



Sound

“The universe is in a continuous state of vibratory motion. Rhythmic patterns appear throughout the universe, from the very small to the very large. Atoms are patterns of probability waves, molecules are vibrating structures, and living organisms manifest multiple, interdependent patterns of fluctuations. “Plants, animals, and human beings undergo cycles of activity and rest and all their physiologic functions oscillate in rhythms of various periodicities.”

Fritjof Capra in “The Tao of Physics”

It is amazing how our lives are affected by sound. Just as all the other great scientific principles such as math, gravity, electricity and light are now taken for granted, so is sound. Although many have contributed to the development of our knowledge about sound, one of the first pioneers to greatly expand our knowledge was Pythagoras. Although Pythagoras is primarily known for his contributions to mathematics and geometric theorems, his major contribution to music theory was the discovery of mathematical relationships, the ratios between the harmonic intervals of the sounds of the planet’s orbits.

Candice Pert Ph.D., a medical researcher, who discovered the “endorphin receptor”, stated in her book that sound opens the cell receptors faster than anything else does. The book she wrote is entitled “Everything You Need to Feel Good”.

Our daily lives are filled with frequencies; frequencies of light, sound and electromagnetic waves. Sound is the first human experience we perceive while in the womb; the first human sense we develop. Every sound frequency has an effect on our body; it can be beneficial to us or it can harm us.

As far as technology and sound, almost everyone can access their simple components and begin the first step in altering the vibratory signature of our cells which is also known as “The Journey of Self Healing”. Sound researchers and composers, from the beginning of time, have had musical compositions and chants that heal. Becoming aware of the impact we have on the symphony of life is the first step of conscious creation.

Research into binaural beats and brain entrainment has been pursued for over thirty years with amazing success in the areas of stress relief, pain management and peak performance both mentally

and physically. An excellent description of how binaural beats work, their effects and benefits, read [THIS ARTICLE](#). While we do not recommend using binaural beats with vibroacoustic therapy, the effectiveness of combining them with VAT is something that will require more research.

In Germany, doctors prescribe CD's for common ailments and are promptly reimbursed by their insurance carriers; a fact dreaded by the pharmaceutical companies. Most research funds are allocated directly to pharmaceuticals and bypass the research on the root of core molecular change that occurs with the use of sound.

NASA has long been researching the uses of sound for civilian, military and space applications. Radar became functional in 1934 using the principles of sound reflection off objects. NASA uses sound generators and vibroacoustic delivery systems to keep our astronauts healthy in space.

It is one of the few research facilities where funding into sound research is abundant.

Changing the molecular structure of the water we drink and the liquid in our bodies is how sound can have the immediate results on the body's cells. The effects of sound on water is another field of great potential considering the majority of all living entities, human, plant and animals, are mostly water. Even the beloved planet we live on is largely composed of and operates on water. Many sound programs are available free on the internet as well as the effect of each frequency on water and biology. The list of companies that make healing music and tuning forks are endless and easily accessible to anyone with internet access.

Princeton University graduate Joel Sternheiner, discovered the mechanism that calculates how plants respond to the stimulation of sound waves. Sound affects the amino acids and protein molecules in all living things. Produce grows more than twice as fast without any viruses when played a simple sound frequency for less than one minute. The implications of this discovery on the quality of our food supply is hard to imagine; no more chemicals and the elimination of famine?

Sound Waves

Sounds are waves, which can be measured as frequency. Frequency is measured in Hertz (Hz) units; it's the number of waves that pass by per second. An "A" note on a violin string, for example, vibrates at about 440 Hz (440 vibrations per second).

The ancients understood that sound can help us alter our consciousness and unleash mind powers that are normally not accessible to us in ordinary consciousness. Anthropologists who have studied ancient shamanic rituals have found that shamans, for example, have long used the rhythmic sounds of drum beats to induce altered states of consciousness. Scientists have found that specific drum beat frequencies can produce theta brain waves, which match meditative states.

We can enhance our creativity, intuitive insights, memory, intelligence and health by altering our brain waves.

The recognized brain wave ranges:

Gamma (between 25 and 100 Hz, though 40 Hz is typical) is considered the highest possible state of focus

Beta (14-30 Hz) is present in normal waking consciousness;

Alpha (7-14 Hz) in states of relaxation;

Theta (4-7 Hz) in meditative states; and the slowest,

Delta (0.5-4 Hz) in deep sleep and profound meditative states.

Supplemental Information: Brain Waves

Gamma waves are the fastest of the brainwave frequencies and signify the highest state of focus possible. They are associated with peak concentration and the brain's optimal frequency for cognitive functioning. Nobel prize winning scientist, Sir Francis Crick believes that the 40Hz frequency may be the key to the act of cognition.



Beta waves range between 13-40 HZ You are wide-awake, alert. Your mind is sharp, focused. It makes connections quickly, easily, and you're primed to do work that requires your full attention. In the Beta state, neurons fire abundantly, in rapid succession, helping you achieve peak performance. New ideas and solutions to problems flash like lightning into your mind.



The Alpha state is an intensely pleasurable and relaxed state of consciousness essential to stress reduction and high levels of creativity. Artists, musicians and athletes are prolific alpha producers; so are intuitive persons, and so was Albert Einstein. Alpha researcher, Joe Kamiya says, "Its pleasure may come from the fact that alpha "represents something like letting go of anxieties."



Theta is one of the more elusive and extraordinary brain states you can explore. It is also known as the twilight state which you normally only experience fleetingly upon waking, or drifting off to sleep. Theta is the brain state where magic happens in the crucible of your own neurological activity. But for most, being able to enter the dreamlike theta state without falling asleep takes meditation practice.



In the **Delta state** you are sound asleep. Delta waves are the slowest of all five brainwave frequencies and range between 0-4 Hz. Slow Wave Sleep or SWS, is the deepest of sleep states and it plays a vital role in health and well-being. During this phase of the sleep cycle, the brain begins producing very slow, large Delta waves. Even if your lifestyle doesn't allow for the luxury of a full eight hours of sleep, a few hours of Delta waves will trick your brain into thinking it's had all the restorative sleep it needs.



Brain State information courtesy of Kelly Howell, BrainSync.com

The most recently researched brain frequency is Gamma, which is the fastest, about 30.0 Hz and higher. You can use sound to positively alter your brain wave frequencies and produce specific desired results.

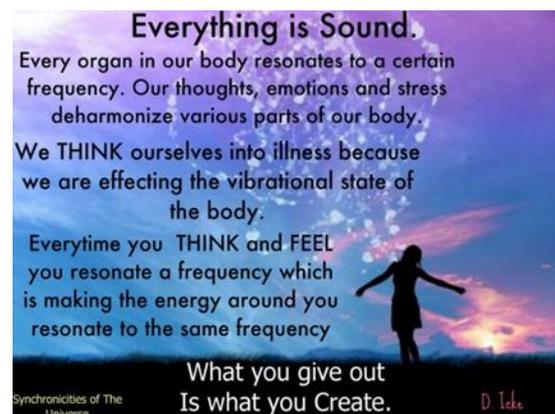
The theta mind state, for example, is associated with many extraordinary and even super human abilities. Shamans and other people who live close to the earth, such as the Aborigines of Australia, have long been known for possessing super human powers. According to stories passed on by shamans of the Southwest, Sitting Bull and Geronimo used mind powers to time travel, walk without leaving foot-prints, communicate with plants and discover miraculous cures.

Studies have demonstrated that when people listen to sounds that are in the theta range (4.0-7.0 Hz), they enter deep meditative states and tend to have greater visualizations, inspiration and reprogramming abilities than when they are in the ordinary waking state of beta. While meditative states, such as theta, are enormously valuable, the higher frequency states, such as beta/gamma, also provide their own benefits.

If you want to enhance your mind abilities while you are working on your computer or doing analytical work that requires high-alert states, you can benefit from listening to beta/gamma frequencies. (Gamma is at the low end of the frequencies used for vibroacoustic therapy).

These higher frequency sound waves are associated with bursts of insights, high-level information processing and certain cognitive activities, such as analysis and math. We all can learn how to use the power of sound to change our brain waves and enhance our lives in specific ways.

There are many ways to alter your brain waves. You can, for example, tune into the natural sounds of nature during a vision quest or listen to brain entrainment audios. It is easy and practical for anyone to positively influence their brain waves in extraordinary ways once we expand our awareness of the options available to us.



Comparing Sound Therapy with Music Therapy

Music therapy is the relationship between therapist and patient.

Sound therapy is about the application of sound/ low level frequencies, directly to the patient. That is one of the reasons sound therapy can be effective even with elderly clients who have advanced Alzheimer's disease or children with ADHD. The physical response is independent of any emotion/psychological stimulus.

Resonance

Every system, organ and cell in the body has a natural vibratory rate. This is called its resonance. A great deal of research has gone into determining the optimum resonance of the various parts of the body, and more has gone into calculating what frequencies can be used to restore a system to its optimum resonance. That is the basis of what we are doing in vibroacoustic therapy.

Entrainment

This occurs when two or more frequencies synchronize to a dominant rhythm. They “entrain”. A good example is shown here on You Tube.

(URL: <https://www.youtube.com/watch?v=5v5eBf2KwF8>)

While part of the goal of vibroacoustic therapy is to get the human body to resonate at a healthier rate, and we use low frequencies to do that, we do not necessarily want the body or systems to become “entrained” with a particular frequency, because while one part of the body may respond positively to a particular frequency, another may not. That is why VAT programs are not constant. More will be discussed about this later in the course.

Here is an image showing what frequencies at which different organs resonate. This will explain why we do not want to entrain the whole body to 40 hz. or whichever other frequency we are using in therapy. Each organ has its own natural resonating frequency and we do not want to interfere with that.

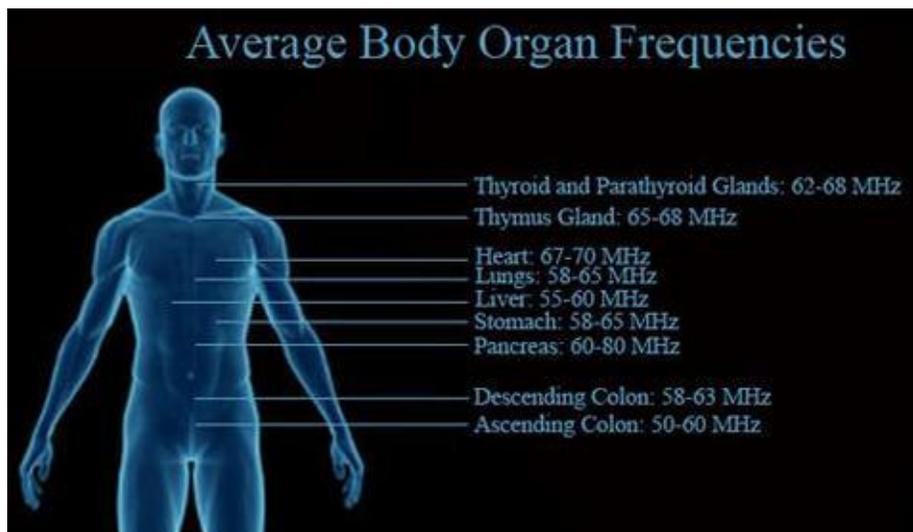


Image courtesy www.ShepherdsHeart.Life

Frequencies

Ranges:

Ultrasound:	10 Gigahertz – rapidly absorbed in fluid media
Radio waves:	12 KHz to 100 MegaHz
Average Hearing range:	20 to 20,000 hz
Normal speech:	500 to 2,000 hz
Harp:	32 to 3136 Hz
Chakras:	100 to 2000 hz – subharmonics of original frequencies?
VAT:	30 to 120 Hz (primarily 30 to 100 Hz)
Infrasound:	less than 20 Hz
Schumann resonating frequency:	7.83 Hz – earth’s electrical field

One Hertz is exactly equal to one cycle per second, but one hertz is a very small unit, so prefixes are used that denote the order of magnitude of the waveform, such as kHz, MHz, and even GHz.

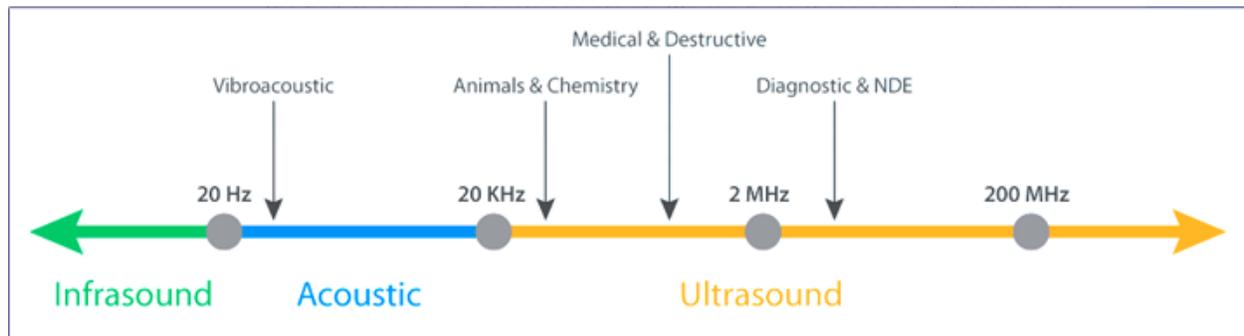
Prefix	Definition	Written as	Time Period
Kilo	Thousand	kHz	1mS
Mega	Million	MHz	1uS
Giga	Billion	GHz	1nS
Tera	Trillion	THz	1pS

The human ear can hear approximately 20,000 audible frequencies. The range varies for each individual depending of their health and age. Frequencies make hearing possible for both humans and animals. For example, dolphins can hear frequencies a high as 180,000 Hz in their communication system and dogs can hear frequencies above human hearing. The piano has its lowest note as 24 Hz and its highest note as 4,186 Hz. The sound frequencies of the spheres (the earth, sun and other planets in our solar system) as they rotate in our planetary system are so low that they have to be raised 20 to 30 octaves to be heard by the human ear.

[The Schumann frequency](#) is 7.83 Hz and is known as the earth’s resonating frequency. 7.83 Hz also straddles the alpha and theta brainwave frequencies in the human brain. Certain scientific experiments have shown that tuning into 7.83Hz helps people experience benefits like enhanced learning/memory, body rejuvenation, balance, improved stress tolerance, anti-jetlag, anti-mind control, and grounding. On the other hand, experiments were done where the Schumann resonance was removed from individuals’ environments. These subjects reported migraine headaches, emotional distress, and other health problems. As a result, scientists at NASA installed Schumann resonators into the space shuttles. These devices generated a pulsing 7.8 Hz background signal to maintain optimum health for the shuttle’s astronauts during space maneuvers.

It must be remembered that, while sound can be very healing, (depending on the frequencies) it also can do damage. Remember that vibrations caused by the wind were responsible for the collapse of the Tacoma Narrows Bridge in 1940. High frequencies can be used to destroy

things as witnessed in the old Memorex television commercial in which Ella Fitzgerald shattered a glass with her voice by singing a high note.



The use of sound in healing has become a proven tool because of its unique properties. Sound travels four times faster through water than it travels through air. The body is 60 to 80% water and is a perfect receptor for sound. So, when you apply the frequencies directly on the body through the vibroacoustic device, you introduce a sound wave that travels through the meridians system, the superhighway of your body's energy system, to exactly where it is needed most.

Because sound has the ability to by-pass our emotions, it can be used independently of music for healing.

Of course, sound in its most sublime form is music, and in that form, it has been used for healing throughout time. Experiments have shown that plants exposed to Western or Indian classical music thrive and cows who hear soothing music produce more milk. But just as pure frequencies can be beneficial or harmful, so too can music. Experiments have also shown that rats exposed to hard heavy metal rock music become aggressive, and plants exposed to it often wither and die.

Today's Sound Medicine

- Ultrasound – diagnostic
- Ultrasound – Therapeutic, pain, tumors
- Lithotripsy – kidney and gall stones
- Sonic scaling – dentistry

Ultrasound

Ultra Sound Therapy is used and is generally accepted in hospitals, by doctors and physical therapists for diagnostics and for pain management on various muscles and aching backs. Ultrasound basically means anything above the frequencies of audible sound, and includes anything over 20,000 Hz. Frequencies used for medical diagnostic ultrasound scans extend to 10 MHz and beyond. Generally speaking therapeutic ultrasound ranges between 1 and 3 MHz.

One of the most amazing uses of sound to appear in the last decade is the use of ultrasound for [brain surgery](#) for essential tremors. “Focused ultrasound guided by MRI provides a technique that makes incisionless surgery feasible. While sound waves can target and ablate deep within the brain through an intact skull, MR imaging provides the necessary thermal feedback.” You can read much more about the approved uses and results with this technique [HERE](#) and see video of the procedure [HERE](#).

Lithotripsy

This is a procedure to dissolve or break up kidney or bladder stones. Sound waves, spread over a very large frequency range from about 100 kHz to 1 MHz, guided by x-ray or ultrasound, pass through the body until they hit the kidney stones, breaking them up into tiny pieces.

Sonic Scaling

Used by dentists and in personal machines by individuals, the frequencies generated are in the range of 25,000 to 42,000 Hz.

Cymatics (excerpt from “Cymatherapy” by Chris Gibbs)

[Cymatherapy](#) is a form of **targeted** vibroacoustic therapy that integrates the principles of modern physics with traditional and modern forms of medicine. The premise is that, when injury and disease occur within the body, affected structures such as cells, tissues and organs can become damaged and lose their structural integrity. When exposed to sound and its structuring interactions, there is a potential to gently encourage the reorganization of these damaged structures, leading to a quicker healing process and recovery. Resonant sound frequencies may also have the therapeutic potential to stimulate nerves in a way that signals the brain to initiate processes of repair, growth and regeneration. The video linked [HERE](#) is a somewhat extreme demonstration of cymatics – but great fun.

Cymatherapy uses specialized sound and magnetic energy frequencies designed to interact with the body’s many energy fields to encourage therapeutic structuring and regulation. By using this approach, Cymatherapy has the potential to assist in overcoming the disturbed frequencies that can occur during times of stress, injury and illness. Therefore, the therapeutic application of Cymatherapy to the body is somewhat like the process of retuning a piano.

Cymatherapy is currently being applied as a complementary therapy for supporting many medical and non-medical illnesses. Due to the subtle but penetrating effects of sound, Cymatherapy can be applied deeply to generate resonance for supporting physical, mental and energetic functioning. The frequencies being used also appear to enter the body through the subtle energetic systems often associated and supported with traditional forms of Eastern medicine, such as acupuncture meridians and the chakras.

Cymatherapy can also be applied as an individual therapy or combined with other forms of complementary therapy, which can assist by enhancing and sustaining therapeutic outcomes

Soundscapes

Some of the earliest scientific indications that sound has an important structuring effect upon substance were discovered through the development of what are known as soundscapes.



Soundscapes are visual patterns created in substances when they are exposed to the vibration of specific sound frequencies. Some of the earliest examples of soundscapes, known as '[Chladni figures](#)', were created by musician and physicist [Ernst Chladni](#) around 1780(4). He discovered that vivid symmetrical patterns and shapes could be created in sand, when placing it upon a square glass or metal plate and running a violin bow across the plate's outer edge. The vibration of the metal plate resulted in the formation of a subsequent sand pattern. By adjusting the bow to play different musical notes or sound frequencies, Chladni found he could create an entirely different pattern or shape within the sand that was on the plate. What is important about these early soundscapes is that the pattern created by each specific sound vibration had an exact geometrical symmetry and therefore could be expressed as a mathematical formula. In other words, certain sound frequency vibrations were now known to influence substance in a structurally specific and predictable way.

One of the most inspiring and influential soundscape researchers of all time was Swiss medical doctor and philosopher of science [Hans Jenny](#) (1904-1972) (2). Dr Jenny's work was greatly inspired by the earlier work of Chladni, while providing a vast array of more sophisticated and updated illustrations. Instead of using a glass or metal plate, Dr Jenny used surfaces made of various materials including rubber, stretched paper and steel.

Crystal oscillators were also adhered to the underside of these surface membranes. Electrical stimulation was then applied to the crystal oscillators to generate audible sound vibrations at various frequencies. Each of these frequencies vibrated the membrane and whatever substance was placed upon it. A wide variety of individual and combined substances were tested, such as salts, molten plastics, metals, oils and water.

Specific audible sound frequency vibrations produced symmetrical patterns within the materials that were exposed to them. However, Jenny's experiments went much further than Chladni's to create more complex patterns in substances and using a wider variety of sound frequencies. Another important finding was that regulatory movement as well as structuring of substances could be sustained when exposed to certain sound frequency vibrations.

However, one of the most important observations was that many of the substances used in Jenny's experiments were the same or similar to those contained within the body, including its composite water, salts and oils. Therefore, it is not hard to propose that audible sound vibrations can have a structuring and regulating effect upon the movement of these substances when sound is transmitted through the body. It is also important to realize that sound can penetrate through most substances and even faster through dense structures and water than through air. This is important because the body is predominantly made up of around sixty percent water and a large amount of dense tissue, making it a good medium for interacting with sound and its vibrational effects.

For a great overall demonstration of the effects of sound on physical matter, watch this [video](#).

Dr. Sir Peter Guy Manning, M.D. of England, used the research of Hans Jenny to create Balancing Codes – sound made visible at an almost inaudible level – 700 plus codes, each have 5 frequencies, to regenerate cells by creating harmonics and sub-harmonics in the body.

Information there: <http://www.spiritofmaat.com/archive/mar1/cymatics.htm>

For an interesting article by Jeff Volk on this topic, go to <http://cymaticsource.com/pdf/QuestersArticle.pdf>

The work of Manning was the basis of today's ongoing work by [Dr. June Leslie Wieder](#), a psychologist, chiropractor and massage therapist who has done research on the resonant frequencies of the spine. She bases her research on the law of resonance that states that anything that vibrates reacts sympathetically to its harmonic vibrations. Her research has given her what she believes to be the optimal frequencies for each of the 24 vertebrae. She believes that by placing the correct resonance on each vertebra, the bone will reset to its natural tone, correcting any subluxation and creating harmonic waves that help to balance the system, which controls the breath, heart rate, digestion and other physiological activities. Dr. Wieder uses mostly tuning forks.

Counter Frequencies or BioAcoustics

Some sound therapists feel that it is possible to counteract a harmful or annoying frequency. A controversial proponent of this is [Sharry Edwards](#), who claimed to be able to cancel out the frequency-equivalents of toxins, pathogens and other undesirable frequency-equivalents. While there may be some validity to this argument – certainly we often see “white noise” being used to counter or mask annoying sounds - the idea that a specific frequency can actually cancel a pathogen, toxin or a stressed frequency has not been proven. In fact, some people have claimed that Sharry Edwards “BioAcoustic” treatments have worsened conditions attributed to pathogens. To discuss the validity of this theory and modality is far beyond the scope of this course, but is something about which you should be aware if someone tries to compare vibroacoustics with “bioacoustics”. This is slightly reminiscent of the work of Royal Raymond Rife....

Distinguishing between RIFE technology and VAT

Again, it is beyond the scope of this course to get into the pros and cons of RIFE technology and whether or not cancer has been cured using it, but it is a frequency-based treatment and thus we mention it as something with which you should be familiar. The article linked here: <http://www.wanttoknow.info/cancercuresroyalrife> is actually a good summary of RIFE's life and work, so if you have interest in it, perhaps start here.

For the purposes of comparing to vibroacoustic therapy, you should know that Rife's instruments used the principle of harmonics. An example pointed out in the above article is that of an intense musical note shattering a wine glass: the molecules of the glass are already oscillating at some harmonic (multiple) of that musical note; they are in resonance with it. Because everything else has a different resonant frequency, nothing but the glass is destroyed. There are literally hundreds

of trillions of different resonant frequencies, and every species and molecule has its very own. “It took Rife many years until he discovered the frequencies which specifically destroyed herpes, polio, spinal meningitis, tetanus, influenza, and an immense number of other dangerous disease organisms.”

Bottom line – Vibroacoustic therapy utilizes mainly low frequencies in the range of 30 Hz to about 100 or 120 Hz. RIFE frequencies are much higher, (in the Ultrasound range) administered via wands, cylinders or stick-on electrodes containing transducers capable of conducting a wide range of frequencies and their harmonics.

VIBROACOUSTIC THERAPY

In his famous equation, $E=mc^2$, Einstein showed that sound, frequency and vibration are energy, and energy is matter.

Everything on this earth is made up of energized moving particles of vibrating energy. To change from matter to energy is simply a change in vibration. To truly understand vibroacoustics, it is necessary to stop looking at objects, including people, as solid form. Start to imagine everything as small vibrating particles of intelligently organized resonating waveforms and particles with a fundamental frequency.

On a microscopic level, our bodies are made up of these small pulsating particles of matter. Each organ is a group of particles that have bonded together and are vibrating at the same frequency.

The group of particles from the liver will have a different vibratory rate from those in the kidney. So each organ has its own vibration and sound frequency.

These organs respond as a group to particular sound and color vibrations. The various systems in the body also respond to sound as do the emotional, mental and spiritual bodies. When the frequency of any cell deviates from the normal, it will have an effect on the whole organ and consequently the whole body. A state of pathology sets in, and the tissue is said to be diseased.

All healing interventions must influence the body by somehow altering its frequency resonance. Healing has often been affected by such modalities as sound, light, music therapy and various other energy medicine techniques that alter the frequency patterns of an individual.

Sound can change the arrangement of these particles of matter and vibroacoustic therapy harnesses the healing abilities of sound and acupuncture. Because sound can penetrate much deeper into the body, and can actually change the vibration of the particles, it is more effective than needles or just touch alone.

Vibration is our first memory

Each species has receptors for perceiving vibrations and sound. Perception of vibrations maybe the most important life-saving property that any living organism has.

Vibrations can be perceived in gaseous substances, fluids and in solid matter. Mammals have several sensory organs that are used for perceiving vibrations. The organs that are most specialized for sound perceptions are our ears, and for perception of vibrations in solids there are senses of touch. All of them are important for the instinct decision one makes if an approaching object is threatening or safe. This inherent process results in our actions and behavior. Shall we react by fleeing, by fighting for our life, or alternatively, show trust and acceptance?

A new-born baby is already armed with the defense reflexes from the senses of touch and sound. The startle effect is rooted in our instincts; it is memory inherited in our cells. This is memory of a totally different dimension than the learned behavior changes we have assimilated during our

growing up and aging processes. Many of the assimilated social behavior patterns hinder us from applying the life supporting reflexes that exist in our cellular memory.

The pregnant mothers' bodies are constantly producing sound vibrations of different character and intensity. However, they can all be defined as low sound frequencies. The adult body does not forget the positive effect of the life-supporting sound vibrations in the uterus. The memories remain in us on a cellular level. Evoking these memories can contribute to re-establish the harmonic state of a human being in a positive developmental process.

The water in our bodies

Our bodies consist mainly of water, and can – acoustically - be compared with a water-filled sack. Sound transferred to any single point of the sack will be transferred by the watery substances to any part of the body – and will give mechanical massage to virtually every cell of the body.

Even the brain will receive vibrations when we apply sound along the spine. (That is why we are hesitant to recommend mechanical vibration technology like T-Zone or such. The act of standing on a mechanically vibrating plate sends vibrations directly up the spine, offering no protection to the brain.)

What happens to the body during a VAT session?

VAT is based on the principle that all matter, including the human body, vibrates all the time, at various frequencies. When the frequency from a sound outside the body interacts with the body's frequency, changes occur.

Originally, audio speakers or subwoofers were used for vibroacoustics. However, because they function by creating sound waves in the air, the volume had to be very high for the sound emanating from them to affect the vibrations in the body. Transducers function by creating a physical vibration in anything connected to them, so the bed, cushion or chair to which they are connected essentially act as direct transduction of the frequencies to the body.

VAT is direct communication with the nervous system, bones, muscle tissue and fluids of our bodies. As each sound wave “washes” into the body, it is transferred as vibrations to these components of the body.

The body absorbs about 2 % of the energy which is transferred to the body. Muscles and nervous tissue react to the massive and synchronous stimuli. Sound moves about 4.5 times faster in water than in air, and thus the sound stimulation is affecting the whole body simultaneously. Because the distance from the transducers in a VAT system to the skin surface is virtually on-existent, there is no other instrument which can synchronize nervous impulses in the body to the same degree.

Since all the molecules inside the body have been put in motion, it is like the body is receiving an internal massage. It is because of this that we can “reach” with the sound vibrations the nerves, glands, lungs, heart and deep-lying blood vessels that we cannot touch in traditional massage.

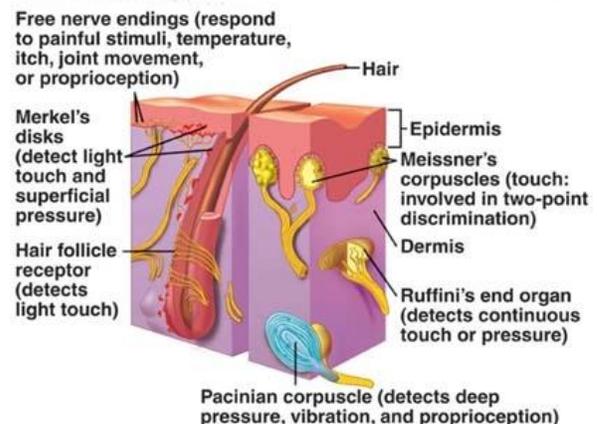
Since transducers are primarily designed to create physical vibration rather than move sound waves through the air like speakers; there is a more efficient transfer of pure frequencies into the body. Transducers can allow for the extraneous sound to be quieter than with speakers. Speakers require the volume to be increased greatly in order to experience anywhere near the same level of vibration or energy transfer.

The energy which is entering the body influences certain transmitter substances. These substances are important factors in the reactions we can observe as the result of the therapy. The low frequency vibrations will - among other reactions - often make the client drowsy. This can be used directly as a treatment for insomnia.

The body absorbs energy from the sound waves. This energy absorption gives heat to muscle tissue. The mechanical vibrations increase the blood flow in the extremities.

When the various frequencies of sound and/or music are converted to vibration, which is introduced to the human body, it can be utilized to bring the body into a state of healthy resonance. As each sound wave “washes” into the body, it affects the entire body because, as the waves are sent throughout all the components – cells, organs, systems, their molecules are reacting and communicating with each other. As this communication occurs, harmony and a healthy resonance are restored in the body.

In order for the body to receive and be able to understand and respond to the vibrations, specific frequencies are used to obtain a specific effect. This is pure vibroacoustic therapy, or VAT, and it is conducted by a trained therapist.



By delivering these sound frequencies through the body directly, an entirely different system of the body – spinal cord and areas of the brainstem and brain – are brought into play, with the possibility of direct cellular stimulation.

VAT and pain relief

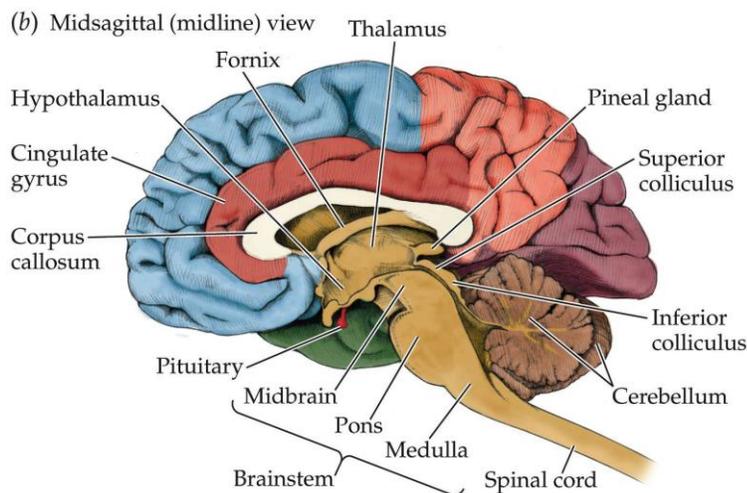
Melzak's pain theories say that when the large diameter sensory fibers interact with impulse transmission, they modulate pain processing. The mechanism involves stimulation of the Pacinian corpuscles, which are large vibration sensitive mechanoreceptors located throughout subcutaneous tissue, connective tissues and around visceral organs and joints. When the shape of the Pacinian corpuscle is deformed due to pressure, it transduces the mechanical energy of pressure into neuroelectric energy. Stimulation of these deep pressure receptors at frequencies in the range of 60 to 600 Hz (Chesky 1996) creates neural inhibition of pain.

That is one way pain is alleviated by VAT. Another way is via what Dr. Herbert Benson called the “relaxation response”. Dr. George Patrick of the National Institutes of Health in the U.S. says that the relaxation response is triggered by VAT. When a person is in a relaxed state with brain

wave patterns in low alpha/theta rhythms, beta-endorphins are released, producing an analgesic effect.

Another effect of vibratory stimulation is a depression of excitability of motor neurons innervating the antagonistic muscle via reciprocal inhibition. Studies have shown that forty-five minutes of vibratory stimulation can cause redness of the skin and warmth in that area. The best frequencies to use are 50 to 200 Hz, applied with moderate pressure. Sixty-nine percent of patients reported a reduction of pain during moderate-pressure vibratory stimulation for 25 to 45 minutes in the affected muscle or tendon. The optimal length of a VAT session for this purpose can fall anywhere between 10 to 45 minutes.

Other effects of VAT



Biological Psychology 6e, Figure 2.12 (Part 2)

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Blood pressure, heart, respiratory and metabolic rates are decreased. There is speculation that there is a difference in the way healthy tissues respond to a frequency in contrast to unhealthy tissues. And, each of the energy meridians can be vibrated or stimulated by sound, thereby affecting energetic flow, and just as acupuncture is said to open up the pathways, it is believed that VAT can work the same way.

Direct stimulation of living cellular tissue using sound frequency vibration has shown marked cellular organelle response with a

corresponding measurable increase of cellular metabolism and therefore a possible mobilization of a cellular healing response. Since the human body is over 70% water and since sound travels 5 times more efficiently through water than through air, sound frequency stimulation directly into the body is a highly efficient means for total body stimulation, especially at the cellular level.

Sound frequency pulse waves played directly into the body have a profound effect on the nervous system. The entire posterior 1/3 of the spinal cord consists of nerve tract bundles whose sole purpose is the transmission of vibration sense data to the Brain Stem, Cerebellum, Pons, Medulla, Hippocampus/ Limbic System (emotional processing areas) and various areas of the Cerebral Cortex.

By stimulating the body via sound, we are changing the production of stress hormones (Beta-Endorphin, ACTH and Cortisol) in the body in a positive way. While the experience of VAT is perceived consciously as relaxing, the primary physical effect of VAT is that it adds subtle mechanical stress to our organism. Compare it to a workout – running, or cycling. Just as we add stress to our body when we are working out, the effect on the body afterward is a feeling of

relaxation and well-being. That's why people sometimes experience a "runners' high" after a VAT session.

During a VAT session, the brain starts producing stress hormones. The stress-hormone peak comes after about 15 minutes. This is one of the reasons it is so good for people who are unable to exercise due to physical limitation, or who are confined to beds or wheelchairs. The stimulation of VAT substitutes for the physical movement that creates these hormones. This is also powerful for those who are neurologically challenged – from a stroke, Parkinson's disease or any number of similar afflictions.

This is one of the ways that VAT contributes to the cell metabolism process of anyone who uses it. It provides drugless positive hormonal substitute for physical exercise.

These hormones are analgesic and anti-inflammatory, spasm and metabolic stabilizing agents. VAT seems to be a catalyst for positive stress-hormone reactions.

This is one of the reasons that certain conditions are best treated by the specific frequencies used in pure VAT. Unlike treatments with music that utilize numerous frequencies, pure VAT is much more predictable after the introduction phase. Pure VAT is independent of binaural reactions to sound and music (VAM), so it is unnecessary even to use headphones or to even hear the vibrations. We circumvent the audio process and access the physical reactions directly, transmitting sound vibrations to other sensory stimuli of our organism, similar to the reactions of touch and massage, but from within.

Single frequencies or music?

Because our bodies are so sensitive to the frequency of these vibrations, some VAT practitioners, including Olav Skille, (who is considered the grandfather of vibroacoustics) believe that it is best to use only single frequencies at one time. In one of his papers he says, "I refined the concept of VAT to the use of one, amplitude modulated, and sinusoidal tone in order to have exact control over the stimulus that is transferred to the human organism. The body can, in fact, function as a loudspeaker membrane."

Not all vibroacoustic therapists feel this way, preferring instead to mix frequencies with music or binaural beats. While much of the research done by Skille in Norway and people like Dr. Heidi Ahonen at Wilfred Laurier in Canada have focused on singular frequencies, others like Dr. Jeffrey Thompson in California use music which of course is comprised of several frequencies. Binaural beats add another dimension to the music that could be used.

Much will depend on the emotional state of the person experiencing VAT, although we do know that for Alzheimer's patients, it is difficult to get them to focus on just the vibroacoustic frequencies. Thus, music that is familiar is very helpful in helping them connect to the present.

According to some VAT "purists", vibroacoustic therapy using music has the potential to be somewhat confusing to the body, not only because there are several different frequencies but also

because emotions are attached to it. To get around that difficulty, those of us who use VAM (vibroacoustic therapy with music) use that which has no melody, no beat; it is just esoteric.

Popular composers of this type of music include Steven Halpern, but recordings by many so called “new age” artists are also good.

When using VAHT (Vibroacoustic Harp Therapy) Kate Kunkel composes esoteric music based on the client’s feedback, but it too is not familiar, and should not evoke emotions because there would be no memory to it. However, the founder of VAHT, Sarajane Williams, does often use sheet music when she does VAHT.

Tony Wigrams wrote his PhD thesis primarily based on a mixture of music and frequencies. (A copy of Wigrams’ thesis is included in this course.) He named this mixture “Vibroacoustic Music” (VAM) and most therapists around the world are now using VAM or pure musical stimuli in their work.

However, it is felt that, to make the best therapeutic use of vibroacoustics, it is important to understand the effect that specific frequencies have on particular systems of the body. For serious physical conditions, this is considered the best place to start any treatment. Section 3 of this course covers many conditions and recommends which frequencies work best to treat them.

In Summary

There are now more than 35 years of research and development of vibroacoustic therapy, and the treatment is being used in hospitals, psychiatric hospitals, nursing homes, health clubs, alternative and complementary clinics and private therapy studios in Finland, England, Germany, Norway, Estonia, Denmark, Russia, Japan, Ecuador, Mexico, China, Canada, the United States and elsewhere.

VAT equipment is also now approved as a medical device in several countries.

In the next chapter, we will explore some of the research conducted with VAT and meet some of the pioneers of this therapy that Saima Tamm has described as “adaptogenous therapy”.

It is “A therapy which has effects which makes the body ‘choose’ the effects it needs in almost all circumstances, as it listens to the signals which are on the outlook for total harmony, and creates reactions in the body which satisfy the signaled needs.”

Extra Materials for your Consideration

Nogier frequencies:

Principles of Resonance in the human body

Everything has a frequency at which it naturally resonates, known as its Prime Resonant Frequency or (PRF). At this frequency an object absorbs energy more readily. Each component of the body has its own PRF: cells, organs, bones.

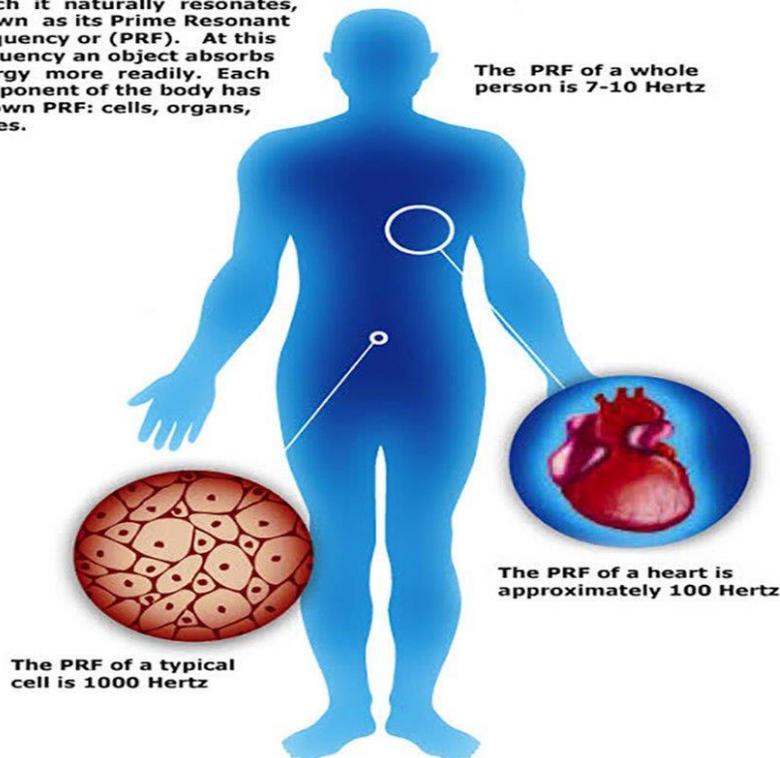


Image from the summary from a CD available in the U.K.. <https://www.amazon.co.uk/NOGIER-FREQUENCIES-AURICULOTHERAPY-CD/dp/B079RBZ9VF>

These are much higher than the frequencies with which we work – but look at our resonant frequency – basically in the Schumann frequency range.

Dr. Nogier identified frequencies natural to our bodies frequencies. His research shows that the application of these frequencies helps bring organs and tissues back to their healthy resonant frequency. A resonant frequency means the natural frequency with which an object, in this case our body cells, vibrate.

Cells are considered to have the ability to pick up their particular resonant frequency when they are exposed to a range of healthy frequencies that includes their particular natural healthy frequency.

The Seven Nogier Frequencies

Frequency A | 292 Hz Cellular Vitality: Resonates with the Ectoderm (outermost tissue) that forms skin, glands, nerves, eyes, ears, teeth, brain and spinal cord.

Frequency B | 584 Hz Nutritional Metabolism: Resonates with Endoderm (innermost tissue) that forms the lining of the intestinal tract, the lungs, the bladder, the urethra, and the auditory tube. It also forms the thyroid, thymus, liver, gall bladder and pancreas. Improves nutritional assimilation, allergy problems and balances the parasympathetic nervous system.

Frequency C | 1,168 Hz Movement: Resonates with Mesoderm (middle tissue) that forms connective tissue such as ligaments, tendons, cartilage, muscle, and bone. It also forms the heart, blood and lymph vessels, kidneys, ovaries, testes, spleen, and the cortex of the adrenal gland. Used for muscle, skeletal and myofascial pain.*

Try D [Frequency not given] if chronic condition related to C is not improving. Coordination: Helps to balance the two sides of the brain. May also help reduce and handle stress.

Frequency E | 4,672 Hz Nerves: Used for spinal and skin disorders and for pain control. Resonates with the spinal cord and peripheral nervous

For more information: <http://www.holistictherapies.info/148-2/>

<https://energixusa.com/frequency-of-human-body/> - an excellent source for research on frequencies, focusing on dangers of EMRs.

Here is a list of color/sound frequencies: <http://www.greatdreams.com/hertz.htm> If you are interested in creating your own music, this could be very valuable!