

The History of the Tuning Fork in Healing

In 1550 in Pavia, Italy, Girolamo Cardano, a physician, mathematician and astrologer, noticed how sound was being perceived through the skin.

In 1553 in Padua, Italy, H. Capivacci, a physician, noticed that this knowledge of sound being perceived through the skin might be used as a diagnostic tool for differentiating between hearing disorders located in the middle ear or in the acoustic nerve.

In 1684, German physician G. C. Schelhammer tried using a common cutlery fork to enhance the experiments that Cardano and Capivacci were working on.

In 1711 in England, Royal trumpeter and luteist, John Shore, created the first tuning fork. At that time, he lovingly and jokingly called it a pitch fork. It was made of steel and had a pitch of A423.5.

In 1800, German physicist E.F.F. Chladni, along with others, constructed a complete musical instrument based on sets of tuning forks.

In 1834, J.H. Scheibler presented a set of 54 tuning forks covering ranges from 220 Hz to 440Hz. Later, in Paris, J. Lissajous constructed a tuning fork with a resonance box.

Also in Paris, German physicist K. R. Koenig invented a tuning fork which was kept in continuous vibration by a clockwork.

In 1863 in Heidelberg, physiologist H. Helmholtz, used sets of electromagnetically powered tuning forks for his experiments on the sensations of tone.

Tuning forks were indispensable instruments for producing defined sinusoidal vibrations and used as a diagnostic tool in otology.

The most common system of determining the pitch of all twelve notes in an octave is the Equal temperament. The standard pitch here is A440. As a side note, equal temperament was proposed by Aristoxenus, a pupil of Aristotle, and had been in use in China for some centuries.

Mr. Hipkins, the head piano tuner in 1846, was instructed by Walter Broadwood to instruct his piano tuners in the use of equal temperament. To do this, he used two tuning forks; one for meantone at A433.5 and one for equal temperament at A436.

Even though musicians were among the first people to work with pitch, scientists enjoyed sharing knowledge and use of the tuning fork also.

As far back as 583 BC, when the Greek philosopher, Pythagorus, made a device called

the monochord and set the pitch to 256Hz.. The Egyptians and Greeks used the monochord to make intricate mathematical calculations.

It wasn't until around 1834 when a group of German physicists was able to use a mechanical stroboscopic device, that they were able to determine that the pitch of the tuning fork was at A440cps (which later was expressed as A440Hz).

Even though the pitch of the note "A" in the 17th century varied from 373.3 Hz to 402.0 Hz, on July 27, 1987, the International society of Piano Builders and Technicians unanimously support A=440 Hz. as the international pitch standard for piano manufacturers and for modern piano and orchestral tuning.

In the 18th century, the German physicist Ernesy Chladni, discovered that when a violin bow was drawn vertically across the rim of a metal plate that the sound waves it produced created patterns in sand that was sprinkled on the plate. For each different musical tone that was played, the sand particles formed a different geometric pattern.

In the 1960s the Swiss scientist Hans Jenny discovered that low frequency sounds produced simple geometric shapes and as the sound frequency increased, the shapes became more complex. He also found that the sound 'OH' produced a perfect circle and that the sound, 'OM' produced a pattern similar to that of the ancient Indian mandala for 'OM'.

In 1974, a professional jazz musician, Fabien Maman, noticed that by playing certain musical notes that he could have an energizing effect on the audience.

In the late 1970s, Fabien joined with the senior researcher at the National Centre for Scientific Research in Paris, Helen Grimal, to study the effects of sound on normal and malignant cells. The pair used all types of sound making instruments including flutes, drums, gongs, and more. They discovered that at 30-40 decibels, the sound always produced changes in the cells and the higher up the musical scale they went, the frequency would travel outward from the center of the cell to its outer membrane. The most amazing results happened when the human voice was used.

On the cellular level, Fabien Maman found that the note 'C' made cells longer while 'D' produced a variety of colors. 'E' made cells spherical. 'F' make them round, balanced and vibrant colors of magenta and turquoise. He also said that 'F' was the fundamental sound of the singer and thus helpful for the physical body through its harmonizing and regenerating effect at the cellular level. 'A' (440HZ) changed the color of the cells energy field from red to pink.

The Japanese scientist, Masaru Emoto, discovered that music affected water and that different types of music affected it differently. With our body made up of 80% water, his work demonstrates the importance of how our body is influenced by the sounds around us and by the information stored in the water that we drink.

Dr. Tomatis used high frequency sounds (3,000Hz and above) to activate the brain and affect cognitive functions such as thinking, spatial perception and memory. Listening to these sounds increased attentiveness and concentration.

Sound therapist Jonathan Goldman in his book, *Healing Sounds*, states that frequency plus Intention equal Healing.

Barbara Hero and the International Lambdoma Research Institute in Kennebunk, Maine, discovered that by passing sound waves through each organ of the body that they were able to calculate the optimal frequency for each organ using mathematical formulas based on the speed of sound.

To see the 'Scientific' uses of tuning forks and to actually see how sound waves move and operate is on: www.physicclass.run.com

A creator of using Music Therapy in the Medical field is Don Campbell who has written several books on his own findings in his medical practice. You can find invaluable information in his book titled, "The Mozart Effect."

Some good reference tools would be:

Jonathan Goldman, *Healing Sounds*. Element Books. 1992.

Alfred Tomatis, *The Conscious Ear*, Station Hill Press, 1991.

Fabien Maman, *The Role of Music in the Twenty-First Century*. Tama-Do Press. 1997.

Don Campbell, *The Mozart Effect*. Avon Books. 1997.

Masaru Emoto, *The Message from Water*. HADO Kyoikusha. 1999.