

# Changing Your Brainwaves Using Auditory Binaural Beats - For Free

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There has been a surge of interest in binaural beats during recent years, and a number of software only products that utilize this technology have become quite popular.

What are they?

A binaural beat is generated from two tones.

Each tone is of a slightly different pitch.

One tone is presented to the left ear, and the other to the right.

The two tones combine into a single tone sensed by your brain.

This single tone pulse is the stimulating when entraining with binaural beats.

Binaural beats are probably the most well-known stimulus used for entrainment. They have been shown to work, but other entrainment techniques are more effective. Our machines produce binaural beats and dual binaural beats. They also include other audio entrainment methods in addition to these. I've personally found that the frequency following effect of binaural beats is quite modest, but they do actually work and have an effect on brainwaves that can be shown with EEG.

Here's a bit of history from Gnaural's web page, which we'll discuss in a moment.

In 1839, German experimenter Heinrich Wilhelm Dove discovered that playing two tones simultaneously, one in each ear, induced the perception of a "beat frequency" when the tones were of slightly differing frequency (generally less than 100 Hz apart). What was interesting about Dove's discovery was the fact that there was no acoustic mixing of the tones. The perceived beats existed solely within the auditory system.

## Heinrich Wilhelm Dove

Heinrich Wilhelm Dove discovered binaural beats in 1839. While research about them continued after that, the subject basically remained a scientific curiosity until 134 years later, with the publishing of Gerald Oster's article "Auditory Beats in the Brain" (Scientific American, 1973). Oster's paper was landmark not so much for its own new laboratory findings, but rather that in the way in which it identified and tied together the isolated islands of relevant research done since Dove, in a way that gave the subject fresh insight and relevance to scientific research. In particular, Oster saw binaural beats as a powerful tool for cognitive and neurological research, addressing questions such as how animals locate sounds in their three-dimensional environment, and also the remarkable ability of animals to pick-out and focus-on specific sounds in a sea of noise (what is known as the "cocktail party effect"). Oster also considered binaural beats to be a potentially useful medical diagnostic tool, not merely for finding and assessing auditory impairments, but also (because they involved different neurological pathways than ordinary auditory processing) for more general neurological conditions. For example, Oster found that a number of the subjects he worked with that were incapable of perceiving binaural beats suffered from Parkinson's disease. In one case, Oster was able to follow one such subject through a week-long treatment of Parkinson's disease; at the outset the patient couldn't perceive binaural beats, but by the end of the week of treatment, the patient could hear them again. Oster also reported (in corroborating an earlier study) that there were gender differences in the perception of beats. Specifically, women seemed to experience two separate peaks in their ability to perceive binaural beats that seemed to correlate with specific points in the menstrual cycle (one at the onset of menstruation, one around 15 days later), which led Oster to wonder if binaural beats could be used as a tool for measuring relative levels of estrogen.

Until Gerald Oster's 1973 article, binaural beats were basically considered no more than a scientific curiosity. Oster's paper was landmark not so much in presenting new laboratory findings, but rather in identifying and tying-together the isolated islands of relevant research done since Dove in such a way as to give the subject fresh insight and relevance to scientific research. In particular, Oster viewed binaural beats as a tool for cognitive and neurological research, addressing how we locate sounds in our environment, and the so-called "cocktail party effect" (e.g., the auditory system's propensity for selective attention). Oster also considered binaural beats to have potential as a diagnostic tool, for finding Parkinson's disease, auditory impairments, and even for gaging fluctuations of estrogen (the latter assertion rising from a study he replicated that corroborated findings of gender differences in the perception of beats).

SBaGen is a free binaural tone generator that has been out for quite some time now. It works great, but there is a better out now called Gnaural2.

If you don't want to download and install Gnaural 2, you can use a version placed on the web as a Java Applet. Check it out here

You can download Soundscapes and Gnaural Example files for Gnaural here  
You can even use them with the online Java Applet version.

A ton of links after the jump...

- The cryosleep brainwave generator A free program to generate brainwaves under Linux, demo sounds are online
- BrainWave Lab - Sound Therapy
- Simple summary chart of how Alpha, Beta, Delta, Theta & Gamma Waves affect us
- SBaGen, a free multi-platform program for binaural beats
- Gnaural, a free opensource binaural beat graphical editor/generator for Windows and Linux
- Gnaural Applet, a browser-based Java binaural beat generator
- BrainJav, a browser-based Java binaural beat generator
- bbEngine, a freeware program for binaural beats for Mac OS X
- Brainwave Entrainment to External Rhythmic Stimuli - Interdisciplinary research and clinical perspectives symposium (Stanford University)
- Auditory Driving - Overview of sonic entrainment methods
- Hearing Lecture Notes (5): Binaural hearing and localization from University of Sussex
- Auditory Illusions worksheet from Rutgers University
- Brainwave/Cymatic Frequency Listing
- The Monroe Institute - originators of 'Hemi-sync' sound system
- Centerpointe Research Institute - originators of 'Holosync' sound system
- Immrama Institute - step-by-step explanation of brainwave entrainment and binaural beats
- The Effect of Binaural Auditory Beats on the EEG of the Human Brain &mdash; a student lab project from Penn University
- (Heaven & Earth Productions) The "Mental Alchemy" series -- outstanding 'real time' geomantically-oriented binaural brainwave entrainment, produced by Brendan Bombaci
- Downloadable binaural beats in the public domain (various formats)
- Explanation of binaural beats using examples
- free binaural beat mp3's including 'the music of pi'