



Sound therapy: The power of rewiring your brain with music

## **Sound therapy: The power of rewiring your brain with music**

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Sound therapy is effective because research shows that sound waves can actually alter our brain waves and emotions.

Can sound heal us? Can it change how we feel and how we process information? Sound therapy is an umbrella term that describes the many uses of sound with therapeutic purposes.

The use of singing bowls, chimes and tuning forks is one of the current sound therapy modalities gaining ground. Traditional healers in China, Japan, Tibet, Nepal and India have used crystal bowls for centuries. Most religious or spiritual ceremonies around the world also incorporate some form of singing, chanting, bells and metal or crystal bowls.

In the case of crystal bowls, they are designed in such a way that they can reproduce sounds that are very similar to that of the human voice and may elicit in the listener the same soothing responses we might have experienced when our mother sang us lullabies.

Many alternative practitioners and holistic centers are now offering this or another form of sound therapy with the purpose of inducing meditative states and promoting relaxation. But, what is the science behind it?

## The science behind sound therapy

Neuroscience is telling us that our brains are flexible and change. Researchers in Germany have found that sounds and smells can open new neural pathways, reorganize the brain wiring and influence perception to the point of creating optical illusions. Even soundtracks in movies and videogames affect the audience and contribute to elicit certain emotions.

All of us have probably experienced the effects of sound on our mood and now we have evidence that the human brain actually reacts to music.



Mom's heartbeat is a "primordial sound", similar to drumming.

Sound has been proven to change brain waves.

Using the Magnetic Resonance Imaging (MRI) technology, science has demonstrated that exposure to specific sounds increases activity in certain areas of the brain.

In fact, the first sensory experiences of a fetus are sound and vibration. Because the baby is immersed in amniotic fluid, smell and taste are not yet awakened. His or her eyes are closed and the baby hardly has some sight of light. But since sound travels faster in water than in air, and even though the fluid compresses the eardrums in the womb, the fetus' sense of hearing is amplified. The mom's heartbeat and the sound of water hissing around his body are among the sounds recorded by the fetus as

"primordial sounds."

That's why patting on the newborn's back soothes her down. The tap-tap-tap resembles the heartbeat and takes her to a familiar place. It might also explain why people could easily go into trance states while listening to drumming. Recordings of these primordial sounds have proven to decrease levels of anxiety in adults.

## **Music as sound therapy**

Among conditions that could be aided by using sound therapy are labor pain, musculoskeletal pain, arthritis, soft tissue damage and even cancer. But not all types of sound are therapeutic.

We have all probably seen babies' instinctual startle response (Moro reflex) triggered by loud noises. The baby cries, arches his back and extends legs, arms, and fingers. Infants do not like certain sounds, especially loud ones. We are not born wired for continuous or intense noise.

The medical magazine *Pediatrics* published this year "The effects of music therapy on vital signs, feeding and sleep in premature." The authors of the study claimed that, "intentional therapeutic use of live sound and parent-preferred lullabies applied by a certified music therapist can influence cardiac and respiratory function." It can also improve the premature's sucking patterns and enhance bonding between parent and child.

In these days of high decibels, our stress response rarely has the opportunity to be reset. Sound from traffic, the AC units, the electrical appliances, all contribute to keep us in a permanent state of alert. Still, when we turn on the music and select a song that has meaning for us or elicits pleasure, we relax and our mood shifts.

Sound therapy uses what is known about sound and music to purposefully bring out memories, elicit pleasure or calm you down. It can also counteract the harmful effects of stress on the body. In inducing relaxation, the music promotes physiological changes that facilitate physical and emotional healing.

## **Neuroscience of sound therapy: sound affects the mind**

By using highly sophisticated technological equipment, the functioning of the body and the brain can these days be observed with unprecedented detail. Technology has also made possible measuring the changes that take place in the mind and body in different states of consciousness and different states of health.

Participants in a study published earlier this year, were asked to select pleasurable music and then more music was selected for them. The individuals recorded subjective pleasure states that were then correlated to the images obtained with the MRI. In all subjects of the experiment, a part of the brain's reward system – the nucleus accumbens in the center of the brain – was activated during the time they listened to classical music.

Two years ago, Finnish researchers had revealed how music activates areas responsible for motor responses, emotions and creativity.

Those who have studied the neuroscience of meditation and relaxation know that it can lower blood pressure, improve the immune response of the body and help us focus. That may explain therapeutic effects of relaxing music.

Current technology supports the use of sound to affect the mind. Changes in the brainwave function have been observed. These changes are due to “entrainment” or “physical resonance.” Entrainment refers to how brainwaves respond to rhythmic sensory stimuli such as sound or light.

### **Stress management, disabilities treated with sound therapy?**

Those who advocate for the use of sound therapy sustain that it counterbalances high levels or sustained levels of stress. Sound is also used to decrease anxiety, lower blood pressure, improve mood and even help autistic patients.



Not all sounds are therapeutic. Silence or soothing sounds are more effective.

Some experts have used sound therapy with Alzheimer’s patients since sound is said to improve focus and memory as well.

A form of therapy also used with Alzheimer’s patients is Snoezelen. It uses different sensory stimuli, including sound. It was initially used only with disabled children. It takes place in special rooms where music starts playing as soon as you walk in. The room has a sound beam that can translate your movement into music. It has been used with deaf people so that they can “feel” if not hear the music.

Another method that uses sound is the Tomatis method also known as listening therapy. By using special devices, the brain can be stimulated so that it can better process sensory messages. It has been used for conditions that include learning disabilities, behavioral problems and attention deficit hyperactivity disorder (ADHD). This method has also been found useful with older people suffering from coordination and motor problems. Performers find that it helps them refine their skills.

But there are other effective therapeutic uses for sound. For example, ultrasound, body tone (tuning forks) uses sound waves that are above our audible range and it directly affects the physical body.

Among its uses are:

- Pain relief
- Phonophoresis (administration of medication through the skin while applying ultrasound);
- Wound healing
- Lithotripsy – ultrasound or shock waves, to break a kidney stone into small pieces that can more easily be removed.
- Cosmetic purposes
- Diagnostics (sonograms).