

Case Study

Traditional Sound Healing with High-Tech Enrichments

James L. Oschman

Nature's Own Research Association, PO Box 1935, Dover, NH 03821, USA

Publication Date: 23 November 2018

DOI: <https://doi.org/10.23953/cloud.ijactm.389>

Copyright © 2018. James L. Oschman. This is an open access article distributed under the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Abstract In many cultures around the world the human voice, in the form of songs or chants, has long been used for healing. This article summarizes how such a traditional sound therapy has been enriched using modern acoustic technologies. A system, called HUSO, an acronym for “human sound,” combines the ancient tradition of sound healing with modern technology. To create the tones used in the HUSO system, experienced sound healers recorded powerful sacred vocal sounds that have been found to evoke healing and balance in most people. After 90-minute recording sessions the toning and chanting were separated electronically into specific frequencies. Each individual tone was then manipulated and enhanced by adding different harmonics and waveforms until the combination produced a specific oscillating vibration with the most beneficial effect on the body and mind. To restore healthy balance the whole body is treated. The brain receives the tones by listening through headphones, while the whole body receives the modulated frequencies by means of vibrating pads located at acupuncture points. Feedback from individuals using the HUSO technology is that the process enables them to relax and de-stress, with a variety of profound benefits. HUSO is a completely new and unique sound healing system that is achieving results never observed before. The technology is easy to use in the clinic or at home and gives people an individualized whole-body experience of natural therapeutic sounds derived from the human voice. The system is being used successfully in wellness centers and by a growing number of prominent physicians in various specialties such as chronic illness, anti-aging, psychiatry and neurology. Relaxing with these sounds passing through the body helps with a variety of difficult or otherwise untreatable conditions.

Keywords *Acupuncture meridians; Chronic illness; EMF sensitivity; Ground regulation system; Living matrix; Music therapy; Resonance; Sound therapy; Stress-reduction; Traditional sound healing; Whole-body healing*

1. Introduction

Every morning millions of people around the world awake to sounds coming from an alarm clock or clock radio. In rural areas, the wake-up sounds may come from a rooster, or from other early birds. Often the day begins with flipping a light switch, pressing a button on a coffee maker, turning on the stove to make breakfast, and starting the car. For some of us, starting the car involves pressing a button on the car key, or unlocking the car door with a radio signal. Behind each of these routine everyday events there are various forms of energy, conversions of energy from one type to another, the movement of energy from one place to another, and an incredible phenomenon called resonance. I have long been interested in the medical significance of these physical phenomena that are so familiar to all of us.

Resonance is the remarkable process that enables you to hear the rooster and see the light from a star – light that may have begun its journey to Earth long before you were born. These familiar events can teach us a piece of the story of sound and music therapy because normal functioning of the human body depends on many resonant energetic interactions. These energetic phenomena have profound medical implications. Their practical significance is documented by the popularity of music therapies that are now taught in many universities and that are practiced in hospitals by individuals certified by organizations such as The American Music Therapy Association (AMTA) or The Music for Healing and Transition Program (MHTP). A visit to the web pages of these organizations (The American Music Therapy Association; The Music for Healing and Transition Program) can connect you with a wealth of scientific studies on the physiological and emotional benefits of sound and music for everyone from newborns to the elderly and infirm and their hospice care-givers (Yurkovich et al., 2018; Potvin et al., 2018). The AMTA publishes two journals on sound and music research, *The Journal of Music Therapy* and *Music Therapy Perspectives*. And the New York Academy of Sciences has held a series of conferences on the Neurosciences and Music in relation to health, the latest one in 2018 (Loui et al., 2018).

Moving Energy

One of my most influential teachers during my scientific career was Albert Szent-Györgyi, winner of the Nobel Prize in 1937 for the synthesis of Vitamin C. He was regarded as one of the most brilliant and creative scientists of the 20th century and he was the most prominent Hungarian-American scientist. One assertion he made has always fascinated me: “In every medical tradition before ours healing was accomplished by moving energy” (Szent-Györgyi, 1960). I have long been curious about why our Western medicine does not investigate the older medical traditions such as acupuncture, Ayurveda or the Shamanic traditions that have been a primary source of health care for generations of people around the world for thousands of years. Wouldn’t the successes of these methods give us new and useful information about life and healing that could be used today? This is vital today when our health care systems are in financial crisis and are challenged by chronic illnesses and epidemics of pain and addiction to pain medications. We need all of the good ideas we can find, so why do we ignore the approaches that have worked so well in the past?

And precisely what did Albert Szent-Györgyi mean by “moving energy”.

To answer these questions, I have explored many of the so-called “alternative” medicines, especially those that claim that they use energies of one sort or another to stimulate healing. I was, in fact, one of the first academic scientists to investigate these diverse kinds of medicine from a scientific perspective.

In every medical tradition before ours healing was accomplished by moving energy.

~ Albert Szent-Györgyi

Why doesn’t modern medicine study the wisdom from older medical traditions that have been the primary source of health care for generations of people around the world for thousands of years? And what exactly did he mean by “moving energy”?

At the outset, I was told that there was no science to support these healing modalities, and it was not possible to write a book about them. I was suspicious of this attitude and not discouraged by it and decided to see for myself. I soon discovered that there were literally mountains of studies that could explain how these methods achieve their often-remarkable results. In the beginning, these were not studies of the methods themselves, but were studies of energetic processes involved in normal and

abnormal physiology and biochemistry that could help explain how providing certain energetic frequencies to the body might stimulate healing. In recent years the situation has changed dramatically, with many studies now being done directly on the methods themselves, to see how they alter the course of disease or stimulate the repair of injuries. All of the information I found was so rich and fascinating that I eventually published three books and over a hundred articles and book chapters about our emerging understandings of energy and information medicine.

The Healing Voice

In this essay I will explore one traditional therapy that has recently been enriched using modern technologies. In many cultures around the world the human voice, in the form of songs or chants, has long been used for healing. There are two reasons for this: one is that modern technological approaches are simply not readily available in some parts of the world. The other is that these natural methods have proven to work very well. For example, a systematic review published in 2011 indicated that music interventions may have beneficial effects on anxiety, pain, mood, and quality of life in people with cancer (Bradt et al., 2016). And a study published in 2013 in the *Journal of the American Medical Association* found that children admitted to the emergency department who listened to music during routine procedures showed less distress and reported lower pain scores than those who didn't listen to music (Hartling et al., 2013).

The reasons music is so good for us have been documented in many scientific studies. One web page lists a dozen brain-based reasons why music therapies work:

1. Our brains are primed to respond to and process music at an early age.
2. Our bodies entrain to rhythms.
3. Music readily taps into our emotions.
4. Music helps improve our attention skills.
5. Music shares neural circuits with speech.
6. Music enhances learning.
7. Music is a social experience.
8. Music is predictable, structured, and organized—and our brains like it!
9. Music is non-invasive
10. Music is safe
11. Music is motivating.
12. Music is fun (Top 12 brain-based reasons why music as therapy works).

In modern times many people are not well and are searching for relief from a wide variety of disorders. Chronic disease is rampant and extremely costly, and the underlying causes are not always obvious. When Western medicine does not work, people often turn to the alternatives. Some of these alternatives seem strange at first, but when they do things that regular medicine cannot accomplish, attitudes can change quickly. Good news travels fast, and today alternative and integrative medicine are rapidly becoming main-stream.

A fascinating alternative technology recently introduced to the public - aptly named HUSO, an acronym for "human sound" - combines the ancient tradition of sound healing with modern technology. Rituals involving music and sounds have long been recognized as a way of bringing communities together and healing both physical and emotional traumas. This innovative new/old technology had its origin in the highly intuitive mind of an experienced sound healer with an over forty-year history of walking the path of traditional sound healing, using chants, toning and indigenous instruments from Native American, Hawaiian, and Celtic cultures to help many people achieve wellness. She has an intuitive sensitivity to people that enables her to sense what their problem is and the specific sounds that will be beneficial. In accordance with many who follow the path of healer she

has never advertised, and has no website promoting her unique gifts. People learn about her by word-of-mouth and come to her for an incredible range of health issues. She does not perform a medical diagnosis or write prescriptions. Instead, she uses her intuition to produce sounds that stimulate healing. While this may seem odd to some readers, I can report that I have met a number of therapists during my travels through the worlds of complementary and alternative medicine who are incredibly sensitive and intuitive. This has been so fascinating that I have written a paper on the science of intuition, in collaboration with a famous Philadelphia psychiatrist, the late Maurie D. Pressman MD (Oschman and Pressman, 2014).

Some of these “sensitives” are able to teach therapists how to “tune in” to the physiological and emotional issues that are troubling their patients. The person in our story is able to navigate in the world of healing so that she can sense the source of what is going on with a person. She is then able to give people precise knowledge or insights about themselves. She describes scanning the body and checking it at many levels. This works very well, especially for people who can connect with the information they are given – ideas about their diet, their thought patterns, or their environment. In some cases, old thought patterns and habits must be discarded. In other cases, some factor in the environment must be changed. Like all shamanic healers, the creator of the HUSO technology knows that illness happens when the innate foundational organic patterns that keep things balanced become imbalanced. To recreate balance and wellness that pattern has to be returned to its natural healthy state.

She has found that certain sound patterns can break the blockages that prevent cells in the body from communicating with each other, so that cells can “hear” each other again. While this may seem a little strange, modern science of the body is revealing the nature of these cell-to-cell communications, some of which involve sound and light. For example, did you know that every time any of the hundreds of muscles in your body contracts specific sounds are created? (Oster, 1984). And new evidence from 2007 and 2014 suggests that nerves may actually transmit information by sound rather than by electricity, as was thought in the past (see new data showing that nerves transmit information by sound waves rather than by electricity).

The modern “twist” to our story is that our sound healer joined forces with an entrepreneur and his wife - also a sound healer and owner of a wellness center - who both know first-hand how effective sound is in rebalancing body systems and reestablishing wellness. Together they created HUSO, a company dedicated to making sound healing technology available to the world. They began recording the voices of sound healers and processing them in certain proprietary ways to enhance the beneficial effects of this ancient tradition while at the same time making their healing methods available to many more people than they could reach one-on-one. Then they assembled a team to develop a device designed to deliver these unique transformative sounds to the entire body system.

To create the tones used in the HUSO technology, experienced sound healers recorded powerful sacred vocal sounds intended to evoke healing and balance in the majority of people. The recording sessions were usually about 90 minutes in duration. After the recording process was completed, the toning and chanting was electronically separated into specific frequencies. Each individual tone was then manipulated and enhanced by adding different harmonics and waveforms. The results were frequency combinations that produced the most beneficial effects on the body and mind. The creators of HUSO recognized that restoration of healthy balance requires treating the whole body, so they developed pads containing speakers adjacent to resonant lab-grown crystals that could be placed on acupuncture points. The brain receives the tones through headphones, while the whole body does as well. The modulated frequencies from the pads enter the body by creating a subtle piezoelectric effect.

Piezoelectricity refers to "pressure-electricity." When such materials are compressed, they generate electricity, and, conversely, when they are stimulated with oscillating electric fields, they vibrate. This is a characteristic of certain crystalline materials as well as of many of the tissues in the human body (Athenstaedt, 1974; Bystrov et al., 2012). The vibrations stimulating the acupuncture points travel throughout the body because the meridians form a continuous body-wide system that extends to all cells in the body and even into the insides of the cells and nuclei, where the DNA is found. This whole body-wide system is called the living matrix (Oschman and Oschman, 1993):

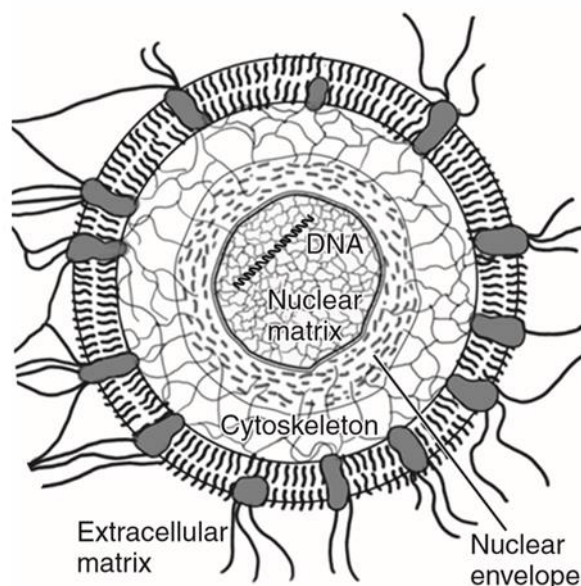


Figure 1: *The living matrix*

The living matrix is referred to as a vibratory continuum, meaning that pulses of energy can propagate from the skin surface and then throughout the whole system, ultimately reaching the interiors of every cell and the nucleus with the genetic material, DNA. The ability of the matrix to sustain vibratory communications was documented by Pienta and Coffey in 1991 (Pienta and Coffey, 1991). Their detailed description:

Cells and intracellular elements are capable of vibrating in a dynamic manner with complex harmonics, the frequency of which can now be measured and analyzed in a quantitative manner by Fourier analysis [and by other methods]. Cellular events such as changes in shape, membrane ruffling, motility, and signal transduction occur within spatial and temporal harmonics that have potential regulatory importance. These vibrations can be altered by growth factors and the process of carcinogenesis. It is important to understand the mechanism by which this vibrational information is transferred directly throughout the cell [and throughout the organism]. From these observations we propose that vibrational information is transferred through a tissue tensegrity matrix which acts as a coupled harmonic oscillator operating as a signal transducing system from the cell periphery to the nucleus and ultimately to the DNA. The vibrational interactions occur through a tissue matrix system consisting of the nuclear matrix, the cytoskeleton, and the extracellular matrix that is poised to couple the biological oscillations of the cell from the peripheral membrane to the DNA through a tensegrity-matrix structure. Tensegrity has been defined as a structural system composed of discontinuous compression elements connected by continuous tension cables, which interact in a dynamic fashion. A tensegrity tissue matrix system allows for specific transfer of information through the cell [and throughout the organism] by direct transmission of vibrational chemo-mechanical energy through harmonic wave motion. [text in brackets introduced by the author]

The relationship between the acupuncture meridians and the living matrix is illustrated below. The vertical meridians are called Jing, and the horizontal meridians are called Luo. Ancient acupuncture theory envisions the Luo meridians as having many branches and can be viewed as ultimately reaching to the surfaces and interiors of all cells in the body.

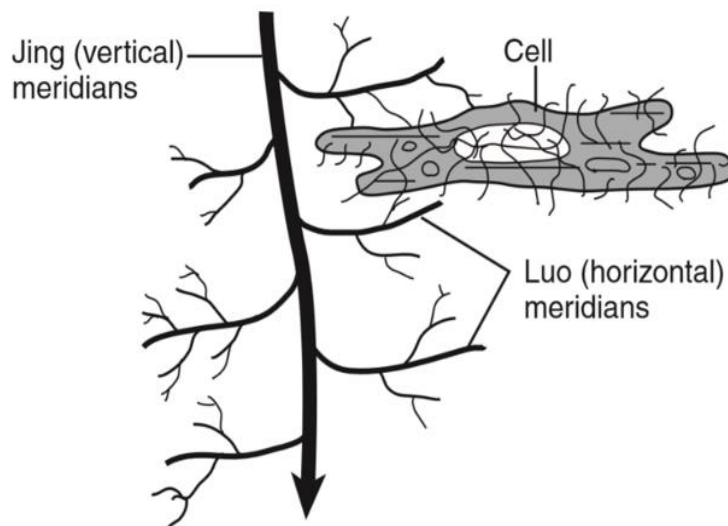


Figure 2: Relationship between the acupuncture meridians and the living matrix

Another report by Alfred Pischinger describes the system as a “ground regulation system” emphasizing its vital roles in physiological regulations (Pischinger, 2007). In addition to the meridians and living vibratory matrix, a new body-wide communication system has recently been discovered. At the end of March 2018 scientists from New York University reported that a ubiquitous type of connective tissue called the interstitium is not composed of “dense” fibers, as was previously thought, but contains interconnected fluid-filled spaces. This newly-discovered “organ” forms a body-wide network of interconnected, fluid-filled compartments supported by a meshwork of strong, flexible proteins. The layer lies beneath the top layer of skin, and is continuous with tissue layers lining the gut, lungs, and urinary systems, as well as those surrounding blood vessels and the fascia covering the muscles (see Researchers find new ‘organ’ missed by gold standard methods for visualizing anatomy & disease, 2018). This is another system capable of conducting sound vibrations throughout the body.

Electromagnetic Sensitivity

In 2015 the French Parliament passed a law to control exposure to electromagnetic fields (EMFs) generated by wireless technologies like, cell phones, computer tablets and Wi-Fi. This new law makes far-reaching changes concerning EMF exposures. As reported in *Le Monde*, Wi-Fi is banned outright for preschoolers. Anyone selling a cell phone to a child aged under 14 must be also able to provide an accessory designed to reduce exposure of radio frequency (RF) radiation to the head. Similarly, any cell phone-related advertising must recommend the use of such an accessory device.

An observation shared by many traditional healers and by many scientists is that our modern environment has become “polluted” with toxic electromagnetic fields that are affecting the health of many people (Pall, 2018). These fields come from cell phones, WI Fi, smart meters, and other electronic technologies. While many people do not seem to be affected by these fields, a growing

portion of the population is developing electromagnetic hypersensitivity, with lots of health consequences. Manufacturers of these devices would very much prefer that the public be unaware of the potential hazards from these devices. The theme of their publicity is that these technologies have no biological effects, and that any evidence to the contrary is flawed. However, it turns out that there are actually thousands of reputable studies from around the world showing the harmful effects of unnatural electromagnetic fields. It is the industry-sponsored studies, showing no effects that are flawed (Pall, 2014). And the governments in some countries are beginning to recognize the problem as a disability and pass laws that will reduce exposure, especially to children who are especially susceptible to Wi Fi because the bones of their skulls are not fully formed.

While we enjoy the convenience of our modern devices, there is a long-term price to pay because of the ways these technologies introduce chaos and disharmony into our delicate physiological regulatory systems. Most physicians are unaware of these influences and do what they have learned to do in medical school: treat the symptoms. Treating the symptoms without addressing the causes does not help and can lead to adverse reactions or side effects from the drugs. The unfortunate patients get worse instead of better, and when they return to their doctor they are often told to see a psychiatrist. Their problems are not mental – they are actually suffering from the well-documented effects of unnatural energy fields. What is dangerous and deceptive about this situation is that many people who do not have obvious symptoms are nonetheless being compromised in subtle ways. These effects can be cumulative, eventually reaching the point where pathology develops. For example, there is real concern that the eventual outcome will be a rise in serious brain and eye cancers (see Cell phone use linked to brain and eye cancers).

Many therapists have noticed the harmful effects of new and increasingly more powerful man-made frequency technologies that are being introduced all of the time. Because the body is not a static field and is constantly affected by ever shifting external as well as internal circumstances, the HUSO team designed their technology to be able to test for the specific tones that best balance a person's body in the present moment. However, due to the fact that the energy of the body is constantly impacted by its environment the tones that work best for you one week may not be the ones you need a few weeks later. This means that the frequencies that are most beneficial for you to use may have to be changed periodically. HUSO was created to make it possible to retest and reconfigure an individual's tone program to reflect those changing needs.

The Science of Resonance

Let us explore the basic physics and biophysics that enables our bodies to respond to our surroundings, including the remarkable beneficial effects of sound and music on our health. In discussing these phenomena, we will take a close look at frequencies and resonances. This article will present some of the conclusions great thinkers have reached about how sounds and other vibrations affect us. In the process, we will learn more about how our bodies work in health and disease. At the same time, we are obtaining new information on how we heal from injuries, both physical and emotional.

A recent article entitled “The Fall and Rise of Resonant Science” brilliantly summarizes the history of the subject (Mortenson, 2010). Concepts and ideas about resonance have been important for thousands of years. Very old teachings on this subject were mixed with religious and mystical philosophies that can be traced back in time on the basis of classical architecture and symbols carved on the walls of ancient temples in every culture. Because of their association with Gnostic and pagan metaphysics, these ideas were long regarded as heretical and therefore considered unworthy and unacceptable for scientific exploration. They also created issues for the church and led to the persecution and deaths of some insightful scientists. An early landmark study of the physics of

resonance by Joseph Louis LeGrange (1736—1813) avoided conflict with religious authorities by focusing on sound and music.

A generation later, Hermann von Helmholtz (1821-1894) wrote extensively on resonance with regard to sound waves, hearing, and the physics of music. He developed the concepts of sympathetic oscillation and sympathetic resonance. This is the mechanism by which oscillations of an object with a particular geometry will engender oscillations in a similar object a distance away, also known as “the tuning fork effect.” From his prestigious position as Chair of Physics at the University of Berlin, Helmholtz taught his students about conservation of energy, resonance, and thermodynamics. One of his best students was Heinrich Hertz (1857-1894) who confirmed Maxwell’s theory of electromagnetism (light and radio waves are composed of the same kind of energy) which came to be known as resonant Hertzian waves. Hence the absorption and emission of electromagnetic fields used in our modern technologies are resonant phenomenon.

Early quantum explorations were focused on thermodynamics and intentionally excluded considerations of resonance. Recent technological developments utilizing resonant phenomena have opened new and very productive investigations of the roles of resonances in biology and medicine. Resonance is the story of how energy is absorbed, radiated and transformed by objects. These “objects” include all biological entities, from molecules to cells to tissues, organs and to the whole body acting as antennas. See *The Human Antenna. Reading the Language of the Universe in the Songs of Our Cells* (Kelly, 2008).

The science of resonance is a huge part of the science of life. All objects in the universe are spinning and vibrating and are therefore parts of the resonant continuum of nature. The beautiful sounds we call music are therefore reminders of our place in nature.

The science of resonance is thus a huge part of the science of life. All objects in the universe are spinning and vibrating and are therefore parts of the resonant continuum of nature. We are constantly surrounded and penetrated by a wide range of frequencies that have their biological effects through resonant interactions. Resonance allows objects of specific shapes and sizes to interact exclusively with very specific frequencies and not others. This specificity allows for extremely precise control of molecular, cellular, and tissue activities whose summation and working together constitute life.

Concerning matter, we have all been wrong. What we have called matter is really energy, whose vibration has been lowered as to be perceivable by the senses. There is no matter. There is only light and sound.
~Albert Einstein

Patient Feedback

All of our delicate regulatory processes go on without us noticing them, until some imbalance takes place. For those with acute or chronic illness or slow healing injuries, feeling fine as we were meant to feel is a rare experience. Any influence that can enable us to relax and de-stress will have profound benefits. This is the feedback from individuals using the HUSO technology. The reports support the idea that it is possible to directly change your biology at the cell and nervous system level using sound. HUSO is a completely new and unique sound system that is achieving results never observed before. The technology is easy to use in the clinic or at home and gives people an individualized whole-body experience of natural therapeutic sounds derived from the human voice. The system is being used successfully in wellness centers and by a growing number of prominent physicians in

various specialties such as chronic illness, anti-aging, psychiatry and neurology. Relaxing with these sounds passing through your body helps with a variety of difficult or otherwise untreatable conditions.

The HUSO sounds are analog rather than digital. Analog tones are the “language of the body” as they travel virtually instantly through the living matrix-connective tissue meridian and water systems described above, reaching into every cell in your body. The analog approach takes sound therapy to a new level. The recorded vocal sounds have been reconfigured and modulated into specific harmonic blends that further increase their effectiveness. The soothing and balancing sounds are delivered through headphones and pads placed on major acupuncture meridian points. Built-in prescreening technology gives individualized or patient-specific programs.

- Preset programs use frequencies that are balancing for everyone
- Balances the autonomic nervous system – shifts the body from a sympathetic to a parasympathetic or relaxed and nurturing state
- Lowers blood pressure, in some instances 10 to 20 points in one session
- Dramatically decreases stress and inflammation
- Greatly increases the effectiveness of other therapies
- Non-invasive
- Calming and balancing
- A very pleasant experience - many go into a restful sleep
- Positive results in both adults and children
- Especially effective for sensitive children with emotional or behavioral issues
- Elicits improvements in neurological and sleep disorders, pain, stress, mental fog, and electromagnetic sensitivity
- Optimizes performance of the immune system in individuals with chronic infections such as Lyme disease, and for those undergoing cancer treatment
- Effects can be felt at the physical, energetic, emotional, and spiritual levels
- Frequencies are derived from voices of experienced sound therapists
- Signals are delivered via earphones and pads on wrists and ankles
- Additional pads can be placed on painful areas
- Subjects report altered awareness, unusual mental clarity, deep relaxation and wellbeing, vibrations, movement, or feelings of heat or coolness in different organs and tissues
- At the end of the session the system provides a few minutes of soothing music, enabling one to rest quietly and integrate the experience

Acknowledgements

The author is indebted to HUSO, Nashville, Tennessee, for supporting the preparation and publication of this article.

References

Athenstaedt, H. 1974. Pyroelectric and piezoelectric properties of vertebrates. *Ann. NY Acad. Sci.*, 238, pp.68-94.

Bradt, J., Dileo, C., Grocke, D. and Magill, D. 2016. Music interventions for improving psychological and physical outcomes in cancer patients. Available from: <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD006911.pub3/abstract>. Accessed 8-14-18.

Bystrov, V.S., Bdkin, I., Heredia, A. and Pullar, R.C. 2012. *Piezoelectricity and ferroelectricity in biomaterials: from proteins to self-assembled peptide nanotubes*. In: Ciofani, C. & Menciassi, A. (Eds.), *Piezoelectric Nanomaterials for Biomedical Appl.*, EM, pp.187-211.

Cell phone use linked to brain and eye cancers. Available from: <https://www.safespaceprotection.com/news-and-info/cell-phone-use-linked-to-brain-tumors/>. Accessed 8-14-18.

Hartling, L., Newton, A.S. and Liang, Y. 2013. Music to reduce pain and distress in the pediatric emergency department: a randomized clinical trial. *JAMA Pediatr.*, 167(9), pp.826-835.

Kelly, R. 2008. *The Human Antenna*. Reading the Language of the Universe in the Songs of Our Cells. Energy Psychology Press, Santa Rosa, CA.

Loui, P., Latel, A., Wong, L.M. and Gaab, N. 2018. The Neurosciences and music. VI. music, sound and health. *Annals of the New York Academy of Sciences*, 1423, pp.435-446.

Mortenson, J. 2010. The fall and rise of resonance science. New Roles for Electric and Magnetic Fields in Processing, Microstructure Evolution, and Performance of Materials in Energy and Biosciences. *Materials Science and Technology*, 108, pp.2864-2874.

New data showing that nerves transmit information by sound waves rather than by electricity. 2007. Available from: <https://www.livescience.com/1357-controversial-idea-nerves-transmit-sound-electricity.html>.

Oschman, J.L. and Oschman, N.H. 1993. Matter, energy, and the living matrix. *Rolf Lines, the news magazine for Rolf Institute members, Boulder, Colorado*, 21(3), pp.55-64.

Oschman, J.L. and Pressman, M.D. 2014. An anatomical, biochemical, biophysical and quantum basis for the unconscious mind. *International Journal of Transpersonal Studies*, 33(1), pp.77-96.

Oster, G. 1984. Muscle sounds. *Scientific American*, 250(3), pp.108-115.

Pall, M. 2014. *How Wi-Fi & other EMFs cause biological harm*. A 2014 presentation given in Oslo, Norway by Prof. Emeritus Martin Pall of Washington State University. Available from: <http://stopsmartmeters.org.uk/prof-martin-pall-how-wifi-other-emfs-cause-biological-harm/>.

Pall, M. 2018. The harmful effects of electromagnetic fields explained. Available from: <https://articles.mercola.com/sites/articles/archive/2017/09/03/electromagnetic-fields-harmful-effects.aspx>. Accessed 8-14-18.

Pienta, K.J. and Coffey, D. 1991. Cellular harmonic information transfer through a tissue tensegrity-matrix system. *Med. Hypotheses*, 34, pp.88-95.

Pischinger, A. 2007. *The extracellular matrix and ground regulation: basis for a holistic biological medicine*. North Atlantic Books, Berkeley, CA.

Potvin, N., Bradt, J. and Ghetti, C. 2018. A theoretical model of resource-oriented music therapy with informal hospice caregivers during pre-bereavement. *Journal of Music Therapy*, 55(1), pp.27-61.

Researchers find new 'organ' missed by gold standard methods for visualizing anatomy & disease. Available from: <https://www.prnewswire.com/news-releases/researchers-find-new-organ-missed-by-gold-standard-methods-for-visualizing-anatomy-and-disease-300620206.html>. Accessed 8-14-18.

Szent-Györgyi, A. 1960. Submolecular biology. *Radiation Research Supplement*, 2, pp.4-18.

The American Music Therapy Association (AMTA). Available from: <https://www.musictherapy.org/>.

The Music for Healing and Transition Program (MHTP). Available from: <http://www.mhtp.org/>.

Top 12 brain-based reasons why music as therapy works. Available from: <https://blog.brainhq.com/2010/04/22/top-12-brain-based-reasons-why-music-as-therapy-works/>. Accessed at 7/28/18.

Yurkovich, J., Burns, D.S. and Harrison, T. 2018. The effect of music therapy entrainment on physiologic measures of infants in the cardiac intensive care unit: single case withdrawal pilot study. *Journal of Music Therapy*, 55(1), pp.62-82.