain toward calm, creativity, and emotional ease.
- **Seeking deep recovery or better sleep?** The Delta protocol encourages the slow, restorative rhythms your body needs to recharge.

Through consistent use, these sessions help strengthen your brain's natural ability to shift states smoothly, making it easier to access balance and clarity throughout your day. By syncing with the body's own energetic language, the VIBE device offers a science-based path to harmony, performance, and well-being.

Bringing It All Together

Understanding your brain’s natural rhythms is the first step toward improving focus, relaxation, creativity, and vitality. Each brainwave type contributes to the harmony of a healthy, balanced mind.

With tools like the **VIBE device by Resona Health**, you can intentionally support those rhythms, helping your brain find its natural flow at any moment. Whether your goal is deep rest, clear thought, or renewed energy, tapping into these frequencies offers a powerful way to align **mind, body, and intention**

Brain Wave Summary Chart

A quick-reference guide to the five primary brainwave types and their associated VIBE benefits.

Brainwave Type	Frequency Range (Hz)	Associated State / Description	VIBE Benefit & Protocol Focus
Gamma	30 – 100 Hz <i>(peak around 40 Hz)</i>	<ul style="list-style-type: none"> • Heightened perception and mental clarity • Integration of multiple brain regions • Deep focus and insight 	VIBE Gamma Protocol – Enhances cognitive performance, memory, learning, and higher consciousness
Beta	12 – 30 Hz	<ul style="list-style-type: none"> • Alertness, active thinking, problem-solving • Everyday focus and analytical processing 	VIBE Beta Protocol – Supports concentration, decision-making, productivity, and sustained attention
Alpha	8 – 12 Hz <i>(peaks ~10 Hz)</i>	<ul style="list-style-type: none"> • Relaxed alertness, creativity, balanced awareness • “Neutral gear” between calm and focus 	VIBE Alpha Protocol – Promotes calm clarity, stress reduction, and creative flow
Theta	4 – 8 Hz	<ul style="list-style-type: none"> • Deep relaxation, intuition, visualization • Gateway to subconscious mind and emotional healing 	VIBE Theta Protocol – Encourages meditation, emotional release, and intuitive insight
Delta	0.5 – 4 Hz	<ul style="list-style-type: none"> • Deep, dreamless sleep; restoration and healing • Slowest, most regenerative brain rhythm 	VIBE Delta Protocol – Supports restful sleep, cellular repair, and total body rejuvenation