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Do Binaural Beats Have Health Benefits?



Medically reviewed by [Deborah Weatherspoon, Ph.D., R.N., CRNA](#) — Written by [Jacquelyn Cafasso](#) — Updated on September 18, 2018

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What are binaural beats?

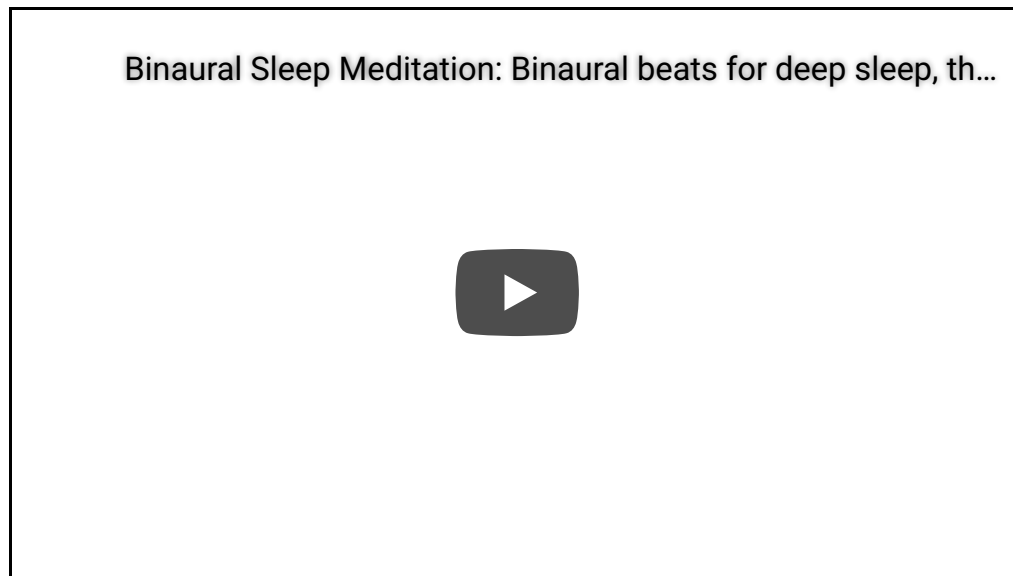
When you hear two tones, one in each ear, that are slightly different in frequency, your brain processes a beat at the difference of the frequencies. This is called a binaural beat.

Here's an example:

Let's say you're listening to a sound in your left ear that's at a frequency of 132 Hertz (Hz). And in your right ear, you're listening to a sound that's at a frequency of 121 Hz. Your brain, however, gradually falls into synchrony with the difference — or 11 Hz. Instead of hearing two different tones, you instead hear a tone at 11 Hz (in addition to the two tones given to each ear).

Binaural beats are considered auditory illusions. For a binaural beat to work, the two tones have to have frequencies [less than 1000 Hz](#), and the difference between the two tones can't be more than 30 Hz. The tones also have to be listened to separately, one through each ear. Binaural beats have been explored in music and are sometimes

used to help tune instruments, such as pianos and organs. More recently, they have been connected to potential health benefits.



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What health benefits are binaural beats claimed to have?

Binaural beats are claimed to induce the same mental state associated with a meditation practice, but much more quickly. In effect, binaural beats are said to:

- reduce anxiety
- increase focus and concentration
- lower stress
- increase relaxation
- foster positive moods

- promote creativity
- help manage pain

Meditation is the practice of calming the mind and tuning down the number of random thoughts that pass through it. A regular meditation practice [has been shown](#) to reduce stress and anxiety, slow down the rate of brain aging and memory loss, promote emotional health, and lengthen attention span. Practicing meditation regularly can be quite difficult, so people have looked to technology for help.

Binaural beats between 1 and 30 Hz are alleged to create the same brainwave pattern that one would experience during meditation. When you listen to a sound with a certain frequency, your brain waves will synchronize with that frequency. The theory is that binaural beats can help create the frequency needed for your brain to create the same waves commonly experienced during a meditation practice. The use of binaural beats in this way is sometimes called brainwave entrainment technology.

How do you Use binaural beats?



What you need to experiment with binaural beats is a binaural beat audio and a pair of



headphones or earbuds. You can easily find audio files of binaural beats online, such

as on YouTube, or you can purchase CDs or download audio files directly to your mp3



player or other device. As mentioned earlier, for a binaural beat to work, the two tones



you have to have frequencies of [less than 1000 Hz](#), and the difference between the two

tones can't be more than 30 Hz.

You'll need to decide which brainwave fits your desired state. In general:



- Binaural beats in the **delta** (1 to 4 Hz) range [have been associated](#) with deep sleep and relaxation.
- Binaural beats in the **theta** (4 to 8 Hz) range are linked to REM sleep, reduced anxiety, relaxation, as well as meditative and creative states.
- Binaural beats in the **alpha** frequencies (8 to 13 Hz) [are thought to encourage](#) relaxation, promote positivity, and decrease anxiety.
- Binaural beats in the lower **beta** frequencies (14 to 30 Hz) [have been linked](#) to increased concentration and alertness, problem solving, and improved memory.

Find a comfortable place free of distractions. Simply listen to the binaural beat audio for at least 30 minutes each day in your headphones to make sure that the rhythm is entrained (has fallen into synchronization) throughout the brain.

You can experiment with the length of time you listen to the binaural beats to find out what works for you. For example, if you're experiencing high levels of anxiety or stress, you may want to listen to the audio for a full hour or longer. Remember, you must use headphones for binaural beats to work. You may also want to listen with your eyes closed.

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Is there any research to support the claims?


-  While most studies on the effects of binaural beats have been small, there are several that provide evidence that this auditory illusion does indeed have health benefits,
-  especially related to anxiety, mood, and performance.

One [blinded study](#) in 29 people found that listening to binaural beats in the beta range (16 and 24 Hz) was associated with both improved performance on a given task as well as a reduction in negative moods compared to listening to binaural beats in the theta and delta (1.5 and 4 Hz) range or to simple white noise.

Another [controlled study](#) in roughly 100 people about to undergo surgery also found that binaural beats were able to significantly reduce pre-operative anxiety compared to similar audio without the binaural tones and no audio at all. In the study, anxiety levels were cut in half for people who listened to the binaural beat audio.



Another [uncontrolled study](#) asked eight adults to listen to a binaural beat CD with delta (1 to 4 Hz) beat frequencies for 60 days straight. The participants filled out surveys before and after the 60-day period that asked questions about their mood and quality of life. The results of the study found that listening to binaural beats for 60 days significantly reduced anxiety and increased the overall quality of life of these participants. Since the study was small, uncontrolled, and relied on patient surveys to

collect data, larger studies will be needed to confirm these effects.

One larger and more recent [randomized and controlled trial](#)  looked at the use of binaural beats in 291 patients admitted to the emergency department at a hospital. The researchers observed significant decreases in anxiety levels in patients exposed to audio with embedded binaural beats compared to those who listened to audio without binaural beats or no audio at all (headphones only).

Are there any side effects to listening to binaural beats?

There are no known side effects to listening to binaural beats, but you'll want to make sure that the sound level coming through your headphones isn't set too high. Lengthy exposure to sounds [at or above 85 decibels](#) can cause hearing loss over time. This is roughly the level of noise produced by heavy traffic.

 Binaural beat technology could be a problem if you have [epilepsy](#), so you should  ask to your doctor before trying it. More research is needed to see if there are any side effects to listening to binaural beats over a long period of time.



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The bottom line

With several human studies to back up the health claims, binaural beats appear to be a promising tool in the fight against anxiety, stress, and negative mental states. Research has found that listening daily to CDs or audio files with binaural beats has positive effects on:

- anxiety
- memory
- mood
- creativity
- attention

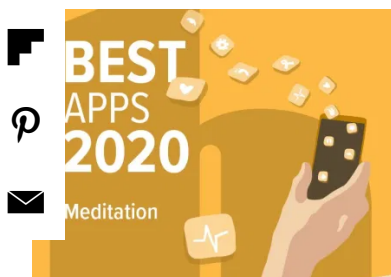
Becoming a master at meditation isn't easy. Binaural beats won't work for everyone, and they aren't considered a cure for any particular condition. However, they might offer a perfect escape for those interested in relaxing, sleeping more peacefully, or entering a meditative state.

Last medically reviewed on October 6, 2017

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