

Mind Machine Information

Brainwaves

The study of "brainwaves" has played a vital role in the understanding of how the brain and mind function. Discovered in the 1920s by German researcher Hans Berger, these tiny electrical signals mirror the shifting patterns of mental activity. They are measured by attaching special sensors, called electrodes, to the scalp; these pick up brainwave activity which is then measured by an instrument called an electroencephalograph, or EEG. Brainwave activity tends to fall into four groups: beta, alpha, theta and delta. These categories are associated with the rapidity of oscillation (frequency) of brainwaves. As it turns out, certain patterns of brainwave activity are also associated with specific mental states.

Beta is associated with normal, waking consciousness; attention directed towards the external environment. You are most likely in the "beta state" as you read this. Beta waves oscillate between approximately 14 and 30 times per second (Hz).

Alpha is relaxed, not thinking about anything in particular, sometimes a pleasurable feeling of "floating". Often dominant in certain kinds of meditation, alpha waves have for the past twenty years been associated with calm, lucid mental states (the "alpha state"). They are also often detected during dream sleep. Alpha waves oscillate between 9 and 13 times per second.

Theta Found in states of deep relaxation, theta activity is also associated with bursts of creative insight, twilight ("sleep") learning and vivid mental imagery. It is also found in more advanced meditators. Theta waves oscillate between 4 and 8 times per second.

Delta This slowest of brainwave activity, is found during deep dreamless sleep and sometimes in very experienced meditators. They oscillate between 1 and 3 Hz.

Your brainwave activity is constantly shifting and changing during the day and night. Virtually every form of mental and physical activity will cause changes in this activity. Abrupt, unexpected noises or other events will quickly alter your brainwave patterns. Even watching TV can dramatically alter brainwave activity in an undirected manner.

Over the years many techniques have been developed to allow you to enter these states, particularly alpha and theta, at will. Most methods, such as meditation, require years of regular practice to master. Alpha wave biofeedback, quite popular in the 70s, re-quires the sometimes awkward placement of electrodes as well as considerable practice.

Mind Machines help Manage Stress

Mind machines and biofeedback devices help you manage stress. By using the Proteus Mind Machine and ThoughtStream Biofeedback/Neurofeedback combination, you will learn to manage stress in a healthy and safe manner that does not include the use of habit forming drugs.

Managing stress is NOT avoiding life. It is living life to the fullest, maximizing your potential and minimizing negative influences on a personal, social or professional level. There is good stress. Being uncomfortable is a motivator for change. Chronic stress may lead to alcohol, prescription medication and use of illegal drugs. Avoid creating problems. Learn to resolve stress related situations safely and effectively.

25 years of experience as a therapist has convinced me that managing stress is the most important aspect of sound mental health. In order to reduce recurrent negative effects of stress, the perception of stress has to be examined, identified and modified to enhance your well being and retard additional psychological and physiological damage.

Psychological Effects of Stress

The inability to adapt to stress is associated with depression or anxiety. Nearly 2/3rds of individuals who experience stress are 6 times more likely to develop depression with a month. Researchers have discovered that repeated release of stress hormone produces hyperactivity in the hypothalamus-pituitary-adrenal axis and disrupts normal levels of serotonin, the nerve chemical that is critical for feelings of well-being. Stress diminishes the quality of life by reducing feelings of pleasure and accomplishment, and relationships are often threatened.

Stress-related conditions that are most likely to produce negative physical effects include:

- An accumulation of persistent stressful situations, particularly those that a person cannot easily control.
- Persistent stress following a severe acute response to a traumatic event - an automobile accident or your web site crashes.
- An inefficient or insufficient relaxation response.
- Acute stress in people with serious illness, such as heart disease, diabetes, urinary tract dysfunction, chronic fatigue syndrome, Lupus, and fibromyalgia.

The Frequency-Following Effect

In the 1940s researcher Gray Walter discovered that brainwave activity tends to mirror flickering light, particularly in the alpha and theta frequencies. This effect has become known as the (frequency-following effect.) A familiar example is the tendency to slip into a relaxed or dream-like state while gazing into a fire-the flicker rate of which happens to average in the alpha/theta range!

More recently, sound has been shown to produce similar results, particularly pulsed sound and binaural beats. This last effect, binaural, results when one ear hears a pure tone of a slightly differing pitch than the other ear. The brain then actually synthesizes the difference between the two. The portions of the brain associated with hearing tend to fall into step with this pleasant, gently pulsing rhythm. The combination of pulsed light and binaural beat frequencies can be a particularly effective tool for relaxation and preparation for meditation. Pulsed sound in the form of musical rhythms has been entraining people for thousands of years.

Research conducted at the Monroe Institute and elsewhere suggests that both binaural beats and flickering light stimulation can synchronize the activity of the left and right hemispheres of your brain. It is thought that this synchronization can increase the flow of information between the two hemispheres, thereby accelerating learning and increasing creativity.

How Do Mind Machines Work

All mind machines have three basic components: (1) a small often Walkman-sized control unit, (2) goggles that position tiny LED's in front of each eye, and (3) stereo headphones.

The control unit is a sophisticated micro-computer that regulates the intensity and frequency of the flickering lights and rhythmic pulsing sounds. The mind machines on this page have control units programmed to store a variety of 'pre-set' sessions, ranging from sleep to relaxation to heightened concentration to improved learning and others. The devices allow you to define programs and mix and match frequencies, control light intensity and volume.

The first time you use a mind machines the kaleidoscopic stream of brilliant patterns and images produced by the flickering lights will amaze you. The visions that appear can be spectacular. The hues and boldness of colors are intricate. The sensations are similar to participating in a Vision Quest.

Biofeedback researcher Dr. Thomas Budzynski, who uses light and sound machines in his practice and research, has called them 'facilitators of unconscious retrieval'.

How light and sound devices benefit you.

How does something so basic as flickering light and pulsating sound produce profound changes in brain waves and consciousness?

Scientists have found that when the brain is given rhythmic stimuli, such as pulsing lights, the brain waves tend to correspond to the rhythm of the stimulus. Many of the mind machine programs start with faster frequencies and 'ramp down' to progressively slower ones, allowing the user to move into the relaxed 'alpha' and dreamlike 'theta' states.

Slower brain wave frequencies have important benefits, ranging from relaxation to improved learning. The alpha-theta frequencies may be keys to the state of mental lucidity called meditation. When Zen monks were studied it was discovered that those who have meditated longest are the ones who enter these alpha-theta states most readily.

Some of the benefits of Mind Machines include enhanced abilities to:

Relax more deeply

Ever have trouble silencing your "monkey mind?" Light and sound stimulation uses *completely natural* forms of stimulation to gently lead your mind into slower, more tranquil mindstates.

Experience less anxiety

Use of light and sound machines has often been compared to "electronic meditation." Regular use of our products can help reduce anxiety and other common responses to psychological stress.

Fall asleep more quickly

One of the most powerful and effective applications of light and sound stimulation lies in its ability to rapidly induce deep, refreshing sleep.

Enhanced creativity

When you're in the "twilight" state, you can access the power of your subconscious mind and use it for solving creative problems. You may even find your enjoyment of music and art increasing, with regular use!

Improved visualization

Flickering light activates your visual processing mind much more strongly than does ambient light. That's why it's easier to visualize scenes while using our products than normal. In fact, most people will "see" a stream of colorful, dreamlike or kaleidoscopic images during a session. If you rely at all on your visual imagination or memory, you'll find our products especially beneficial.

Accelerate the learning process

Light and sound stimulation can help you improve your school grades, boost verbal IQ, reduce mental stress and focus more clearly on your studies. If you are interested in this application be sure to see the [recently published study](#) which demonstrated a **significant increase in college Grade Point Average** following regular use of our technology.

Medical Disclaimer

The Proteus Mind Machine and ThoughtStream Biofeedback Machine are not medical devices and should not be construed as substitutes for proper medical care. They are intended for use as educational tools for learning to relax and for personal growth and as such are not intended for the treatment or diagnosis of any medical condition.

Products which incorporate flickering light should not be used by individuals with epilepsy or seizure disorders unless so directed by a medical doctor. They may also be unsuitable for use by those taking many forms of psychoactive drugs and those who have suffered from head injuries.

If you have specific questions regarding the [Proteus Mind Machines](#) and [ThoughtStream Biofeedback Machine](#) please contact Dr. Richard Pfeiffer at growth@growthgroups.com