

Healing with Electromedicine and Sound Therapies

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INTRODUCTION

In the 1960s, counterculture hippies were urging us to give peace a chance (great advice). To expedite that process, it was helpful to have “good vibrations”—considered so important, the Beach Boys wrote a catchy song with that title. It was easy to tell who had good vibes and who didn’t. An optimistic, considerate person was considered “high frequency,” while a pessimistic, disagreeable individual was “low frequency.” Not surprisingly, everyone wanted to be around the folks who had good vibes.

Colloquialism aside, saying that someone is “high frequency” is based on legitimate science. Every molecule, cell, living body, and object is comprised of energy that manifests as physical matter. Some of that energy is detectable as frequencies that belong to one or more radiation bands in the electromagnetic spectrum. And these frequencies correspond to biochemical and biological processes in the body.

In the healing arts, there are different ways to affect matter. With conventional medical care, the chemical, functional, and/or structural change in organs, glands, and other tissues are created either through biochemical manipulation (through drugs) or physical manipulation (such as surgery). With electromedicine therapies, healing is achieved by working with the electromagnetic radiation (emissions) and related energy fields that form, and are emitted by, physical matter. Broadly speaking, electromedical devices produce and focus specific frequencies that can be in the form of

electromagnetic fields, electrical current, magnetism, visible light, heat, or other energy.

Although electromedicine is widely used in Europe, it is less known in the United States. Few people in developed countries would question the use of the ubiquitous transcutaneous electrical nerve stimulation (TENS) unit, which emits small amounts of electrical current to manage pain. And magnets embedded in the insoles of shoes, also for pain management, are now a regular item in consumer catalogues. But electricity and magnetism are primarily used diagnostically in hospitals—such as with the standard electrocardiogram (EKG or ECG) to assess the health of the heart and with magnetic resonance imaging (MRI) to show the inside of the body. Most medical professionals (and the lay public) are not inclined to take advantage of less popular electromedical devices because they do not understand how they work. And those who do use the equipment might talk about “frequencies” or “energy” without a full grasp of what these actually are or the science behind the technology.

Fortunately, receptivity to electromedicine is increasing. Health professionals are expanding their practice (and their success rate) with safe, holistic technologies. The general public is beginning to recognize and request electromedicine as an effective and valid treatment modality. In this discourse, I will explain what “frequency” and other terms mean as they are applied to the electromagnetic spectrum. Electromagnetic energy in living systems will be reviewed. I will explore several types of electromedical modalities. And I’ll discuss the related modality of sound therapy.

ELECTROMEDICINE THROUGHOUT HISTORY

Healing with electromedicine is not new. From electricity (lightning) and static electricity (friction) to magnetism (lodestone), from the sun (for its far infrared and ultraviolet radiation) to visible light (for its different colored wavelengths), humans have used electromedicine for healing since ancient times. The therapies were first based on natural phenomenon, but about the early 1800s, electrical current began to be harnessed—first for providing light and then for more sophisticated needs, such as for telegraphing messages over long distances and running machines in factories. By the 1900s, electrical power was common in the home as well as the workplace.

Given the healing properties of many forms of energy, it did not take long before numerous electronic devices invented for medical treatments were considered mainstream. In *Electrotherapy and Light Therapy with Essentials of Hydrotherapy and Mechanotherapy*, published in 1949, Richard Kovács describes an impressive array of electronic equipment, most of which had already been in use for half a century. This equipment utilized alternating current, direct current, low frequencies, high frequencies, static electricity, diathermy, infrared rays, ultraviolet rays, and ultrasonics. Modern electromedicine practitioners will recognize some of these devices as forerunners of those used today—if not *the* machines still being used, since some devices have not changed much in 100 years. Some of this equipment included Georges Lakhovsky's multi-wave oscillator, the Violet Ray (which utilized Nikola Tesla's coil), Edgar Cayce's wet cell, and Dr. John Harvey Kellogg's electric light cabinet. The conditions treated were virtually unlimited: muscular aches and pains, skin conditions, gynecological problems, some heart conditions, respiratory ailments, gastrointestinal disorders, acute and chronic infections, and degenerative diseases.

Given the wide applications of such equipment over half a century ago, what seems remarkable is not the abundance and range of devices, but rather the resistance to electromedicine today. Of course, the invalidation of electromedical therapies by the medical mainstream—and laws passed to suppress

the use of such devices—drove these modalities out of the public's immediate consciousness. Electromedicine as a valid treatment modality has met with derision and skepticism from practitioners and laypeople alike. But electromagnetic fields are successfully used for diagnostic purposes, with the understanding that living organisms are energy-based. If all sorts of electrical, thermal, and magnetic devices (as well as the acoustic-based ultrasound) are used for testing, why can't they just as easily be used for healing?

As might be expected, the pharmaceutical industry has taken advantage of people's ignorance and resistance to any modality that seems new and strange, for if the benefits and track record of electromedical devices were widely publicized, drug companies would lose billions of dollars each year. There is little effort by mainstream media to educate consumers, since it depends on considerable revenues from the advertising of drugs.

Unlike drugs, each of which can be used only one time by one person and for just one or two conditions, the many electromedicine modalities that have emerged in the last century

- ♦ Are non-invasive.
- ♦ Support the body's innate ability to heal, instead of substituting for its natural functions.
- ♦ Are fairly easy to use, by laypeople as well as professionals.
- ♦ Can be utilized over the course of a lifetime (since they address many conditions).
- ♦ Can be used with more than one person.
- ♦ Are relatively inexpensive, considering their range and scope.

How and why do electromedical devices work? Whether one is a health care provider or a seeker of health services, understanding the science behind electromedicine can make the difference between discerning good vibrations from bad. The best place to start is with a discussion of the EM spectrum and its related component, sound.

THE ELECTROMAGNETIC SPECTRUM AND SOUND

EM Spectrum Defined by Its Particles and Their Effects

The electromagnetic spectrum (or EM spectrum, sometimes also called EM waves) is the term used for many different energy oscillations that comprise our known universe. As shown on the chart of the EM spectrum (Figure 1, at the end of this article), these different oscillations with different characteristics range from the slower-moving, lower-energy electrons of electrical current to the faster-moving, higher-energy photons of visible light and other waves.

It's common to think of the various EM energy bands as unrelated phenomena that are separate from each other, since we perceive them differently with our senses (when we can perceive them at all). We see visible light as color, we feel far infrared radiation as heat, and so on. But all these energies are sequentially connected to each other as a *continuum of waves* in the EM spectrum. The nature of the particles depends on how fast they are moving and the qualities that they exhibit.

Humans perceive most of the EM frequencies *indirectly* through their *effects*, rather than directly perceiving the frequencies themselves. We label and differentiate EM waves from each other, according to how they manifest physically. By harnessing the waves with various electrical devices and some passive (non-electrical) materials, we can produce tangible physical phenomena. For instance, we access frequencies on the radio spectrum with an antenna, which transmits and receives radio broadcasts. An X-ray machine utilizes certain radiation on the X-ray band, which allows us to see inside the body, and so on.

The existence of an EM field includes both electric and magnetic fields. An EM field has certain properties, electrical fields have other properties, and magnetic fields possess yet others. Electrical and magnetic fields can be separated from EM fields as their own distinct energies. They can also exist in EM fields in varying proportions.

Frequency, Wavelength, and Amplitude

All the energies in the EM spectrum have different frequencies. The term *frequency* pertains to the number of cycles per second at which a wave vibrates or moves. (The designation "CPS" has now been replaced with *hertz*, or *Hz*.) Waves also have different *sizes* or *lengths*, with various terms used to measure the length such as micron, angstrom, nanometer, and meter. (The waves shown below are *sine* waves. Different shaped waves will be discussed later.)



Wave is a movement of energy along a directional axis.

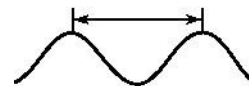
Frequency is a rate of oscillation measured by the number of wave cycles per unit time (usually in hertz).

Wavelength is the length or distance between **two identical points** on the wave (which comprises **one complete wave cycle**). This is described with different terms of measurement, depending on the size of the wave.

Amplitude is the point of **maximum intensity** of the signal (usually regarded as the highest point on the wave). It is comparable to turning up the volume on a radio.

Key EM Wave Definitions

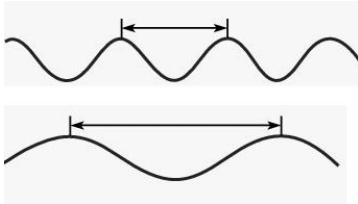
The peak of the wave is the highest point on top. The trough of the wave is the lowest point on bottom. The length of a wave is often measured peak to peak. (See arrows in diagram below.) Technically, however, any portion of the wave can be used as a reference point, as long as the measurement addresses one complete cycle (peak to peak, trough to trough, etc.).



As the number of waves within a given space—in other words, their *frequency*—increases in number per second, their size becomes *smaller*. And as the number of waves *decreases* in number per second, their size becomes *larger*. Put another way, the

higher the frequency or oscillation rate of a wave, the *smaller the wavelength*. The *lower the frequency* or oscillation rate of a wave, the *larger the wavelength*. “A homely comparison to visualize this,” Kovács analogizes, “may be a motley army of giants and dwarfs, all under orders to reach the same goal simultaneously; in order to do so the giants step out leisurely, while the dwarfs run and take hundreds of steps for each one of the giants.”¹

In the example below, the frequency of the top wave is higher than the frequency of the bottom wave, because the distance is shorter between the peaks of the waves. The wave forms in this example are simple *sine waves*.



In order from slower-moving to faster-moving, frequencies in the EM spectrum include radio waves, microwaves, infrared light, visible light, ultraviolet light, X-rays, and gamma rays.

Electric Fields and Magnetic Fields

So far, I have been discussing electromagnetic radiation from the EM spectrum. Electromagnetic *radiation* (radiant energy) and electromagnetic *fields* (non-radiant spaces in which energy exists) operate somewhat differently. Both come from electromagnetic sources. However, energy that *radiates* exists separately from its source. It travels away from its source, and it continues to exist even if the source is turned off. EM *fields* are not projected out into space. They no longer exist when the energy source is turned off.

Static electricity and magnetism are both static fields that share a complex and intimate relationship with each other. An oscillating electric field generates an oscillating magnetic field, and an oscillating magnetic field generates an oscillating electric field. Each exists at right angles to the other. Most importantly, when *movement* is introduced to either a static electrical field or a magnetic field, they become *electromagnetic* fields. This will be

important to remember when we later examine a number of different electromedical devices.

Sound

The EM spectrum is often compared to sound, since the two phenomena share many of the same features. Sound is comprised of *mechanical pressure waves* in a compressible medium such as air or water. Put another way, sound is created when an object moves with enough force to displace (compress) the surrounding air (or other medium capable of carrying these waves). We hear many of these waves (air currents) as audible frequencies (sound), because after the air reaches the ear, it minutely moves the eardrum—a delicate drum-like membrane—and sends the oscillations to the brain, where they are then decoded into the noise of traffic, spoken words, a barking dog, music. The waves of sound could be created by a pen dropping on a desk, someone’s vocal cords being moved in speech, or a violin string being plucked.

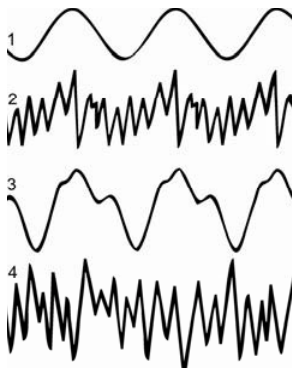
The frequency of a wave (expressed as cycles per second) that applies to the EM spectrum also applies to music, a subset of sound. The pitch of a note depends on its frequency. A *lower frequency*, or an oscillation rate of *fewer Hz*, is *slower-moving* and produces a *lower tone*. A *higher frequency*, or an oscillation rate of *more Hz*, is *faster-moving* and produces a *higher tone*.

Frequency can be more easily understood and perceived with music than with random sound (noise). Noise—as well as some harsh electronic music—is comprised of *disorganized waveforms*. This disorganization manifests acoustically as indistinct, muddy pitches. Music, on the other hand, is comprised of *organized waveforms*. This organization manifests acoustically as distinct, discernible pitches. The difference between music and noise can be seen on an oscilloscope—a testing device that shows visually what we hear acoustically—with real-time pictures of wave forms (Figure 2). Noise, or random sound, on the oscilloscope appears as irregular wave forms, while music or pure tones appear as regular wave forms. For most people, the acoustic and the visual correlate: music is more pleasing than noise to the

ear, and regular waveforms are more pleasing than irregular waveforms to the eye. In Figure 2, in the examples of music, all the instruments are playing the same note.

The wave forms of music on an oscilloscope show organization, with obvious patterns.

The wave forms of noise on an oscilloscope show disorganization, with no discernable pattern.



Music – Symmetry

- 1. **Tuning fork.** Very pure sound; prongs vibrate regularly.
- 2. **Violin.** Bright sound, angular waveform. Same pitch as tuning fork: peaks of the waves are the same distance apart and pass at same rate as those produced by tuning fork.
- 3. **Flute.** Playing same note as first two. Purer sound than that of violin, so its waveform is more rounded.

Noise – Asymmetry

- 4. **Cymbal.** Irregular patterns and jagged, random waveforms, no discernible pitch. No regular pattern of peaks and troughs.

Photo courtesy of, and text adapted from, *Dorling Kindersley Encyclopedia UK*.

Figure 2: Comparing Music and Noise Wave Forms on an Oscilloscope

Different Shapes of Waves

As illustrated in the diagram of notes played by various instruments, waveforms have different shapes. Figure 3 shows some common ones in their simplest form.

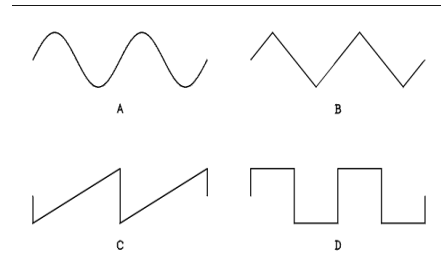


Figure 3: Wave Forms. (A) Sine; (B) Triangle; (C) Sawtooth; (D) Square

The more complex an object, the more frequencies it contains. Also, the more complex wave forms it will have. A useful analogy between simple and complex forms is the difference between plucking a single string (which represents a simple organism like an amoeba) and playing an entire orchestra (which represents a complex organism like a human being).

Symmetry and Asymmetry: The Language of Math and Music

The symmetry of music and the asymmetry of noise can also be described *mathematically*. Mathematically, sound is comprised of random frequencies that have *little or no relationship* to each other. Mathematically, tones or music are comprised of frequencies that *do* have relationships to each other. (A single, true tone will naturally be in symmetry with itself.) The absence of certain mathematical relationships in sound and the presence of those relationships in music explain why sound can irritate the nerves and music can calm them.

Although EM fields and sound transmit frequencies in different ways, the mathematical measurements representing the relationship between electromagnetic frequencies are the same for music. Put another way, the harmonic relationships of each system are governed by identical mathematics. The frequencies of musical tones and the EM spectrum exist in octaves, higher harmonics, and lower harmonics of each other. Thus, musical tones and EM spectrum frequencies have mathematical relationships to some of the other frequencies that are higher or lower. For

example, a frequency that is multiplied or divided by two produces a higher or lower *octave* of itself.

As with sound, EM fields possess symmetry and asymmetry. Various electromedical devices can detect the equivalent of either noise or music in the oscillations of cells and tissues in the body. *When the oscillations are not mathematically harmonious (which corresponds to noise), there is disease and degeneration. When the oscillations are mathematically harmonious (which corresponds to music), the cells function optimally and correctly.*

Pulsed Magnetic Fields

There are many ways to induce an EM field. One way is with magnetism. Although magnetism per se exists in a static state, inducing movement in a magnetic field creates a corresponding movement in the electric field that naturally exists at right angles to it. The result is *electromagnetic radiation*. When this type of EM radiation is created from movement, it is commonly referred to as *pulsed*.

Pulsing a wave means that the signal is “on” for a brief period, then off, then on, then off, etc. Pulsing is independent of the frequency, which is equivalent to a note in music. The pulsing is like the rhythm. Carrying the analogy further, a wave taking up its full cycle of “space” is a whole note. A wave taking up only half of that cycle is a half note. A wave taking up only one quarter of that cycle is a quarter note, a wave taking up only one eighth of that cycle is an eighth note, and so on. Speaking musically, the “on, off, on, off” aspect of the wave could also be regarded as “note, rest, note, rest, etc.”

Many of the pulsed magnetic fields that are used in electromedical devices have a “rhythm” comparable to only an eighth note, because the wave is “on” for only a brief period. But that brief period is long enough to induce movement in the body. The movement of the EM radiation in the body translates into ion transport, increase in blood and lymph flow, and more. Any frequency can be pulsed.

In Figure 4, the bottom line shows a “lag time,” or interval when the wave is at rest, before it resumes its upward-moving cycle.

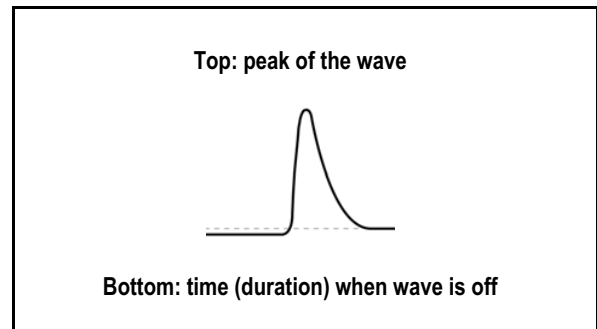


Figure 4: Wave Lag Time

Figure 5 shows two waves in succession. Here, the “lag time” or rest interval between the waves is easily seen. Note that there is no trough to the wave because it has been truncated.

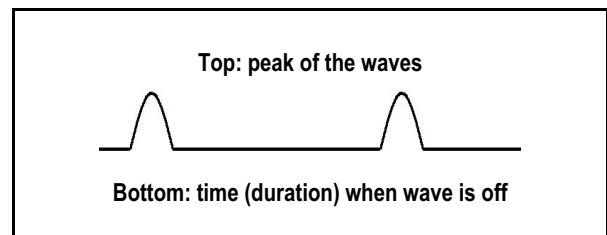


Figure 5: Two Waves

Pulsed electromagnetic radiation induces therapeutic results, which is why it is used. Some electromedical devices using pulsed EM fields will be discussed later.

THE ELECTROMAGNETIC BODY

Energy in Living Systems

Electromagnetic waves can be used for diagnostic purposes because living organisms are energy-based. Historically, most cultures have erroneously regarded the body solely as a mechanical and biochemical organism. But every cell in the body is a transmitter and receiver of electromagnetic information. The following are examples of how human beings, animals, and plants contain and respond to EM fields:

- ◆ During migration, monarch butterflies, locusts, and even blindfolded birds navigate flawlessly. Salamanders and turtles also use magnetic fields to navigate. We now know that magnetite, a highly magnetic mineral, is found in the tissue and brains of insects, birds, reptiles, and amphibians.
- ◆ Bacteria use their magnetic sense to burrow deeper into the mud. We now know that magnetite is also present in bacteria and protozoa.
- ◆ Many kinds of fish are able to follow each other in organized formations (“schools”) due to the magnetic fields generated by the magnetite in their bodies.
- ◆ The whiskers of dogs, cats, and other animals are now recognized to function as antennas, due to their sensitivity to electromagnetic fields.
- ◆ In plants, the sharp points of leaves, as well as pine needles and the blades of some species of grass, act like antennas for electrical signals.
- ◆ Melatonin, a hormone that (among other functions) helps induce sleep, is produced by the pineal only in darkness. We now know that the pineal gland, deep inside the brain in the skull, is exquisitely sensitive to light.
- ◆ Stingrays find food because they can detect normal, minute amounts of electrical discharge or magnetic fields emanating from their prey.
- ◆ Fish, dolphins, and whales use both the earth’s magnetic fields and sonar (sound) for navigation and communication.
- ◆ The behavior of some animals has long been used to forecast earthquakes. Cattle stampede, birds sing at the wrong time of day, mother cats move their kittens, snakes seek shelter. B. Blake Levitt writes: “It is now thought that [animals] are reacting to changes in the earth’s magnetic field, as well as to electrostatic charges in the air—long before the quake actually occurs or registers on even the most sensitive instruments.”²

In his article, “The Electrical Properties of Cancer Cells,”³ medical doctor Steve Haltiwanger describes how the body partly functions as a living electrical

circuit. Various cells and tissues are conductors (allow for electron flow), insulators (inhibit electron flow), semiconductors (allow for electron flow in only one direction), capacitors (accumulate and store charge, later to release that charge), and so on. Cells transmit and receive energy, and each has its very own frequency with which it oscillates. Since magnetic and electrical waves exist at right angles to each other, magnetic fields applied to the body also create biological changes. We now know that in humans, the sinuses, some other bones in the face, and various tissues in the body contain magnetite.

Not only is every cell in the body a transmitter and receiver of electromagnetic information, it is these various *electromagnetic frequencies that precede and correspond to biochemical functions*. For example, healthy cells oscillate at higher frequencies than do unhealthy cells like cancer. The lower frequency of cancer is reflected by (and causes) the aberrant biochemical reactions within the cell. Put another way, the biochemical differences between normal healthy cells and cancer cells correspond to the differences in the electrical properties of each. The same holds true for magnetic fields. Magnetic fields correspond to biological activity. A change in the magnetic field means a change in the cells, either positive or negative.

Harmful Effects of EM Radiation and EM Fields

In the last century, medical doctor and stress pioneer Hans Selye observed that when bodily tissues are subjected to repeated, intense input—whether chemical (environmental pollutants, adrenal “fight-or-flight” hormones) or mechanical pressure (bruising)—the body perceives it as stress. It responds by tightening the envelope of membranous fascia that surrounds the muscles. This, in turn, causes significant biochemical malfunctions, not the least of which is the disruption of the cell membrane. Other stressors that can disrupt cell integrity include the actual puncturing of the cell membrane, and microbial infection. Cell permeability for the proper materials is key. If glucose, other nutrients, and beneficial hormones cannot efficiently enter the cell, and if wastes cannot

completely exit, microbes can proliferate and degenerative disease can occur. To Selye's list of stressors, I would add destructive EM radiation and EM fields.

It has been known for decades that electrical fields can damage cells. B. Blake Levitt writes:

Direct current (DC) is the steady flow of electrons in one direction. Alternating current (AC) is an electron flow that changes strength and alters direction within a certain cycle; the AC field collapses and reappears with its poles reversed every time the current changes direction. . . . Direct current creates a steady magnetic field. But with alternating current, each time the direction of the electrons is reversed, or flipped, a powerful magnetic field is created that fluctuates at the same frequency.⁴

Another reason these fields are dangerous is that the waves are *coherent*. Although the sun constantly transmits naturally-occurring radio frequencies, microwaves and other EM fields, this radiation is generally *diffuse*, whereas alternating current is *concentrated*. *Concentrated radiation is not natural*. For example, you need to purposely harness, focus, augment, and direct a bombardment of electrons to turn on a light bulb. In *Electromagnetic Man: Health & Hazard in the Electrical Environment*, Cyril Smith and Simon Best write:

It is just over 100 years since electricity generation started; 60 years since radio transmissions and 40 years since radar and telecommunications entered our environment. [The book was published in 1990.] Like natural fields, man-made fields are limited by the physical properties of the environment. Unlike natural fields, they are highly coherent and can interfere with our bio-signals.⁵

The harmful effects of some EM fields are many and varied. Jacqueline Krohn and colleagues point out numerous studies showing that

electric workers and their children have a higher risk of brain tumors. The incidence of childhood leukemia is higher in children who live near power lines that carry high

voltage. Power-line exposure has also been associated with an increased incidence of suicide.

These studies support the hypothesis that ELF's [extremely low frequencies] act as a cancer promoter. ELF fields interact with the cell membrane and can affect hormones, calcium exchange, and tissue growth. It is postulated that the ELF's suppress the production of melatonin, a cancer inhibitor, by the pineal gland.⁶

The effects of ELF fields is more than mere "postulation," as other researchers have corroborated. Smith and Best cite formal published studies linking the following maladies to extremely low frequency, electromagnetic fields:

- ◆ Allergies
- ◆ Autoimmune disorders, such as lupus erythematosus and multiple sclerosis
- ◆ Birth defects and genetic abnormalities
- ◆ Cancers of various types, including brain tumors and leukemia
- ◆ Emotion and mood changes, including higher percentages of suicides
- ◆ Eyestrain and headaches
- ◆ Fatigue and sleep disturbance
- ◆ Heart attacks
- ◆ Hormonal abnormalities
- ◆ Infectious disease increase
- ◆ Lowered fertility, miscarriages, and pregnancy problems, including stillborn children
- ◆ Nervous system disorders, including confusion, convulsions, dizziness, hyperactivity, and memory loss
- ◆ Stress increase and intolerance⁷

The harm from EM fields and EM radiation also depends on the proximity of the person, animal, or plant to the source of the energy. A milligauss is a unit of measurement of the strength of an electromagnetic field. According to tables from the Environmental Protection Agency reprinted in Levitt's book, a blender from six inches away emits between 30 and 100 milligauss; an electric can

opener six inches away emits between 500 and 1500 milligauss; a hair dryer six inches away emits between 1 and 700 milligauss; and a ceiling fan 12 inches away emits between 3 and 50 milligauss.⁸ Some sources maintain that even two milligauss is enough to disrupt a person's biological function and that the maximum emission a person can safely absorb is only one milligauss. This is why there is a high rate of illness among people living near major power lines, cell phone towers, electrical generators, and similar disruptors.

Healing Effects of EM Radiation and EM Fields

Considering the extent that artificially created, non-beneficial EM radiation surrounds us, it's not surprising that (aside from the contributing factors of poor diet, pathogens, and chemical pollutants) so many people are ill. The good news is, if frequencies can harm, they can also be used to heal. Cells have the ability to positively and healthfully respond to minute electromagnetic stimulus—as long as certain criteria are met. The stimulus must be from the correct region of the EM spectrum. It must further be refined (if necessary) to an exact frequency, or combination of frequencies, on that EM band. It must be the correct intensity. It must have the correct shape wave or wave packet. It must be administered in the correct amounts. And it must be accurately and precisely aimed at the target. In electronics, there is a term that refers to the transfer of energy from one component to another through a shared magnetic field: *inductive coupling*. In electromedicine, the response of living cells to beneficial EM radiation is also called inductive coupling. Once the EM fields inside a cell are exposed to EM radiation, the fields within the cell start to move. Along with this energetic process, the corresponding biochemical responses are activated, such as the movement of electrolytes through the cell membrane, excretion of wastes, and so on. Inductive coupling is being utilized in a growing number of extremely effective electromedical devices.

Researchers are discovering that many of the beneficial effects from electromedical devices come from *pulsed magnetic fields* (which by definition

become electromagnetic radiation). Pulsing a magnetic field does more than induce movement in the body receiving the signal. Because pulsing by definition means that there is an "off" period to the signal, it ensures that the human or animal receiving the signal does not become resistant to its effects. A good analogy is someone tapping your arm. At first you pay attention; but after awhile, the body becomes impervious to the sensation so it can focus on other stimuli. This is one of the secrets of electromedicine devices that are effective.

Correctly employed, frequency therapies can increase cell energy, normalize membrane conductivity, lessen oxidative stress, reduce the amounts of inflammatory chemicals in the blood, improve protein synthesis, boost feel-good endorphin levels, restore depleted adrenal function, and enhance immune function. The restoration of these metabolic processes lead to the regeneration of tissue as well as resistance to disease.

"Bigger is better" and "More is better" figure prominently in the Western mindset. The unbridled use of massive doses of many different kinds of drugs and the routine practice of "prophylactic" invasive surgery illustrate this mentality. Another, more humane edict—"Less is more"—reflects what the body usually needs. The exquisite sensitivity of cells to electromagnetic fields of all kinds explains why electromedical devices work—and why the most subtle ones work the best. By "subtle," I mean those energies that subjectively might not be easily perceived, but which are the most compatible with living systems precisely because they are of lower power.

Electromedicine therapies may use many portions of the EM spectrum: electrical current, magnetism, visible light, far infrared (FIR), ultraviolet (UV), and heat (in the form of specific FIR wavelengths). In the following sections, I'll discuss some therapies that use various EM wavelengths. I'll also discuss sound as it relates to the EM spectrum, and explore one use of sound for therapeutic purposes.

EM RADIATION: RIFE FREQUENCY THERAPY

Rife frequency therapy is named after its inventor, Royal Raymond Rife. After this technology was enthusiastically embraced by some of the most prominent physicians and scientists of the 1930s and part of the 1940s, it was driven underground by the pharmaceutical interests and the American Medical Association (AMA). Only in the last couple of decades has rife technology emerged again in popularity, albeit in an altered form.

Royal Rife was born in Nebraska in 1888. Educated in the fields of optics, electronics, biology, and chemistry, he studied at Johns Hopkins University and had two years of training to perform eye surgery and six years of training with optical scientist and researcher Hans Luckel (who worked for German-based company Zeiss Optics). Rife designed and built many medical research instruments including spectrometers, optical tools, micromanipulators, and stop-motion photomicrographs. However, one of his most famous inventions was the 200-pound, 5,682-part Universal Microscope, which stood between two and three feet high.

During Rife's time, specimens had to be killed and stained in order to be seen under a microscope. Even modern electron microscopes, which produce high-resolution images, kill the specimens being viewed, because in order to make the specimens visible, an electron microscope bombards them with electrons in a vacuum. Completed in 1933, the Universal Microscope allowed microorganisms (even tiny viruses) to be viewed in their live state with crystal clarity. This held great promise in finding cures for diseases, because if you can see how living organisms respond to stimuli, you may find a way to destroy them.

As it turned out, this "stimuli" from Rife consisted of frequencies produced by an EM field. If Rife exposed a virus or bacterium to a particular frequency and the pathogen began to vibrate—and then either grew weak or completely broke apart—Rife knew that he had found the *resonant frequency* (or simply *frequency*) of the microbe. "Any object has a certain natural or resonant frequency," explains James L. Oschman:

Strike it, bump it, pluck it, or heat it, and it will tend to vibrate at a specific frequency. This applies to a bone, a piece of wood, a molecule, an electron, or a musical instrument. . . . In the living body, each electron, atom, chemical bond, molecule, cell, tissue, organ (and the body as a whole) has its own vibratory character [as well]. . . . In terms of vibrations, the human body can be compared to a symphony orchestra. Each molecule corresponds to a particular instrument. Each bend, rotation, or stretch of a chemical bond has a certain resonant frequency, and will give off certain "notes" if it is energized. Since molecules, water, and dissolved ions are constantly bumping into each other at body temperature, all parts are constantly jiggling and absorbing and emitting energy. . . . When two objects have similar natural frequencies, they can interact without touching; their vibrations can become coupled or entrained. For electromagnetic interactions between molecules, the word "resonance" is used more often than entrainment. In the older literature you will find the term "sympathetic vibrations."⁹

The microbe's frequency (the number of cycles per second at which it vibrated) was also known as its Mortal Oscillatory Rate (MOR). An analogy explaining how Rife's ray tube worked was the cliché of the soprano who shatters a glass with her pure, focused tone. If enough power were applied, the resonant frequency killed the microbe or debilitated it enough so that the body's own immune cells could then dispose of it.

Royal Rife's ray machine (whose inspiration and fundamental operation appear to have come from Albert Abrams's Oscilloclast) delivered frequencies in the Radio Frequency (RF) range by sending an electrical current through a tube filled with noble gases (mostly argon and neon). The gases would light up the tube, and the frequencies were emitted as EM radiation. It was the *EM wave*, rather than the luminescence from the light, that disabled or killed the pathogens. Rife discovered the resonant frequencies for cancer, typhus, *E. coli*, and other microorganisms. People given "terminal" diagnoses by their doctors would often become well when

exposed to the Rife Ray. A microbial MOR frequency administered at a low power level is harmful to a microbe, but does not harm a larger host such as a human being or animal because the host has a much more complex structure than a microbe—and, hence, will barely feel the power input that can kill a tiny microbe.

Many modern, second-generation rife machines also contain plasma tubes filled with noble gases, although some rife-type frequency devices utilize hand-held, tubular metal electrodes to deliver frequencies into the body via electrical current. Most of the tubes are freestanding; one unit has long glass rods that are held. Due to technology changes—and FCC regulations against devices transmitting over long distances in the RF range because they interfere with radio broadcast signals—today's units emit much weaker signals in lower ranges, mostly from one to 20,000 hertz.

Rife technology devices can range from simple to elaborate, with varying programming capabilities. Smaller units can be the size of large loaves of bread, while large ones equal the size of tower computers. The user inputs the desired frequencies into the computerized machine, and a signal is sent to the noble gases in the tube. The resulting EM field disables or kills the microorganisms in the body, while also inputting energy into the body's cells.

In countries outside the United States, such as Germany and Romania, rife technology is seriously researched and publicized. Its legal status as a medical treatment means that the technology is freely used in clinics and doctors' offices. In North America, open-minded medical practitioners and health seekers have a more difficult time finding manufacturers of rife frequency devices, because after the 1940s, the FDA quashed this technology. About a dozen manufacturers in North America are making rife-style devices. In Europe, there are even more companies making frequency devices.

Two excellent freestanding plasma light frequency devices are especially popular in North America: the PERL, and the P3 units (from different companies). The PERL is a highly respected frequency device made by Resonant Light Technology Inc., from Canada. The 18-pound, 13" x 5.5" x 17" machine is

equipped with a leaded silica glass tube filled with 100% argon. When the noble gas is lit by the transmitted RF energy, the PERL emits frequencies (up to three signals simultaneously) over a 27 megahertz carrier. Frequency selection is from .001 to 400,000 hertz. The selectable waveform (square, sine, or sawtooth) has a range of up to 30 feet. The customer can either program frequencies into the unit or use one of 25 banks of pre-programmed protocols. The equipment's management system (manufacturing quality and customer support) has received an international standard of certification; so should the company decide to apply for Class II Medical Device status for the PERL, they will have met all the requirements. Resonant Light Technology Inc. cannot legally state that the PERL is a therapeutic device for use on humans in Canada, but the company does suggest other applications: therapeutic use with animals, extending the life of food in clinically controlled food storage lockers, slowing the growth of mold and fungi in greenhouses, and reducing the parasitic count within fruit orchards. Energizing the body is an obvious application as well.

Pulsed Technologies, which has offices in both the United States and Romania, makes several different devices. The frequency outputs of this company's units range from .01 to an impressive 1,000,000 hertz (1 megahertz). The Precision Pulsed Plasma system (P3) is a non-contact, radiant device that operates on principles that do not require RF. The P3 is driven and controlled by the Precision Function Generator (PFG or PFG2) for precision programming and unlimited waveform manipulation and control. Both PFG models may also be used separately from the plasma unit as high-end contact (electrode) devices. The computer software, included with the machines, contains modules suitable for laboratory, professional, group, or individual use. Thus, many practitioners and researchers as well as lay customers use this equipment. The company's emphasis on research—Pulsed Technologies sponsors the Eastern Europe-based professional Research and Resource Exchange Network—has been particularly welcome in Europe, where doctors have seen great improvements in the subjects enrolled there in

clinical trials. Applications of a Pulsed Technologies unit are similar to those of the PERL. The uses for a freestanding plasma light unit are limited only by the imagination of the user.

Although Rife's technology appeals to holistically oriented health practitioners, it is simple enough to be utilized by the layperson as well. The largest market in the United States consists of people who want to improve their own health, as well as the health of their family, friends, pets, and farm animals.

In Rife's era, it was proven that his frequency devices disabled microbes that made humans and animals sick. But we now know that selected frequencies can regenerate tissue. Some of the frequencies that Rife used may have done both.

ELECTRICAL CURRENT

Frequency Specific Microcurrent

Most people are familiar with the ubiquitous TENS unit, which uses electrical current for pain control. For this treatment, specific frequencies (generally ranging from 40 to 150 hertz) are applied to the body through electrodes. But consider the mechanism by which TENS suppresses pain: it stimulates A-beta suppressing fibers and *overwhelms* the C-pain fibers in the body. The effects are similar to that of continually rubbing a painful spot; after a while, the pain lessens because the area becomes numb. However, from a holistic perspective, this is not the best way to manage pain, since the TENS unit relieves pain not through body awareness (which allows the system to self-correct), but through lack of awareness (which may not allow for self-correction). This is why the effects of TENS treatments are often temporary.

Frequency Specific Microcurrent (FSM) treats nerve, muscle, and fascia pain by using a wider range of frequencies (from 3 Hz to 970 Hz) to favorably alter tissue and restore health, using minute amounts of micro-ampere current. A TENS unit has an output of up to 100 milliamps, which can overwhelm the body with current that is easily felt. In contrast, the output of FSM is in

microamps (millionths of an amp), which is not readily perceived by the body even though its effects are. (An ampere is a measure of the movement of electrons or current.) Significantly, the output of FSM imitates the output produced naturally by the body within each cell. The amount of FSM current is not strong enough to stimulate sensory nerves, so the treatment usually cannot be felt and is painless, as well as safe, non-invasive, and effective.

Microcurrent can often eliminate pain entirely because instead of simply masking symptoms, it helps to restore cell function. A TENS unit decreases cell energy (ATP production) by about 50%, decreases cell membrane transport by up to 40%, and decreases protein synthesis by 50%. However, since Microcurrent uses less than 500 microamps, cell energy (ATP production) increases (rat studies show by 500%), as does amino acid transport into the cell. This aids in waste product removal, and protein synthesis. Preliminary studies also suggest that FMS helps insulin bind with the appropriate receptor sites on the cell wall and that it activates fibroblasts, connective tissue cells that secrete collagen and other beneficial substances around living cells.

Microcurrent was used in the early 1900s by physicians and osteopaths in the form of an electromedical device that delivered DC wall current. In 1987, the device used for FSM was developed by an engineer named Glen Smith. Eight years later, chiropractors Carolyn McMakin and George Douglas discovered some frequencies used in a 1920s electromedical device and began applying them in their practice.

There are several size units, ranging from the largest (18" x 9.5" x 6.5") to the "home care" portable unit that's about the size of a portable Walkman and is operated by one nine-volt battery. All come with various electrode attachments. Although the use of frequencies is not regulated (so is neither approved nor disallowed by the FDA), the devices that provide the current—the Precision Microcurrent machine and the FSM Auto Care and Sports Care unit—are permitted by the FDA to be used in a medical setting, and by prescription. The FDA has approved all microcurrent devices for sale

in the category of TENS devices, even though TENS devices all deliver milli-ampere current rather than the much smaller (and biocompatible) levels of micro-ampere current.

Candidates for this therapy have arthritis, chronic low back pain, fibromyalgia (especially associated with neck injury), diabetes-related and other neuropathic pains, and myofascial pain (from trigger points in the head, neck, face, and lower back). People with asthma, liver dysfunction, kidney stones, shingles, endometriosis, and irritable bowel syndrome also benefit, although Dr. McMakin reports, "Most cases of post herpetic neuralgia improve with five to six treatments but require the frequencies for scar tissue and inflammation in the nerves damaged by the virus."¹⁰ Many practitioners know how difficult it can be to manage, let alone cure, fibromyalgia. However, those diagnosed with fibromyalgia and treated with FSM no longer meet the diagnostic criteria for fibromyalgia as set by the American College of Rheumatology.

Injuries from accidents or surgeries, especially if treated within four hours, are found to yield reduced pain and greatly accelerated healing. Symptom relief includes reduced inflammation, increased range of motion, improved visceral organ function, and more manageable emotional states. There are frequencies for over 200 conditions, ranging from inflammation and scar tissue to hard-to-document conditions such as mineral deposits and toxicity.

"Body tissues," says McMakin, "respond to frequencies through the principles of biological resonance—responding to the signals like a radio responds to frequencies from a radio station."¹¹ She continues to publish in journals and teach professionals how to use the equipment. Since there is no human or electronic biofeedback component to this technology (just a needle on the instrument indicating whether or not the current is flowing), the practitioner is trained to recognize the most common pain complaints and to diagnose and treat them.

The Tennant Biomodulator®

Another electromedical device that emits small amounts of current is the hand-held biofeedback unit, the Tennant Biomodulator®. The

Biomodulator® has its origins in the Russian Scenar, acronym for Self-Controlled Energo Neuro Adaptive Regulation. The Biomodulator's predecessor was developed by Russian scientists in the 1970s to address an unexpected problem with their space program: the forced feeding of antibiotics to all cosmonauts, whether they were ill or well. If one crew member got sick and took antibiotics, all the crew members would end up with the drug in their system, since urine is recycled into the shared drinking water. Creating an electromedical device to treat cosmonauts in space would eliminate the "need" to administer antibiotics. This device—about the size of a remote control—was aptly nicknamed the "Star Trek Device" by the press. According to Russian clinical studies, the Scenar proved effective in 80% of all cases. Of those, two-thirds enjoyed full recovery, and the remainder had significant healing. Over 50,000 successful outcomes were reported for circulatory, endocrine, respiratory, gastrointestinal, neurological, muscular, skeletal, and genito-urinary problems.

In 2004, Texas-based Jerry Tennant, MD, developed an easier-to-use, more effective version of the Russian invention, powered by two AA batteries, called the Tennant Biomodulator®. Whether moved across the body or sitting still on a particular area, its biofeedback feature operates by sending out a series of precisely modulated electrical current to the skin, measuring the body's response, and then emitting different signals in response to the changes recorded by the skin. This therapy is drug-free, non-invasive, safe, pain-free, and inexpensive (considering the number of conditions for which it can be used). In general, subjects not only feel positive effects after the first session, but the effects are long-lasting.

The Biomodulator®, equipped with newly discovered frequencies, also has an assessment mode that allows the user to determine the approximate voltage of the cells. The amount of voltage, and whether that voltage is plus or minus, helps the practitioner or user determine whether the tissue is mildly or severely inflamed or mildly or severely degenerated. Based on the readings, the practitioner then knows which therapy mode to employ. The device also has a setting for

“automatic,” which is a combined biofeedback and signal input mode.

Dr. Tennant points out that trauma, pain, real or imagined danger, constant fear, an unbalanced pH, and food allergies turn on the sympathetic (fight-or-flight) nervous system and keep it turned on, so the parasympathetic nervous system, which regulates digestion, sleep, hormone secretion, immune function, and so on, no longer works properly. Being “sympathetic-on 24 hours a day, seven days a week” creates conditions of “typical chronic disease and chronic fatigue,” he says.¹² Once the body starts to malfunction, it gets used to being in a pathological state, a trend that can be difficult to reverse. However, the Biomodulator® stimulates the healing process by normalizing the sympathetic and the parasympathetic nervous systems. People have reported relief from swelling and inflammation, as well as faster and more complete healing of wounds, improvement in circulation and other functions, rapid pain relief, and easier recovery from infections. The device is most commonly used for treatment of muscle pain and injuries. However, it is also being clinically studied for the improvement or complete elimination of symptoms of arthritis, tendonitis, hypertension, hearing loss, and asthma.

The Biomodulator® works primarily by stimulating the C-fibers. C-fibers, which comprise 85% of all nerves in the body, produce healing neuropeptides and other regulatory peptides that, in turn, reestablish the body’s normal physiology and propel it to heal itself. Since the peptides last for several hours, the healing process continues after the treatment is over. “Once we balance the autonomic system,” writes Tennant, “the gut will start absorbing nutrients, the endocrine glands will rest and recover, [and] the immune system will recover.”¹³ A key to the success of these units is the restoration of voltage to the cells. A malfunctioning cell cannot metabolize properly. Once the voltage to organs and other bodily tissues is normalized, cellular toxins can be eliminated and water imbalances can be corrected.

To treat, the practitioner first asks the subject the location of the pain, discomfort or dysfunction. If there is clear symptomatology, the practitioner goes to the problem area. However, the spine and

abdomen are also key areas to address, even though they might not seem to directly relate to the stated symptoms. Problem areas are perceived by the practitioner as a difference in the sound emitted by the device and by a feeling of “stickiness,” a magnetic-like pull that prevents the unit from easily moving across the area. The session is over when the “drag” is eliminated and the client relaxes. There is often a reddening of the skin as well.

The Biomodulator® comes with optional attachments that can treat through hair and on smaller skin areas. The Biomodulator® is a FDA-cleared Class II device for symptomatic relief and management of chronic, intractable pain, and adjunctive treatment in the management of post-surgical and post-traumatic pain. Licensed health practitioners can use it in their practice. However, it’s not necessary to see a health care professional if you need treatment. Laypersons who want a device for their own personal use can obtain a prescription from their own physician or from Dr. Tennant.

OSCILLATING MAGNETIC FIELDS: DR. HENRY LAI’S MALARIA TREATMENT

Within the last decade, some exciting research emerged from the University of Washington. Bioengineering professor Henry Lai, along with three colleagues, discovered a way to eliminate malaria using very weak magnetic fields. This has enormous significance, since in addition to symptoms of fever, head and joint aches, and shivering, malaria often causes seizures and death (if infected blood cells block the blood vessels leading to the brain). The World Health Organization estimates that up to 2.7 million people die of malaria every year, one million of whom are children. In the last two decades, the Plasmodium parasite that causes malaria has become increasingly resistant to pharmaceuticals, so they are no longer effective in eradicating the disease.

Dr. Lai’s treatment is simple and elegant: the Plasmodium parasite becomes weak and dies when exposed to weak alternating—oscillating—magnetic fields. While the death throes of Plasmodium may sound similar to what happens to microbes when

exposed to frequencies emitted by rife-style frequency devices, in this case, the magnetic field does not emit variable frequencies.

The principle behind Lai's magnetic device is based on the parasite's unique metabolism. After the person is bitten by the mosquito carrying Plasmodium, the parasite first penetrates the liver and then re-enters the bloodstream to feed off the hemoglobin in red blood cells. Plasmodium eats the globin portion of the hemoglobin molecule, but it lacks the enzyme needed to break down the iron-containing heme in the hemoglobin. Since free heme molecules can cause membrane damage, Plasmodium protects itself by arranging the heme molecules into long stacks—like “tiny bar magnets.”¹⁴ Lai believes that the oscillating magnetic field affects the parasite in two possible ways. Either the heme molecules cannot form stacks and are free to move in the parasite and cause harm. Or, the stacks spin as a result of the magnetic field and mechanically injure the parasite. Both scenarios cause damage and death to the parasite. Although there is only a minute amount of iron in a heme stack, it is enough to be affected by magnetic fields.

Experiments show 33 to 70% fewer parasites in exposed than unexposed samples. According to Lai, this indicates a significant slowing of the parasite's metabolic functions—sufficient to manage the disease. The researcher says it is unlikely that Plasmodium would develop a resistance to magnetic fields. Lai also believes this treatment will not harm the human host: “It's a very weak magnetic field, just a little stronger than the earth's. The difference is that it is oscillating.”¹⁵ “I think,” he adds, “it should be safe for short-term (hours) exposure.”¹⁶

This modality is in the experimental stage, as there is still more research to be done.

PULSED ELECTROMAGNETIC FIELDS: THE ONDAMED®

Whereas Dr. Lai's technology utilizes a generalized weak magnetic field that oscillates, or travels back and forth, other devices use a pulsed electromagnetic field that also conveys frequencies.

One such device is the ONDAMED® System, which was developed by German electronics engineer Rolf Binder. The machine consists of the base unit (18.5" x 14" x 4"), which weighs about 25 pounds in its heavy-duty case, and various applicators that are placed on the body (spine, abdomen, neck, foot, etc.) or held. The software includes three operating modules that introduce various frequency patterns, times, and intensities; and one module of 173 preset programs. Frequencies range from 0.1 hertz to 32,000 hertz. The pulsed magnetic field emitted by the unit covers a small but focused area.

At the start of the session, the practitioner hangs an applicator around the client's neck. Then the practitioner holds the subject's wrist while simultaneously scrolling the machine through a range of rapidly and sequentially emitted programs. When a frequency is emitted that the body may need, a sudden change in the radial (circulatory) pulse occurs. The change in the subject's pulse can feel like excitation (jumping or throbbing), or weakening (slower, less obvious). (This physiological response, known as the Vascular Autonomic Signal or VAS, was discovered by medical doctor Paul Nogier in 1966.) Thus, the “biofeedback” aspect of the ONDAMED® is the person's bodily response, as perceived by the practitioner, to the unit's EM radiation emissions.

The practitioner enters into the machine's memory those frequencies that elicit a response. Then the practitioner scrolls through the frequencies that had been entered, choosing the top two frequency patterns that caused the strongest reaction—and which therefore will have the greatest therapeutic value. The frequencies best suited to the client at that moment are induced through the neck applicator (worn by the subject) as the practitioner scans the body with the hand-held applicator, feeling the person's pulse for the strongest response. The body area causing the strongest response is the site of application.

Not everyone's pulse completely normalizes for the duration of treatment; Binder says that the client undergoes a period of integration. The next time the client is tested, other areas (and other frequency patterns) may prove more useful. During therapy, not more than two frequencies are administered at

one time to ensure that the communication pathways in the body are clear.

While the company is not allowed to make medical claims for the device, the biofeedback has worked well for pain management, stress relief, detoxification (waste elimination and nutrient absorption), reduction of addictive patterns (such as smoking), and weight management. People suffering from allergies, arthritis, inflammation, lymphatic and hormonal problems, infections, and pain report that their symptoms subside or are completely eliminated. The ONDAMED® is rapidly becoming very popular with smokers to stop nicotine addiction, as it shows a 95% effectiveness rate, with an average of one to three sessions to achieve results. Those with other health conditions generally notice improvement in five sessions, although people generally opt for one to 20 sessions.

While the ONDAMED® is non-invasive yet effective (based in part on the fact that its frequencies are custom applied for each person), one can only speculate at this time as to how it works. To this end, medical doctor W.D. Kessler recounts discussions with physics professor J.B. Sharma:

Each organ has specific natural frequencies corresponding its healthy state, to which it resonates if driven by an appropriate external frequency. . . . One way to visualize the underlying mechanism of ONDAMED® is to look at the body and its constituent parts as oscillators. In a healthy body, the ensemble of the oscillators “vibrate” in harmony with each other. . . . Under this model, disease may then be understood as a departure from a healthy synchronous vibration. The [diseased] parts of the body . . . display a lower energy or a chaotic, asynchronous vibration. The difference between an optimally functioning state and a diseased state in the human body is detectable by Nogier’s pulse feedback method . . . [during which] a very small shock is created to the cardiovascular system when a specific frequency hits a diseased site, which then evokes a tempering or “tuning” of the oscillating components through resonance. . . . The asynchronously vibrating components of the diseased body will resonate harmoniously for a brief moment

when hit by the proper frequency. . . . Further treatment with the appropriate frequencies would then bring all components back into synchronous vibration with the tendency to maintain that state of higher order.¹⁷

Continuing what W.D. Kessler states is a hypothesis: Deviations from the frequencies of healthy tissue indicate energy blockages that can then lead to health problems. On the biochemical level, blockage of an area is synonymous with a static field, characterized by accumulated acids or excess hydrogen ions (H⁺), which block the transfer of the magnetic impulses the body needs for the smooth flow of information. The ONDAMED®’s function may be based, in part, on Maxwell’s finding that superimposing one magnetic field on another induces the flow of electrons.

“We don’t want to assume that we know why the body responds to the ONDAMED® in the way it does,” says Binder. “There are physical, emotional, biological, physiological, and energetic responses. We know there is lots of information flowing back and forth. But how the body is processing that information—and why it changes in response to one stimulus and not another—is something we cannot answer right now. The body and its functions are simply too complex. What we do know, is that the therapy works.”¹⁸

What we can say with certainty, is that the ONDAMED® introduces specific electromagnetic impulses into the body, which in turn “jump start” the movement of electrons to the organs, glands, muscles, vessels, bones, nerves, or other tissues that require a more efficient flow of information.

The ONDAMED® System is approved by the Institutional Review Board as a non-invasive secondary therapeutic device for the alleviation of pain, discomfort, and general malaise in the treatment of various disorders. The device can be used by both practitioners and laypeople. The medical doctors and other practitioners who use the device in their practice report a high success rate. The inventor, though naturally pleased, is circumspect. “It’s very important to get the body working by itself,” he emphasizes. “You don’t want

to get the body dependent on a drug, or the machine, for that matter.”¹⁹

MONOCHROMATIC VISIBLE LIGHT: LASER AND LED

To the uneducated general public, the word “laser” evokes a dangerous beam, usually red, that is used in restricted industrial and medical situations. But safe laser therapy has been used by health practitioners all over the world for almost 30 years. Most of the early research and published data, which spanned the late 1970s to early 1980s, was from Russia. Later, as more medical studies and research papers continued to be published, various medical organizations and government agencies all over the world (including the National Aeronautics and Space Administration in the United States) began using this modality as well.

Lasers and LEDs can be made to produce any color wavelength. The emission of the light (whether it’s a red, green, blue, or other color) is due not to glass, paint, or pigment—it is solely the wavelength of the light itself that gives the beam its characteristic color. Since the wavelength is always a single frequency, the color is known as *monochromatic*. Although the several types of lasers include instruments that emit heat in the form of invisible infrared radiation, for this discussion we are interested in lasers (and LEDs) that utilize single-wavelength (monochromatic), visible light for *phototherapy*, in the *red* spectrum.

Laser and LED therapies differ in some important ways, but they also share similarities. Both light technologies are based on the energetic behavior of electrons. Normally, electrons occupy a fixed place in one or more orbital rings that sequentially surround the atom’s nucleus. When they become excited, electrons move faster and jump to higher orbits. When they relax and return to their original position, electrons release energy in the form of light, or photon units. The wavelength of a photon—in other words, its color—is determined by the amount of energy released when the electron drops to a lower orbit. *It is this emitted light that is harnessed in visible light laser and LED technology.*

Although light lasers and LEDs occupy a certain range of frequencies (frequency band) in the EM spectrum, the frequency being used is almost always identified by the length of the wave, rather than the actual frequency itself as described in hertz. In the band of visible light, wavelengths are measured in nanometers (nm). One nanometer, the length of one complete wave, is one billionth of a meter and roughly about the size of a human cell.

The lasers and LEDs that emit a red color range from about 630 to 670 nm. Some clinicians prefer a 660-nm wavelength, asserting that this length wave is overall easiest for the tissues to absorb. Others prefer a ruby red 630- or 635-nm wave, based on research published in the *Journal of Clinical Medical Laser Surgery* stating that a 630-nm wavelength appears “to be most commonly associated with bacterial inhibition. The findings of this study might be useful as a basis for selecting LLLT [low level laser therapy] for infected wounds.”²⁰ In this case, “bacterial inhibition” consists of the retardation of the growth and functioning of pathogens. “What is good for the body is usually bad for pathogens,” says chiropractor and laser therapist Gerry (pronounced “Gary”) Graham. “For example, the right pH for the body is the wrong pH for pathogens. Similarly, 635 nm is the worst wavelength for most pathogens but is beneficial for human tissue.”²¹

Regardless of the specific favored wavelength, researchers and practitioners who use red light find that it works on the principle of *bio-modulation*—turning a cell’s function on or off through physiological means. Monochromatic red light stimulates blood circulation, increases lymphatic drainage, and promotes cell metabolism by stimulating photoreceptors in the mitochondria living within the cell. (Mitochondria are tiny living organelles with their own DNA and reproduction cycles, which live in symbiotic harmony with the cell, and control many important cellular processes including energy production.) Except on the eyes in the case of a laser (explained in a moment), the light can be applied to every part of the body: skin, soft tissue, muscle, bone, brain, organs, lymphatic fluid, glands, and blood. Used over an artery, the light can improve the condition of immune cells—leukocytes,

T-cells, and B-cells within the bloodstream—so they can more efficiently disable pathogens.

Dr. Tina Karu, who is affiliated with the Laser Technology Center in Russia, is reported to have discovered the following:

There are photoreceptors at the molecular-cellular level which, when triggered, activate a number of biological reactions: DNA/RNA synthesis, increased cAMP levels [cyclic adenosine monophosphate, a molecule involved in many biological processes], protein and collagen synthesis, and cellular proliferation. The result is rapid regeneration, normalization, and healing of damaged cellular tissue. In essence, light is a trigger for the rearrangement of cellular metabolism.²²

Single-wavelength light maintains its integrity while radiating. Its ability to travel along the meridians of the body without being dispersed into the surrounding tissues makes it useful for Chinese medicine treatments. A phototherapy device can be built to house a single light or many, but only one wavelength at a time should be shone on the body. Only monochromatic light affects the photoreceptors. If different wavelengths are simultaneously applied to the tissue, the cell receives conflicting signals and cannot respond properly.

LEDs and lasers can also be pulsed so that for a duration of time at regular intervals, the beam is on, off, on, off, etc. Pulsing the light stimulates healing. A continuous, steady emission (no pulse) sedates pain.

LazrPulsr™ 4X LLLT Laser

Laser is an acronym for *Light Amplification by Stimulated Emission of Radiation*. To produce light, a laser diode can contain argon, helium, neon, or krypton.

The monochromatic light emitted by the lasers under discussion is *coherent*. This means, from a physics standpoint, that all the peaks and valleys of the waves line up. The waves are high at the same time, and low at the same time (Figure 6). In practical terms, this means that the light is

directional and focused—or *collimated*—instead of scattered. This optical arrangement provides the intensity and precision of the beam and is probably the most expensive component of a laser diode assembly.

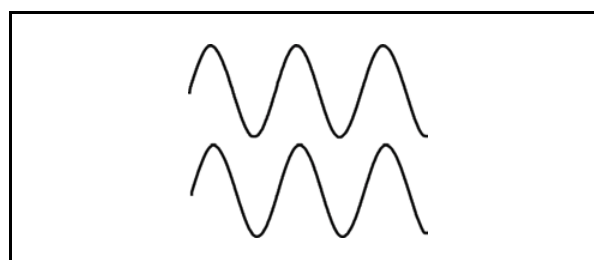


Figure 6: Coherent Waves (in Phase with Each Other), an Alignment Found in Lasers

Not all lasers utilizing red light have the same effects. Most people are familiar with the high-intensity, high-power “hard” lasers that are used by industry (to cut through steel and other metals) or by doctors (used during surgery to make clean cuts into the body, cauterize wounds, and remove unwanted tissue). These high-intensity lasers are legally restricted devices because of the damage they can cause and are not the most therapeutic.

Genuine low-intensity, low-power lasers—also called “soft” or “cold” lasers—emit far less power than their restricted high-intensity counterparts. Their use for healing is also known as *Low-Intensity Laser Therapy* (LILT) or *Low Level Laser Therapy* (LLLT). The legal standard for what constitutes a low level laser can be confusing, however, because in some countries, a device legally classified as a LLL has enough power to heat tissue. Some laser therapists maintain that devices affecting cells through bio-modulation should not be categorized with devices that heat tissue. Australian laser experts Kerry Tume and Sean Tume suggest the following standard: “the energy output is low enough so that the treated tissue does not rise above . . . normal body temperature.”²³ Similarly, Dr. Graham allows “up to only a 0.1 degree Fahrenheit increase in temperature, because otherwise it is a hot laser with different, and less desirable, effects.” Here is an instance, Graham points out, where “less can be more. Most people still fall for the idea that if 10 mW

[milliwatts] will do a job in ten minutes, then 100 mW will do the same job in one minute, and 1000 mW will do the same job in one-tenth of a minute. But this isn't true. The majority of lasers used for meridian therapy use [excessively high-powered, tissue-heating] infrared lasers. With these instruments, you can damage the meridians and over-stimulate tissues."²⁴

With these parameters in mind, Graham developed the rechargeable hand-held LazrPulsr™ 4X. His device emits a 635-nm beam, which as stated earlier is reported as anti-microbial. The LazrPulsr 4X contains ten channels that can be programmed by the user, in addition to over 40 channels that emit pulses consistently shown to restore different tissues and bodily functions.

Pulse refers to the number of times the beam of light is turned on and off in one second. The pulse rates can be as low as one, or as high as 1,000,000, in which the light is being turned on one million times and then turned off one million times each second. "Even though the eye cannot detect movement above 45 Hertz or so," Graham explains, "the body's tissue can clearly detect and recognize these pulse rates in the tens of billions per second."²⁵ Numbers commonly used as rife technology frequencies are often applied as laser pulse rates, and the effects are similar.

One success story of many that Dr. Graham recounts involves a man whose ability to climb stairs improved dramatically (assessed with a radial pulse test) after laser treatment because the oxygen-carrying capacity of the hemoglobin increased by 400%. The *Tumes* agree with Graham that laser therapy works on all manner of conditions. These include injuries to ligaments, tendons, nerves, and other tissue; skin conditions; bone problems (such as osteoarthritis); first, second, and third degree burns; dental problems; infections including herpes; and, of course, chronic pain.

The laser beam can be applied without risk to almost any part of the body (including trigger points and fascia). However, due to the precision of the beam, care must be taken to avoid shining the device directly into the eyes or even on the closed eyelid, because this can cause tissue damage and even blindness. "It would take several seconds of

continuous direct exposure, shining directly into the eye, to cause significant permanent damage," Graham points out. "This is virtually impossible for any adult to do accidentally."²⁶ The FDA, which has classified the LazrPulsr 4X as a IIIa device, has not determined that the device causes significant risk to the eye, so protective eyewear is not required.

Safety features for the LazrPulsr 4X include a laser cover to protect the user from accidentally shining the unit into the eyes, and a low enough power density (five milliwatts) to ensure additional protection. There is also a digital lock that ensures against accidental use by children and inexperienced users. Finally, the unit is designed so that the user can program and operate it with one hand, while maintaining control of the direction of illumination with the other.

Dr. Graham's LazrPulsr is available for sale by prescription only. With a little practice and training, it can be employed safely and effectively for healing by practitioners and knowledgeable laypersons.

LED Devices from Light Energy Company

LED is an acronym for *Light Emitting Diode*. It is sometimes erroneously called a soft laser or laser, but it is not—the monochromatic light emitted by LEDs is *incoherent*. This means, from a physics standpoint, that the waves are emitted at random intervals because the peaks and valleys of the waves do not line up (Figure 7). In practical terms, this means that the light is multi-directional and diffuse, *not* directional and focused (collimated).

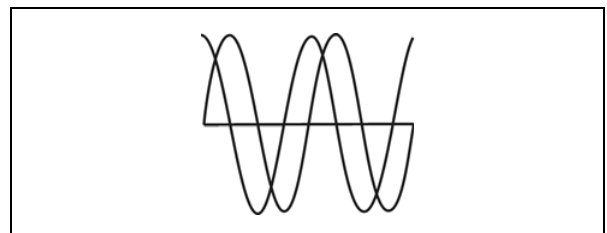


Figure 7: Incoherent Waves (Out of Phase with Each Other), an Alignment Found in LEDs

The lack of beam coherence and precision makes LED therapy safe enough to be used even by children—and difficult to abuse. The advantage of LEDs over lasers is their ability to be used directly

on the eyelid to regenerate injured eye tissue. Also, an LED array is much less expensive than a soft laser. It too has widespread applications. "In Israel," report Cocilovo and Rosen, "medical doctors utilize incoherent light transmitted by light emitting diodes (LEDs) in the practice of neurology, dentistry, dermatology, physiotherapy, and in cosmetic applications to promote collagen and elastin formation."²⁷

Although LEDs are fairly common and easy to obtain, some unique products were developed by Dave Olszewski of Light Energy Company. He has some very powerful multiple-diode LED products that, due to the pattern and spacing of the lights, have enhanced effects because the penetration is deeper than what would be achieved with a single light. The 17-LED Light Disc, a plastic 8 inch x 5 inch paddle with detachable 12-inch handle, has a penetration range of 8 inches, from up to 15 inches away, and the beam can travel through clothes. (An attachable handle allows easy application of the light on hard-to-reach areas of the body such as feet, ankles, and back.) The 23-LED Light Pad, which is like a stiff, flexible, wide belt with tie-strings, can be strapped onto the body or draped during sleep. Penetration ranges from 8 inches to 15 inches, and this beam can also travel through clothes.

Other items include the 3-LED Tri-Light, which is safe to be used for skin conditions, cosmetic facial treatments (such as wrinkle removal), or even eye injuries. This device can run either on a nine-volt battery or an AC/DC adapter, is about the size of a Sony Walkman, and has a penetration range of two inches. The simplest device is the single-diode Light Shaker that runs on a nine-volt battery.

Up until the 1980s, low-level lasers were used almost exclusively for phototherapy because researchers thought that the light needed to be coherent, and prior promising research with incoherent light was nearly forgotten. Subsequently, some clinicians determined that coherency did not make a huge difference. "Dr. Karu," write Cocilovo and Rosen, "contends that coherent light is not necessary, that incoherent light is equally effective at producing clinical results. Furthermore, she found that coherent light is converted to incoherent light in

the body. The exact effect depends on the wavelength, dose, and intensity."²⁸ There is a question as to whether these conclusions were based on *in vitro* or *in vivo* research; the effects of light can be different in a culture than a living body. Nevertheless, enough users report benefits with LEDs to warrant its further investigation as a serious therapy. There is one anecdotal report that cannot be contested: This author successfully treated a scratch on the cornea with the Light Shaker after a piece of plastic fell into her eye. After one hour of holding the light onto the closed, tearing eyelid, the pain and tearing were gone, vision was unaffected, and no more problems occurred.

LED Devices from Good Energy Products

Two very interesting portable LED devices from Good Energy Products use incoherent light, but for a secondary function: they are carriers of frequencies that are imprinted in water. Slightly larger than a fountain pen and smaller than a flashlight, both the Chi Pen[®] and the Advanced Chi Stimulator[®] contain water cartridges through which the light shines. When applied to the body, the energy produces different results, depending on what frequencies have been programmed into the fluid.

The frequencies in both devices are geared more to balancing the body than they are to microbe destruction: most of the energy in the water is from either homeopathic remedies, or frequencies that researchers have established are emitted by healthy tissue. The inventor, Bill Wolfe—a naturopath as well as dentist—has seen major positive changes occur with his clients who use the devices.

The simpler piece of equipment, the 5-½-inch Chi Pen[®], operates on two AAA batteries. Embedded in the casing is a vial of water that has been imprinted with the frequencies emitted by healthy organs, glands and bodily tissues. A 625-nm red light (at 900 milliwatts power) passes through the water to the tip of the penlight, carrying regenerative frequencies designed to restore and balance the body's energy meridians. Although "balancing meridians" is a broad term, the implications are profound, as blockages in the meridians can cause

unlimited symptoms and conditions, ranging from inflammation and pain to organ and gland malfunction. This easy-to-use instrument is intended for people to use at home for self treatment.

The 10½-inch-long Advanced Chi Stimulator[®], which operates on two AA batteries), contains three light emitters. These lights are in the infrared spectrum (950 nm at 450 mW power), which promotes deeper penetration into the tissue than does visible light. (When the instrument is turned on, it emits a blue color so the user can direct the wave to the targeted area, and avoid shining the invisible IR light into the eyes.) A major advantage of the Advanced Chi Stimulator[®] is that instead of a permanent cartridge in the casing that contains only one program, this unit is equipped with eleven interchangeable, programmed, water-filled lenses. These discs are screwed onto the tip of the device, allowing the user to select from a range of frequency formulas—not only Chi Energy, but also Detox, Infection, Inflammation, Lymphatic, Root Canal, Sinus, Stimulation, Toothache, Trauma, and Relaxation.

The LEDs from Good Energy Products are specifically designed to stimulate acupuncture and muscle trigger points, and to assist with pain management, skin conditions, wound healing and dental problems. The devices don't have to be used over long periods, as results are rapidly seen. To stimulate points, the user is instructed to place the laser against the skin for about minute per point. For local pain and swelling, the laser is placed for three minutes on the area with the most intense symptoms, and then for a minute each on spots surrounding the main area. For skin conditions such as acne, burns, insect bites and cold sores, two or three times a day the light is held about ¼ inch above the target area and moved very slowly back and forth for a few minutes.

Dental pain management is one of Dr. Wolfe's specialties. For 3 minutes, the user places the light against the skin over the most painful region. Less painful areas are treated for only a minute each. For gum conditions, Wolfe advises, pull the lip back and hold the light for 3 minutes about ¼ inch from the target area. Although Wolfe recommends doing this two to three times a day, often relief can be felt

immediately. If the subject experiences pain directly after applying the frequencies, this is a good sign: it signifies a desirable improvement in blood flow and increased waste removal. Relief is usually felt the next day. To help minimize post-operative discomfort and pain, Dr. Wolfe tells his clients to use the LEDs about a half hour before the dental work. The laser will not numb the area, but help with healing afterward.

These instruments can be used for animals as well as humans. Dr. Wolfe explains that photonic light accelerates healing partly due to its stimulation of endorphins, critical in pain management. He emphasizes that his instruments do not replace proper medical or dental treatment.

In addition to lasers and LEDs (which come with a generous warranty), Dr. Wolfe has produced an impressive line of highly effective, frequency-infused dental products and skin creams, including toothpaste, mouthwash, and anti-aging and analgesic preparations. There are also MSM supplement crystals infused with neurotransmitter frequencies for mental clarity, to be taken during the day, and frequencies to help with sleep, to be taken before bedtime.

Although the personal care products are made with natural (not synthetic) ingredients, Wolfe feels that the benefits from the botanicals, herbs, essential oils, and other materials are secondary compared to their main purpose: as carriers of frequencies into the body. For those disinclined to use high-tech devices, the skin and dental health products are a wonderful way to administer frequency healing. And those who are comfortable with, and employ, electromedical devices, find that these personal care products augment the effects of whatever else they're using.

FAR INFRARED HEAT THERAPY

Heat therapy is thousands of years old. Whether the heat source was a dry sauna, steam bath, or hot water bath, the ancients understood that when people perspire, they feel better. We know today that sweating is one of the body's chief methods of eliminating waste, whether exogenous (from outside

the body) or endogenous (from inside the body). Poisonous chemicals, heavy metals, and metabolic wastes are routinely trapped by the body's tissues, especially the fat cells—which encapsulate the toxins to protect the bloodstream. These toxins not only exacerbate illness; in many instances, they cause illness.

The chemical load we carry was dramatically illustrated during a Spring 2001 Public Broadcasting System (PBS) special about the chemical industry's suppression of evidence that their own products cause cancer. When newsman Bill Moyers had his blood drawn and analyzed, his blood sample contained over eighty common industrial chemicals, including alcohols, solvents, pesticides, petroleum-based synthetics, PCBs, and Persistent Organic Pollutants (POPs). Given this eclectic and horrifying sample, it's easy to see why so many people today are ill.

During sweating, the fatty tissue vibrates faster, dumping its toxic load into the interstitial fluid (outside and between the cells). These interstitial wastes—which normally would have to be processed by the lymph system, urinary tract, and/or liver—are released through the pores of the skin. This lightens the elimination burden of these other systems, giving them a chance to rest.

Sweating does more than eliminate toxins. It raises the pH of some portions of the body to a more alkaline state because chemical wastes and the products of cell metabolism are generally acidic. Although sweat therapy is not identical to having a fever, there are similarities between the two. When infected, the body produces a fever to "cook" microbes, most of which cannot survive in temperatures of over 103°F or 104°F (39.4°C or 40°C). Sauna therapy can also make it too hot for microbes to survive if the core temperature is raised enough. During fever, more endorphins (natural pain killers) are produced by the body. This, too, occurs during sauna therapy, which accounts for its pain-relieving benefits. During fever, the body produces more enzymes, which the white blood cells need to destroy pathogens. This occurs during sauna therapy as well. In a sauna, the heating of the body alone helps to relax the nerves and tissue fibers.

Modern scientists have discovered that the *source* of heat used to make us sweat can make a difference between highly effective and less satisfactory detoxification. Dr. John Harvey Kellogg, famous for creating breakfast cereal, is less known for having invented the electric light bath that preceded today's far infrared (FIR) sauna cabinet. Even less publicized are the sophisticated tests he conducted in the early part of the twentieth century. Using devices he invented, Kellogg measured the toxins in the urine and sweat of healthy volunteers who took Russian baths, Turkish baths, and sessions in the doctor's own electric light cabinets. The light bath encouraged the release of more toxins than did the steam cabinets. And the test subjects also became hotter, faster, because *the heat waves from the light bulbs in Dr. Kellogg's sauna were in a particular far infrared range*. Far infrared contains among the most beneficial EM frequencies that the body requires for growth, repair, and health.

The amount of FIR emitted by a body or object is part of its electromagnetic signature. The movement of atoms and their constituent particles—as well as the movement of the chemical bonds between molecules—change direction, rotation, and orbit, depending on their frequency. These changes also correspond to alterations in the electrical and magnetic fields that they emit.

Far infrared wavelengths range from about 5.6 to 1000 microns. For healing purposes, we are interested in only a tiny portion of the FIR spectrum that ranges from about 5.6 microns to 9 microns in length, radiating heat from, respectively, about 470°F to 120°F (243.3°C to 48.9°C). (The shorter wavelengths are hotter.) A heat source that emits a particular, narrow band of FIR is the most effective for sauna therapy. Not surprisingly, a wavelength of about 9.35 microns corresponds to a temperature of 98.6°F (37°C).

Water molecules are very efficient absorbers and emitters of far infrared radiation that's about 9 microns in length. This wavelength also causes water clusters to become smaller, more motile, and more easily absorbed into the tissues. Put another way, water *intrinsically resonates* within these particular wavelengths. Whereas other EM spectrum

wavelengths (such as the much longer radio waves) pass through water, a 9.4 micron far infrared wavelength will be absorbed by the water itself and cause its temperature to rise. People's ability to absorb and emit FIR is related to the ability of water to absorb and emit FIR. The human body is comprised of nearly 70% water, which helps to explain why people respond in such a positive way to FIR.

For the vast majority of people, FIR is the most effective means of inducing a sweat. There are many FIR saunas on the market today. One sauna cabinet manufacturer, Saunex™, not only uses heaters that selectively emit only the most beneficial FIR wavelengths, the company also has almost completely eliminated the harmful EM field that normally accompanies electrical wiring.

SOUND

Although electromedicine is the name of a class of various therapeutic devices that utilize selected EM frequencies, during the educational seminars I give on rife therapy and electromedicine, people often ask me if tones can be substituted therapeutically for various EM frequencies. The answer is "Yes, under certain conditions."

Sound is commonly defined as existing only if there is a medium (such as air and water) to carry the vibrations, as sound cannot be heard in a vacuum. *But all frequencies in the electromagnetic spectrum—whether in the form of visible light, radio waves, gamma waves, etc.—have a corresponding sound or tone, even if it does not transmit through air or water and even if we are not capable of hearing it.* (This is probably the origin of the phrase, "music of the spheres.") Since sound and EM radiation are mathematically related, theoretically, all electromagnetic waves can be translated into audible sound, and the two modalities might be interchangeable for healing purposes.

Sound and music therapies (as with heat therapies) have existed for centuries. But in the last several decades, sound healing has enjoyed a renaissance. Tuning forks, crystal and metal bowls, classical music from certain composers, and sounds from nature (cricket and bird songs, waterfalls) have

become popular for soothing the soul and emotions, if not outright physical healing. The scientific precision of our modern age demands a different focus. We already know that every organ, gland, and tissue in the body emits EM radiation, and that this radiation corresponds to tones. New systems are based on this knowledge. For instance, biologist David Deamer decoded and translated some of the vibrational frequencies from select portions of DNA into audible tones, and musician Susan Alexander later added voice and instruments to these tones on a CD. Also, scientists are using acoustically translated DNA in a number of novel experiments (the tones emitted by live and dying yeast cells occupy many Internet websites). However, a unique use of sound, called VoiceBio™©, was first developed in 1995 by naturopath Kae Thompson-Liu.

VoiceBio™© is a non-invasive way of analyzing the function of organs, glands, and various body systems, based on the tones (EM radiation) they emit. If we could hear the symphony expressed by a living body, we would hear the liver vibrating to the note of G, the heart vibrating to the note of A#, and so on. Thompson-Liu discovered that the body's frequencies are reflected in the voice, no matter which octave the person uses when speaking or singing.

In an ideal world, each of the 12 notes of a scale would be represented on a graph of the voice (called a voiceprint). But due to poor diet, trauma, injury, infection, chemical poisoning, faulty genetics, or a combination of these conditions, most voiceprints show unequally represented notes that have huge variations beyond the normal, expected, uneven "bell curve." The notes can all be present (thus falling within the range of good health) or be overemphasized, weak, or missing entirely from the voice (thus falling within the range of compromised health). Assessing the heavy, normal, and weak areas of a voiceprint can help pinpoint which body parts or systems are off-balance.

For the VoiceBio™© assessment, the client records a voice sample into a sensitive microphone connected to a small Walkman-size piece of proprietary equipment called VIBE (an acronym for Visual Image of Body Energy). Then VIBE sorts,

translates, and graphs the tones (ignoring word content) onto a voiceprint that quantifies the frequencies. The graph is displayed on a computer screen connected to the VIBE. VIBE was developed because Thompson-Liu found that the sound cards in computers are unreliable, sometimes varying as much as two tones in accuracy. The actual voice sampling takes five minutes or less.

There are several ways to supply the body with the balancing frequencies. The client can listen, through stereo headphones, to a palm-size tone box (called a “sonic balancer”) encoded with personalized sound formulas. Derived by Thompson-Liu using complex mathematical computations, the sound formulas are different for every person—even those who need the same notes—since they are based on how the client’s brain is fundamentally organized. Although the VoiceBio™ sound formulas are subjectively experienced by the conscious ear more as white noise than patterned pitches, the effects are like healing music rather than disorganized noise, in part because the notes are in the very low range of human hearing. Most important, the tone boxes can be programmed so that the brain learns to produce the weak or missing notes on its own. This brings VoiceBio™ therapy into the realm of holistic self-regulation, rather than allopathic substitution. The client can also listen to the missing notes as either straight musical tones or music in that key. In the case of overemphasized notes, the VoiceBio™ practitioner suggests detoxification and cleansing of the corresponding organs and systems.

The most powerful of all therapies, however, is for the clients themselves to generate the needed tones by singing or humming. (It also makes the therapy cost-effective for the client.) One might think that a highly depleted or stressed individual cannot muster enough energy to hum, and that the very ill need a “jump-start” from an external source, such as the sonic balancer. However, the reality is “quite the opposite,” Dr. Thompson-Liu states. “The very ill see the fastest results by even humming the note for just a brief period a day. I have *never* found a client who could not hum something. Trials conducted in the past year in four states show that having the clients

do it themselves is more effective than the sonic balancers by over 200 percent.”²⁹

Usually, after a month, the client is retested to see if the same formula is needed, if a different formula is needed, or if the client needs to continue at all. Although results to sound therapy can be felt within days or even hours, the listening or humming continues over a period of weeks and even months, depending on the severity of the condition and the person’s ability to respond.

Thompson-Liu’s discovery that all notes correspond to specific nutrients and drugs (as well as body parts and systems) brings another level of specificity to VoiceBio™. A voiceprint helps the practitioner pinpoint which nutrients are most needed by the client. (The relationship between the missing or weak notes can have an obvious relationship to the organ or gland whose note it shares; but sometimes it does not. Nevertheless, the system works.) Thus, nutritional support in the form of vitamin, mineral and herbal supplementation is integrated with the VoiceBio™ therapy.

The voiceprint can also show which pharmaceuticals might be useful. If the client is taking a drug whose frequency matches a note that is already too high, continuing to take the drug can further stress the note. However, the voiceprint can help determine the drug that may be better suited to the client, if there is another drug that produces the same (desired) effect but resonates in a note that’s too low (or at least not as high).

It is important to emphasize that there are many nutrients that resonate in any given note (C, C#, D, etc.), because each note has a *range* of cycles per second. (Historically, what precisely constituted middle C and the rest of the scale depended on the country and era.) However, the frequency of each nutrient is extremely precise, which is why any transmission device must be accurate to the second decimal point. Thompson-Liu devoted many years of research (and expensive laboratory tests) to find the frequencies of nutrients (vitamins, minerals, amino acids, fatty acids, etc.) as well as toxins and drugs. Some sound treatment systems have posted nutrient frequencies on the Internet that are incorrect, because they compute frequency based on the molecular weight of the elements that

comprise the nutrients, rather than on the wavelengths themselves. (Weight measures how heavy something is, and has nothing to do with oscillation or frequency.) As with most electromedical therapies, sound protocols obtain the best results with the exact frequencies.

Healing with sound will become imperative if global government restrictions to supplements become more severe. People could assimilate the frequencies of their chosen supplements via headphones, or even sound recordings. Since this user-friendly modality does not make medical claims, it can be implemented by laypeople as well as health practitioners.

SUMMARY

The body is comprised of EM radiation. It emits EM waves and responds to EM waves. All biological functions correspond to electromagnetic phenomena. The electromagnetic energies that exist in living tissue are extremely potent. When you target a living cell with the precise frequency that it needs, it will respond favorably, and health can be restored in an amazingly short period of time.

Electromedicine covers a vast territory of different energies. The therapies reviewed here—EM radiation, electrical current, oscillating and pulsed magnetic fields, visible red light, and FIR (perceived as heat)—are only a few samples. Other frequency therapies not covered include radio waves and microwaves on the benign portion of the EM spectrum, and bands of visible light besides red.

Conventional physics does not regard sound as part of the EM spectrum per se. However, every frequency in the EM spectrum has a corresponding sound, even if we cannot hear it. Thus, audible sound has an intricate relationship to EM frequencies and can also be utilized for healing.

The health restoration effects of correctly applied energetics cannot be underestimated. The health restoration effects of correctly applied energetics cannot be underestimated. As with any modality, one must be careful when using frequencies, be they disseminated by electromedical equipment or sound. However, as those who have benefited from electromedical therapies can attest, the correct energies, properly used, can be an integral part of one's wellness protocol. Electromedicine and sound are the healing of the future. Whether you are a health care professional or a seeker of health, these therapies are well worth exploring.

THE ELECTROMAGNETIC SPECTRUM

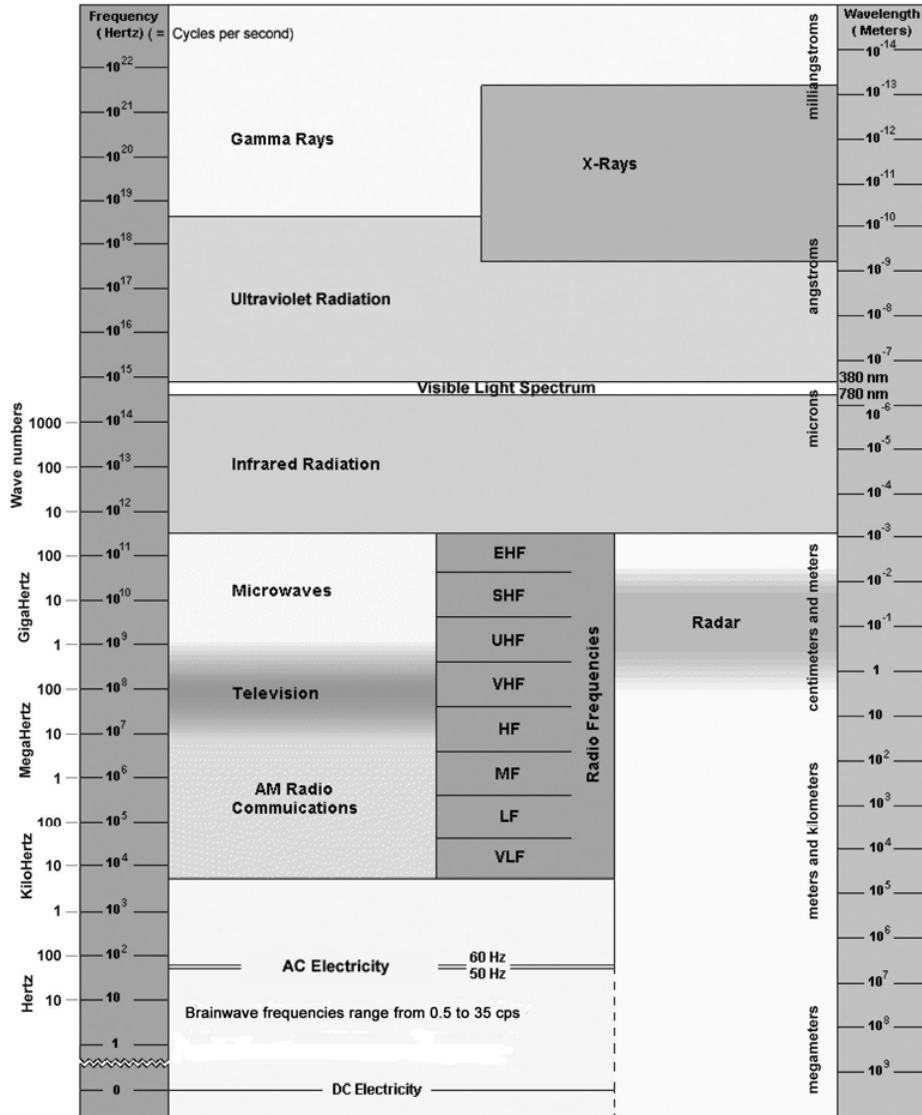


Figure 1: Electromagnetic Spectrum Chart.
 From *The Holistic Handbook of Sauna Therapy* by Nenah Sylver, PhD (2004)



RESOURCES

EM Radiation: Rife Frequency Healing

- ◆ **PERL:** Resonant Light Technology, 4875 North Island Highway, Courtenay, British Columbia, Canada V9N 5Y9; 250-338-4949. www.resonantlight.com. Contact Eddie (Edna) Tunney.
- ◆ **P3, PFG, and PFG2:** Pulsed Technologies, 3217 Brunchberry, Plano, Texas 75023 and Str. Brasov 22, Bl. Z132, Sc.1, Ap.45, 061448, sect. 6, Bucharest, Romania. www.pulsedtech.com. Phone: 800-801-4798 (toll-free) or 214-453-0095 or 214-453-0066 (Dallas, Texas, US), +40-314-057-986 or +40-722-643-640 (Bucharest, Romania), +44-208-002-9048 (London, UK), or +352-20203757 (Luxembourg). Contact Jimmie Holman or Paul Dorneanu.

Electrical Current

- ◆ **Frequency Specific Microcurrent:** Integrated Pain Solutions, 6956 SW Hampton Street, Tigard, Oregon 97223; 503-443-6100. www.frequency-specific.com. Contact Carolyn McMakin, DC.
- ◆ **Tennant Biomodulator®:** Senergy Medical Group, 9901 Valley Ranch Parkway East, Suite 1009, Irving, Texas 75038; 866-514-8221 (toll-free) or 972-580-0545. www.senerymedicalgroup.us; contact Karla Bass or Christine Ebner.

Oscillating Magnetic Fields

- ◆ **Henry Lai, PhD:** Bioengineering Department, University of Washington. hlai@u.washington.edu.

Pulsed Electromagnetic Fields

- ◆ **ONDAMED®:** Ondamed Inc., 80 Waterview Terrace, New Windsor, New York 12553; 845-496-6673. www.ondamed.net. Contact Silvia Binder.

Monochromatic Visible Light: Laser and LED

- ◆ **Laser—LazrPulsr™:** LED Healing Light LLC, 1276 S. Chambers Road, Aurora, Colorado 80017; 303-696-6532. www.lazrpulsr.com. Contact Gerry Graham, DC.
- ◆ **LEDs—Light Disc, Pad, Shaker, and Tri-Light:** Light Energy Company, 1425 Broadway, PMB 526, Seattle, Washington 98122; 800-544-4826 (toll-free). www.lightenergycompany.com. Contact Pam Baker or David Olszewski, EE, IE (owners).
- ◆ **LEDs—The Chi Pen® and Advanced Chi Stimulator®:** Good Energy Products, 1348 Boatright Drive NE, Albuquerque, New Mexico 87112; phone: 800-698-2563 (toll-free) or 505-299-6950 (local and international). www.drwolfe.com. Contact: Bill Wolfe, DDS, NMD.

Far Infrared Heat

- ◆ **Saunex® saunas:** U.S. Health Equipment Company Inc., 138 Maple Hill Drive, Kingston, New York 12401; 877-772-8639 or 845-658-7576. www.saunex.com. Contact Jim Schaeffer or Bernarr Schaeffer.

Sound

- ◆ **VoiceBio™©:** 540-297-6485. www.voicebio.com. Contact Kae Thompson-Liu, naturopath.



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- ³ Steve Haltiwanger, "The electrical properties of cancer cells." www.royalrife.com/haltiwanger1.pdf (April 2, 2006).
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- ¹⁵ Rob Harrill. "University of Washington Researchers Find Magnetic Fields May Hold Key to Malaria Treatment," *Townsend Letter #276* (July 2006), 40.
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