SUPERCHARGE YOUR ENERGY HEALING WITH **PULSED MAGNETIC FIELDS** (PEMFS)

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To define energy healing requires defining energy.

From the Merriam-Webster dictionary:

Definition of energy

1 **a** : dynamic quality
// narrative *energy*

b : the capacity of acting or being active
// intellectual *energy*

c : a usually positive spiritual force
// the *energy* flowing through all people

2 : vigorous exertion of power : EFFORT
// investing time and *energy*

3 : a fundamental entity of nature that is transferred between parts of a system in the production of physical change within the system and usually regarded as the capacity for doing work

4 : usable power (such as heat or electricity)
also : the resources for producing such power

Therefore, energy is defined as a quality, capacity or a force. It is usually dynamic or active. From a physics or science perspective, energy is a fundamental aspect of nature applied from without or within a system to produce change or reactions. Often energy is considered a useful source of power, such as heat or electricity.

What Are Energy Healing Therapies?

According to the National Center for Complementary and Integrative Health (NCCIH), energy healing or energy medicine is a category of "complementary" therapies that involves the use of various types of energy fields. In general, the goal of energy therapies is to bring energy into a person needing help or to balance the energy within a person. Energy medicine is defined as any energetic or informational interaction with a biological system to bring back homeostasis in the organism. Therefore, energy medicine is a field of complementary therapy based on the interactions of the human energy field with other energy fields (human or other).

There are many kinds of energy therapies, some which use treatments such as light, sound, and magnetic fields. These treatments are relatively easy to measure. Other kinds of energy therapies, such as Healing Touch, Reiki, Qigong, and therapeutic touch, are "intended to affect energy fields that purportedly surround and penetrate the human body." These therapies cannot be as easily measured or researched. (Srinivasan) Therapeutic touch, healing touch, Reiki are probably the most commonly used energy healing modalities, and all of these involve a practitioner who assesses the client's energy field and then rebalances it using a variety of techniques.

Even though the results of these therapies have not been measured quantitatively in a reliable way, some new instruments, such as the superconducting quantum interference device (SQUID) are showing promise for research with energy therapies.

Many of the techniques used in energy therapies come from practices in shamanistic and Asian traditions with thousands of years of use. For example, more than 2,000 years ago, Asian healers believed that the flow and balance of life energies (Chi or Qi) were important in maintaining health, and that illnesses were due to energy imbalances. They developed therapies and practices, such as acupuncture, yoga, and Qigong to correct these imbalances. Modern energy therapies such as Healing Touch are based on the same principles.

Subtle energy is another term used to describe the energy in Energy Medicine. These energies used to activate a person are subtle or of very low intensity. Such low levels are challenging to measure. These energies are of a physical kind. There are four basic types of energies enumerated in Physics; they are strong and weak forces, at the nuclear level, and gravitational, and electromagnetic forces. Of these, the second force is electromagnetic (or, its equivalent, acoustic) and is the only one that is easily manipulated and quantifiable at the present time. Acoustic (motive force or pressure) energy could be transformed into electromagnetic or vice versa by creating piezoelectricity. Most tissues of the body with structural elements are piezoelectric. Electromagnetic input to the body can be transformed into acoustic force and any acoustic input could be transformed into electromagnetic energy. Thus, the body is bathed from within and from without by both electromagnetic and acoustic energies of various frequencies and intensities.

Modern quantum physics provides the framework for energy medicine. Einstein demonstrated that matter and energy are interchangeable and therefore our bodies are energy. Matter, then, does not exist in certain places with absolute certainty, but shows tendencies to exist. A particle can also act as a wave, which

becomes a probability wave, and the interactions between waves (particles) are probabilities of interconnections. In this view, the universe becomes a dynamic web of inseparable energy patterns, and the classic idea of analyzing the world by separate, independent parts is challenging and would produce difficult to prove results. (Prestwood)

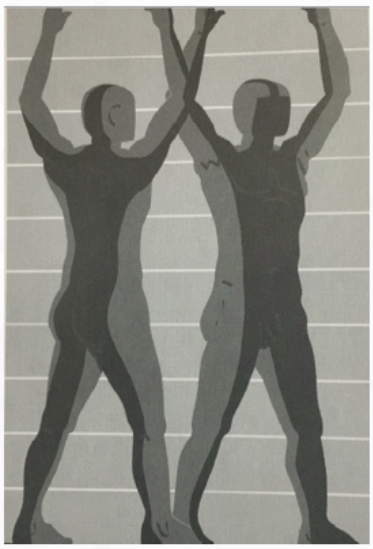
At a molecular level all interactions within the body have a magnetic component. Chemicals cannot combine without their natural electrical and magnetic components allowing the combination or exchange. For example, sodium ions and chloride ions cannot combine to become salt without the physics allowing it to happen through attraction and repulsion forces.

Acupuncture points and meridians

Acupuncture points and meridians are well-known subtle energy sources within the body. Instruments are available to measure acupuncture activity. Acupuncture instruments are based on the observation that acupuncture points have unique electrical characteristics; the points have lower resistance to electrical current flow as compared to the surrounding tissues. It is now well established that the acupuncture system is a low energy closed-circuit electrical system with current flowing in continuous motion. As each meridian is associated with one or more organs inside the body, the electrical activity of the acupoint appears related to the organ function. Electroacupuncture According to Voll (EAV) is commonly used to measure specific acupuncture points to determine energy balance in the PEMFs related meridians and help to guide treatments, whether energetic or otherwise.

The acupuncture points and meridians, because they are electrical grids, emit electromagnetic fields. In fact, it has been shown that the Meridian system effectively produces a low energy, electromagnetic “shield” around the body, through the so-called tendino-muscular grid system. (Helms) This system not only provide subtle protection of the body, as an interface between the body and the environment, but also serves as a conduit system for moving energy (Qi) throughout the body. Modern scientific methods are being used to better define and describe what the Meridian system is. (Longhurst)

Tendinomuscular Meridian
Yang Example



From *Helms, 1995.*

The human skin has a resting electrical potential across its epidermal layer of 90-300 mV [outside negative, inside positive]. Since acupuncture points have low resistance, they may tend to short-circuit this normal battery across the skin giving rise to a source of current in a "source sink", in other words, AC points provide a path of least resistance for currents driven by the 90-mV resting potential which exists across the entire skin. (Stux) Because of this natural electrical charge on the surface of the skin, skin contact between two bodies will create current flow between the two bodies, especially if one of these individuals had higher vitality, for example, an energy healer. In its own way, this may be very similar to wearing a copper bracelet. The copper metal interacts with the electrolytes in the skin to produce tiny amounts of charge, which then moves through the acupuncture system to create acupuncture -type effects, including reduction of pain.

Electroacupuncture According to Voll (EAV)

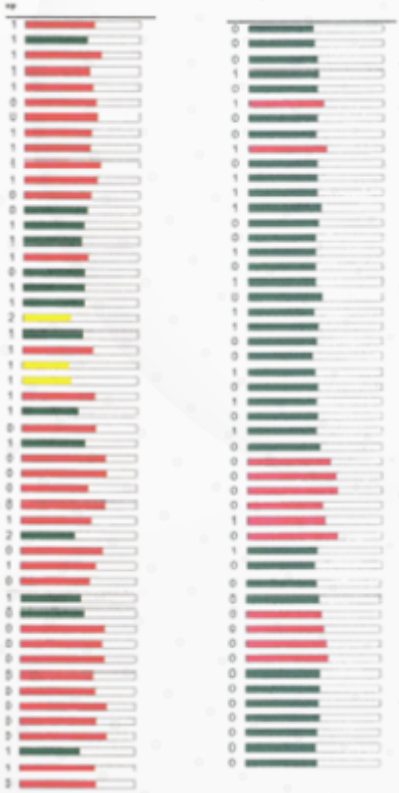
EAV is an acupuncture point measuring technique that introduces a small electrical voltage into specific acupuncture points (Voll points) and then reads the electrical potentials returned from that acupuncture point. EAV is also called EDS (Electro-Dermal Screening) or MSA (Meridian Stress Assessment). The electrical conductance on any general area of the human body has a fairly low level of electrical conductivity. But the skin is very resistant to electrical current. At certain specific locations on the body, electrical flow is much more conduc-

tive than others. In the late 1940's, Dr. Reinhard Voll, a German medical doctor and engineer, began researching and proving this innovative testing method, now known as EAV. The points found by Voll to be higher in electrical flow corresponded to the acupuncture points and meridians.

EAV measurements have been done before and after magnetic field therapy in two different chiropractic patients. In the graph below, red indicates hyperactive acupuncture points, yellow means underactive and green/dark green is neutral. In both the of the two sets of tests, the first column showed significant amounts of red tests. After a short course of PEMF therapy, a large percentage of the red and yellow results disappeared and became green. This indicates rebalancing of these points and their related meridians. The results obtained afterwards would give a better indication of where therapy should be directed. The results obtained before could indicate some "static" in the acupuncture system that was cleared by a very simple single PEMF treatment.

EAV Results Pre and Post PEMF

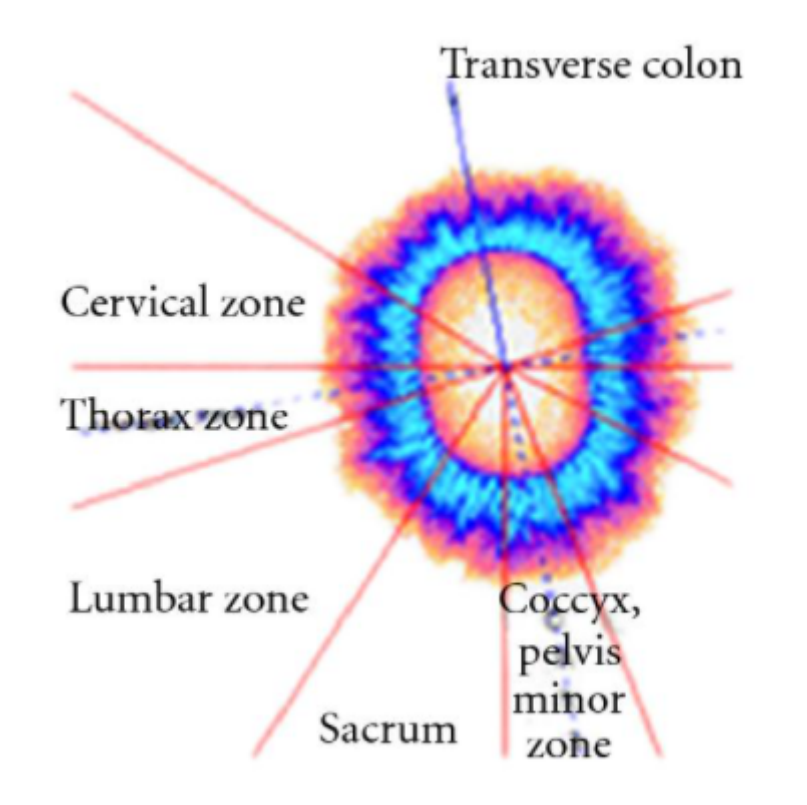
EAV Results Patient 1: Pre and Post PEMF



EAV Results Patient 2: Pre and Post PEMF

Kirlian photography, or GDV (Gas Discharge Visualization)

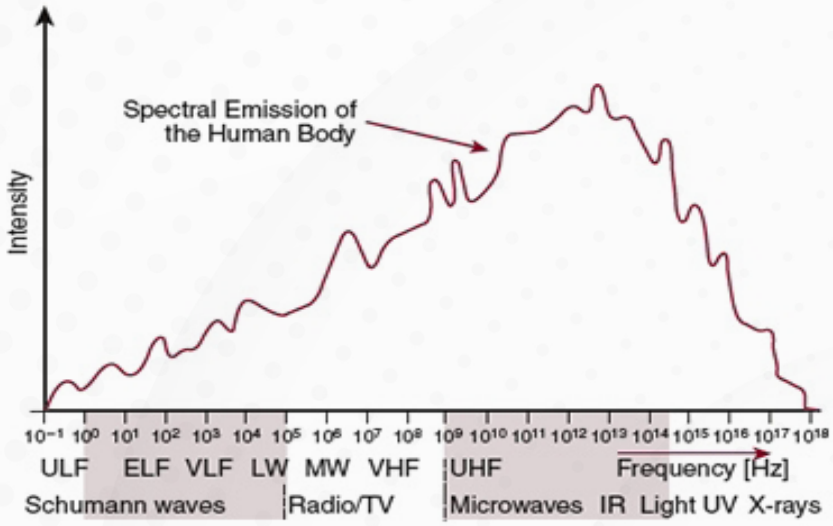
Another way to measure energy flow within the body and the vitality of that energy system is using electrical discharge photography popularly known as Kirlian photography, or GDV (Gas Discharge Visualization). (Kostyuk) The image below Figure 1 is from the second finger of the right hand and shows respective lumbar and thorax zones.



The body and subtle energies

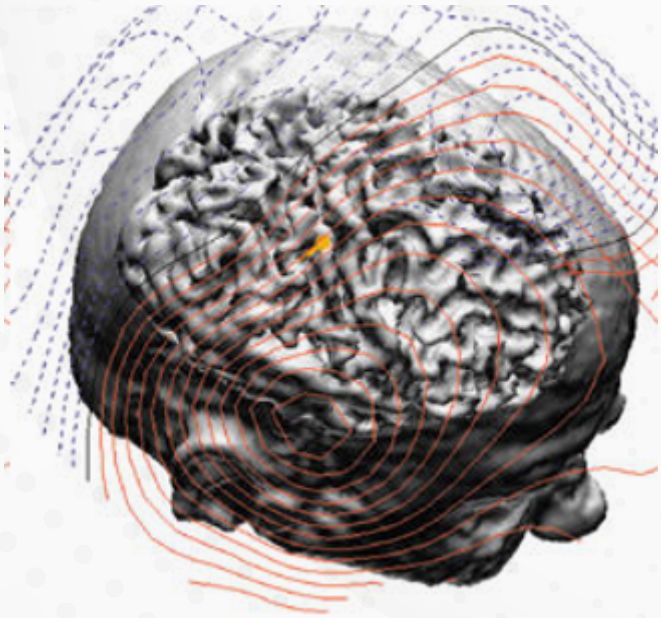
The human body is surrounded by and emits various kinds of energy: electrical, magnetic, light, and “subtle”. Health and disease appear to be related to the flow or lack of flow of our energetic systems. (Prestwood) There has been some quantification of the power spectrum emitted by the body. The graph below shows the relative intensity and frequencies of emissions from the body. It has not been shown whether these are frequencies that are passing through the body or emanated by the body itself. This spectrum of frequencies has not been evaluated for impact with any specific therapeutic system.

Power spectrum of human body emission



From Measurement of the Human Biofield and Other Energetic Instruments

Magnetic fields from the brain



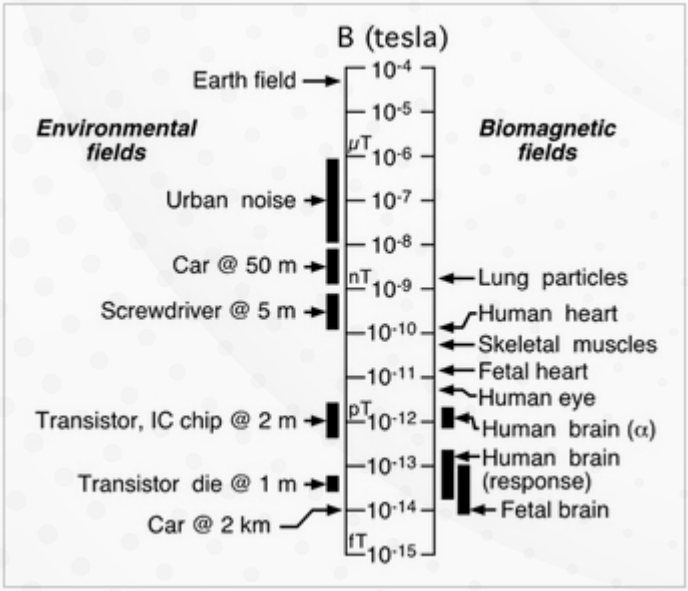
From (http://www.diagnosticimaging.com/dimag/legacy/specialedition/neuro04.html)

This image was created when MRI and a magnetoencephalogram (MEG) of the brain's magnetic field were used at the same time. The red lines are magnetic fields exiting the head, the blue lines are entering the head, and the small yellow ball in the center is an electrical source. This image was taken 30 micro seconds (about a millionth of a second) after an electrical shock to the left median nerve of the wrist. In other words, the brain reacts to a peripheral electrical stimulus producing an enhanced magnetic field.

Body level magnetic fields

Even without electrostimulation, all the tissues of the body produce their own magnetic fields. The highest magnetic fields are registered in the brain and the heart. Because of this, devices have been developed to measure the magnetic fields and are now being used in conventional medicine. For example, MEG is being used to map seizure activity within the brain for possible surgery. The magnetic fields of the brain are in the picoTesla range, while those of the heart are in the nanoTesla range. Magnetocardiography [MCG] is being used to map it electrical activity of the heart for arrhythmia ablation therapy, to assess cardiac functioning, risk of sudden cardiac death, enlargement of the heart, risk of rejection of a heart transplant, and the effectiveness of various heart medications. Magnetocardiography can be substituted for stress tests when they are contraindicated.

The following graphic shows the magnetic field intensities in different body tissues as well as those in the environment.



From https://www.nature.com/scitable/blog/brain-metrics/what_does_meg_measure/

From this graph, the magnetic field intensity is described in Tesla's. One Tesla (T) is 10,000 gauss. So, the Earth's magnetic field is listed as less than 10^{-4}T or ~0.5 Gauss. Biomagnetic fields list between ~10^{-9}-10^{-14}T, or between 1 billionth to almost 1 trillionth of a Gauss. In other words, they are extremely tiny strength magnetic fields.

Electric current and magnetic fields

A very important aspect of electromagnetics is the relationship between electrical charge and current and magnetic fields. According to Maxwell's laws electrical charge in motion (current) produces a magnetic field and the magnetic field interacts with electrical fields. According to Faradays' Law, and externally applied magnetic field produces an electromagnetic force is proportional to the rate of change of a pulsing magnetic field. Most of the actions of PEMFs have been considered to be the result of induced charge or current by the magnetic field, i.e., they generate inductively coupled electrical stimulation. A large number of PEMF clinical devices in present use (particularly for bone and wound repair) induce 1–100 mV/cm peak electrical E field at the treatment site. The induced E field will be greater when the magnetic field effects a greater cross-sectional tissue treatment area, i.e., maximum E field in the target depends upon target size. Because the magnetic field interacts with the electrical field in the skin (a large surface area), even low intensity magnetic fields will produce some degree of amplification of the electrical charges present.

Similarly, energy healers project electromagnetic fields from their bodies. For example, Reiki practitioners have been shown to produce small magnetic fields in their hands of up to 3 picoTesla. (Baldwin) Others have found healers to produce up 100 nanoTesla. In other research magnetic fields of 200–400 nT (a field intensity of ~1000 times greater than that of the cardiac biomagnetic field measured in humans) were detected, but only in 3 of the subjects. In other research two Qi Gong practitioners were studied and electromagnetic fields of 2–3 milliGauss (~2X10^{-7}T) were detected from both as they performed Qi Gong. A milliGauss is 1 thousandth of a Gauss. Using a different field tester, they detected a field of 8–15 milliGauss. But there were concerns about the validity of the measurement tool.

Therapeutic touch practitioners have been evaluated and found to produce between 4-190 V, lasting 0.5 – 12.5 seconds. On average these electoral signals were about 1000 times stronger than galvanic skin responses associated with emotions, 10,000 times larger than EKG voltages and 100,000 times larger than EEG voltages.

The bottom line from this research, indicates that biomagnetic intensity levels are extremely low. Energy healers produce electro-magnetic fields in their healing work, which can be thousands of times stronger than the body's own bioelectromagnetic fields. At the tissue level this can be a dramatically significant level of power by multiple levels. There is an interaction between electrical fields and magnetic fields and the electromagnetic fields of the healers, like externally applied magnetic fields, impact charge production in the body resulting in rebalancing of body and tissue functions.

The copper wall experiments of Dr Elmer Green

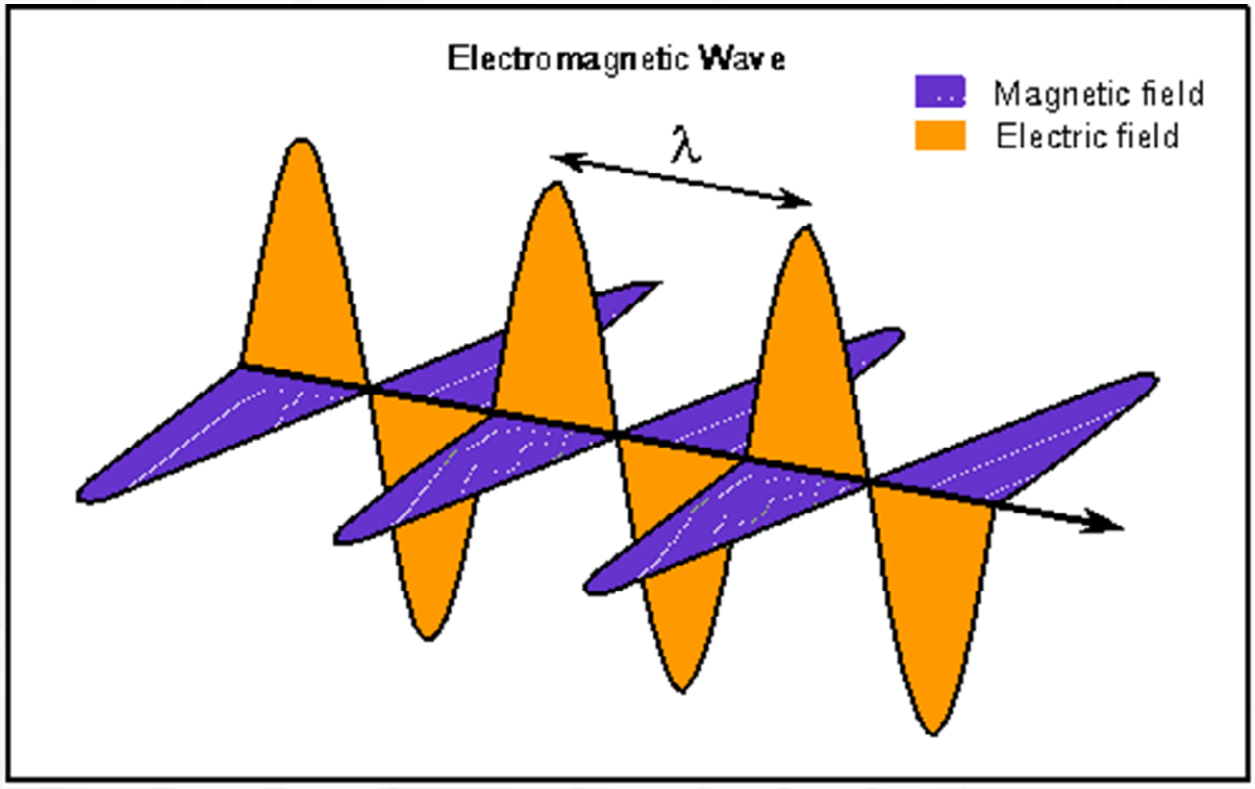
Dr. Elmer Green thought that if people were meditating in a really potent way, they could be generating electrical voltages in their bodies. To test this theory, he set up a copper wall which people sat in front of, and measured the voltages that developed on the walls as a way of finding out whether or not their body changed voltage. When isolated from the ground, sitting alone in a room, a normal body could produce voltages in the millivolt (mV) range. A buildup of static electricity could produce as much as two volts. When they studied healers versus just meditators, the voltages associated with healing intention would shoot up to as much as 200 V and return to baseline. Healer voltages are not normal and are as much as 1000 times stronger than normal. These higher pulses of electricity would only last 4-5 seconds. Dr. Green also discovered that healers doing this over a period of time would often produce electrical pulses from the bodies even when they weren't trying to heal, but just meditating. From https://healthy.net/2019/08/26/the-copper-wall-experiment and Tiller.

In six meditation sessions, one of the healers produced only one pulse of voltage. In the first of the healing sessions, there were 15 – 20 pulses, connected to the intention to heal. One of the healers was bursting with energy to such a degree that the pulsing phenomenon occurred even during meditation. Dr. Green concluded that at least one of the correlates of this healing energy is electrical.

In other work, healers recorded as much as a million volts on the copper wall with a very rapid healing pulse. When they evaluated their EEGs, simultaneous to the healing session, there was a spike in the intensity of the electrical activity in the EEG, that correlated with the healing pulse.

How does a wire with a current produce a magnetic field?

The graphic below describes how a vertically oriented electric field automatically generates a proportionately perpendicular magnetic field. So, with each pulse of the electrical field, there is an equal strength pulse of a magnetic field. The electrical field does not penetrate the body to any significant extent. However, the body is transparent to the magnetic field and penetrates the body completely with ease and without affecting it. However, the magnetic field does affect the body and various functions within the body, covered fairly extensively in Dr. Pawluk's book Power Tools for Health.



Cellular crystal matrix is an electrical conductor

Bioelectricity, that is, the electric fields produced by the tissues as they go about their activities, also concomitantly produce magnetic fields. Recent research indicates that formed or semirigid cellular structures, sometimes called the liquid crystal matrix, create significant electrical fields. Because they are so electrically active, PEMFs also interact with them to rapidly produce even more

electrical activity, resulting in very rapid responses in the tissues. The graphic below shows what these semirigid cellular matrix structures are.

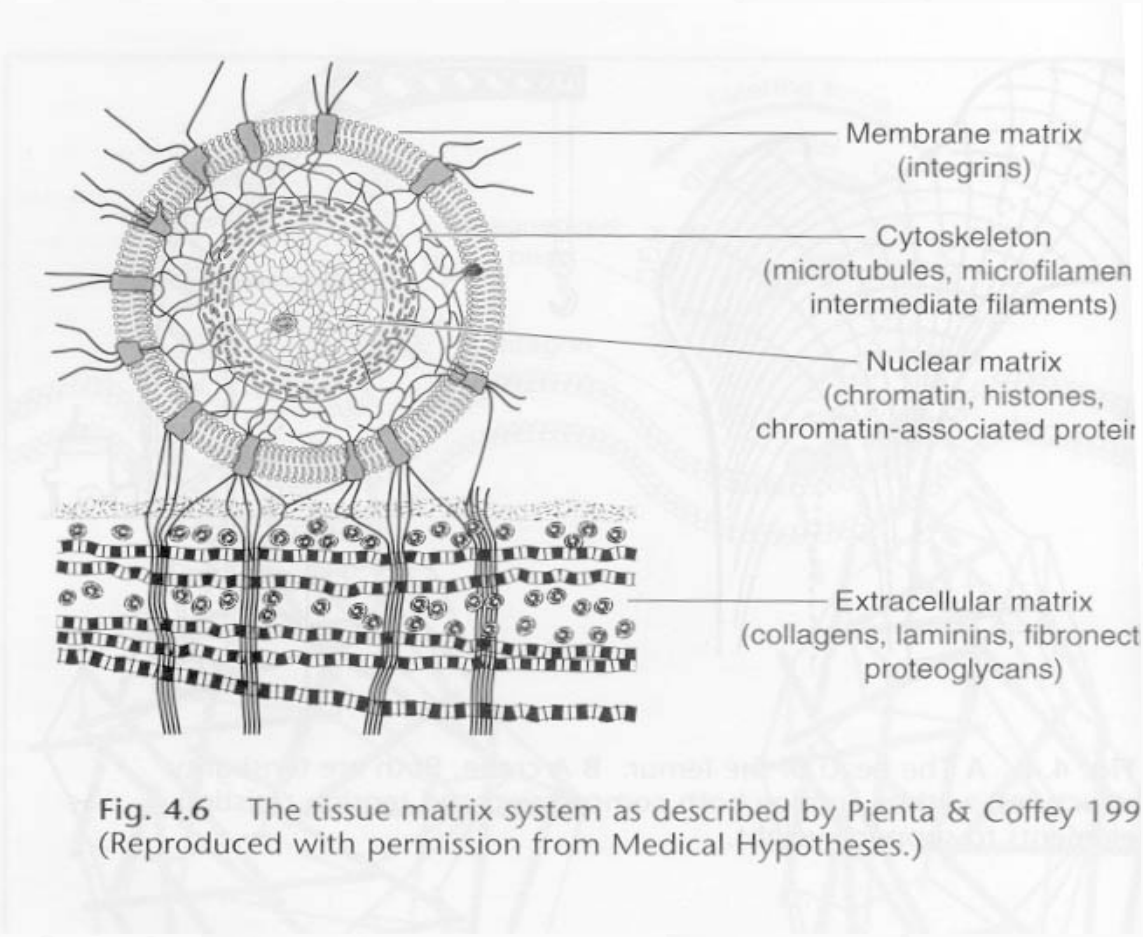


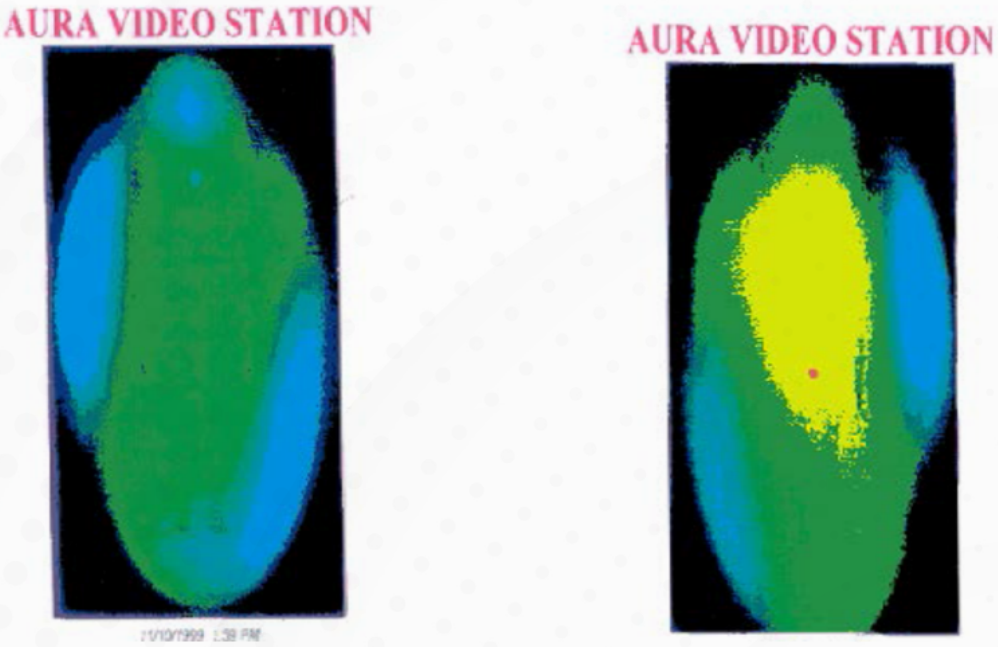
Fig. 4.6 The tissue matrix system as described by Pienta & Coffey 199
(Reproduced with permission from Medical Hypotheses.)

From *Oschman JL. Energy medicine: the scientific basis. Churchill Livingstone, 2000. P66.*

These microtubules and nanowires are electrical and produce currents. Per Maxwell's Laws a flow of electric current will produce a magnetic field. All tissues have these microtubules and nanowires.

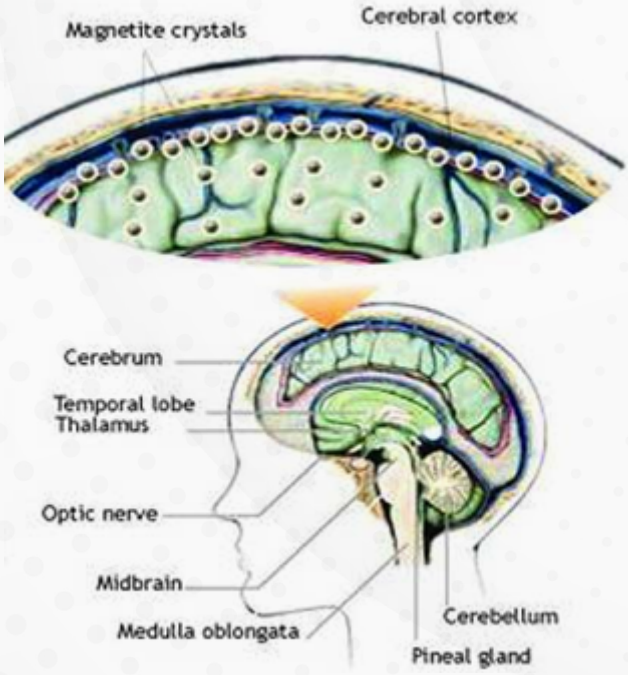
Auras

Many healers report seeing energy fields around the body, the aura. Cameras have been developed to record the aura. An individual was treated with a PEMF system before and after an aura picture was taken. There is a significant brightening of the aura after PEMF therapy, indicating again, that PEMFs can be considered an energy therapy.



Magnetite

There is proof that there are "magnetic antennas" in the brain. These are formed of ferrous oxide crystals called magnetite. Magnetite crystals detect very weak signals and react to them. There are about 5 million magnetite crystals per gram of brain cell and 100 million of these crystals program of cerebral cortex. They are also found all over the body. They are very common in biology, including amphibians and birds.



From: *Kirschvink*

Ferromagnetic particles such as magnetite are directly responsive to both time-varying and static magnetic fields. (Wang) Magnetite reacts over 1 million times more sensitively to an external magnetic field than any other biologic matter. This means that external magnetic fields directly influence the brain. This can affect many functions of our metabolism. It is thought that these crystals are what allow birds to navigate in the dark and in clouds. It has been shown recently that humans have the capability of this type of navigating because of the effects of the Earth's magnetic field on these crystals.

"The magnetic torque from external alternating fields will induce mechanical oscillations in the particles, and ... such motions ... have effects like opening transmembrane ion channels. ... fields of 50 or 60 Hz with peak intensities slightly stronger than that of the earth (50 μT) would be required to make these effects stand above kT (thermal noise), but the large numbers of crystals might allow averaging to yield effects at lower levels." Thermal noise is considered the background activity of cells and tissues. (Kirschvink)

These magnetite crystals may not only serve as receiving antennas, but also have the potential to be transmitting antennas, transmitting various frequencies. There is a possibility that the highly positive Psi experiments of Dr. Rupert Sheldrake may be attributed to these magnetite transmitting antennas. While individual magnetite crystals may not have enough power, as stated above, the large number of crystals might allow averaging to yield stronger broadcasting effects.

Subtle energy fields exchange with electromagnetic fields

Electromagnetic fields interact with subtle (extremely tiny strength) energy fields and vice versa. All of these energy fields interact with chemistry, that is chemical reactions, which affects the structure of cells and tissues. The chemistry in turn affects function. It has been said that physics precedes and controls chemistry. PEMFs are primarily considered as acting in the realm of physics, impacting chemistry, which then impacts structure and, after that, function. (Hankey)

According to the second law of thermodynamics, it is easier to shift something already in motion then to initiate action. It has been estimated that there are about 2000 chemical reactions in the kit cells of the body per second. So, it doesn't take as much energy to shift something in the body, which is constantly

dynamic. Therefore, subtle/weak electromagnetic fields can be significantly impacted with relatively low energy. But it can also be said that the more out of balance processes are in the body, that is, disease, the more energy it may take to shift the balance.

Dowsing

"Water dowsing" refers in general to the practice of using a forked stick, rod, pendulum, or similar device to locate underground water, minerals, or other hidden or lost substances, and has been a subject of discussion and controversy for hundreds, if not thousands, of years. A pendulum is frequently used to detect problems within the body and to obtain answers to various kinds of questions, occult or otherwise.

Although tools and methods vary widely, most dowsers (also called diviners or water witches) probably still use the traditional forked stick, which may come from a variety of trees, including the willow, peach, and witch hazel. Other dowsers may use keys, wire coat hangers, pliers, wire rods, pendulums, or various kinds of elaborate boxes and electrical instruments.

Dowser with "rod"

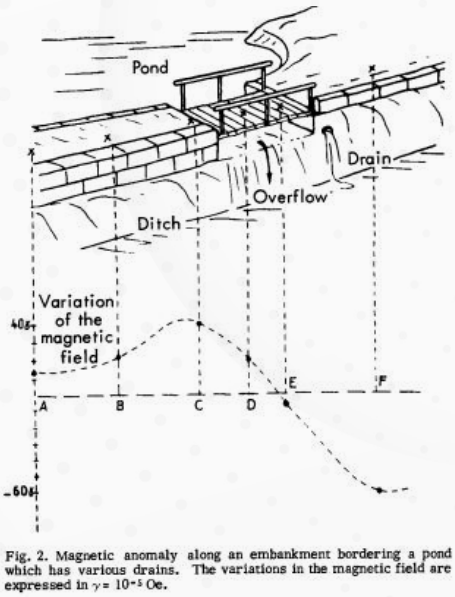


Fig. 2. Magnetic anomaly along an embankment bordering a pond which has various drains. The variations in the magnetic field are expressed in $\gamma = 10^{-5}$ Oe.

Magnetic field varies with flow of water

In the graph above, "magnetic field varies with flow of water", it can be seen that flowing water produces a magnetic field due to the motion of charges in the water and in relation to the surrounding soil. The variation of the magnetic field increases significantly where there is flowing water. Standing water produces almost no magnetic field. Flowing water at depth may be producing magnetic

fields that are relatively undetectable because of the distance from the surface. In addition, there is significant variation among dowsers in their sensitivity to detect the magnetic fields and the how quickly they move through a varying magnetic field. Most important point to make here is that water in motion produces a magnetic field which may be detectable by changes in a body, particularly in somebody who is sensitive to the magnetic field variations.

Dowsing has been subjected to some research to determine whether it may have an electromagnetic aspect. Changes in the earth's magnetic field may coincide with the existence of groundwater. Water dowsers may get a dowsing reaction as a result of entering a change in a changing magnetic field (gradient). Tests were conducted to determine the statistical significance of dowsing reactions obtained by separate individuals dowsing in a common test area. Approximately 150 people, both dowsers and non-dowsing volunteers, participated in the experiment over a period of one year. Statistical tests showed considerable significance. Virtually all people tested experienced dowsing reactions though most of them had never dowsed before. There is a correlation between magnetic gradient changes in the earth and dowsing reactions. In each dowsing test the number of reactions occurring near a change in the ground's magnetic field was greater than the number of reactions occurring in a non-changing field.

In other experiments (Rocard), dowsers were asked to walk past an electromagnetic panel which was randomly turned on and off, without the dowser being aware of which state it was in. Good dowsers were never wrong. However, magnetic fields were not varied, as they would normally be when used traditionally. The research discovered that the chest and arms of the dowser moving through a gradient magnetic field, holding a dowsing rod, will effectively create an electrical circuit of less than a microvolt. A magnetic field in the area of the dowser, whether from the ground or an artificial magnetic field, will interact with the dowser's electrical circuit, generating discernible physiologic responses which the dowser through repetition can identify as significant. There are many factors associated with the ability, strength and consistency of discernment.

Earthing

There is evidence that direct contact with the earth and plants is balancing to the body. The lack of contact with soil and plants directly through the skin, especially the feet, has been shown to lead to various health problems. There are clearly many causes of health problems and energy imbalances in the body. Direct contact of the skin with the soil, which contains many minerals, creates a charge difference, which then leads to electrical currents running between

the soil and the skin. The electrical currents then generate electromagnetic fields locally, which then can affect the whole organism. These generated weak currents and electromagnetic fields lead to various health benefits. However, the currents created through this type of contact are very weak, weaker than externally applied electric magnetic fields.

PEMFs as energy medicine

PEMFs as a form of energy medicine has been used for many years in orthopedics for healing nonunion fractures. PEMFs create an external magnetic field that applied to the body over a bone induces an electrical current in the bone that has a similar waveform as the piezoelectric current induced in bone with mechanical stimulation. There is no physiologic difference between the action potential initiated by an electric field delivered by surface electrodes and the action potentials that can be induced by specific PEMFs, except that PEMFs don't shock the body and go much deeper.

PEMFs affect all tissues in the body since the magnetic field goes through the body completely without being affected by the body. As the magnetic field pulses move through the body it induces current according to Faraday's law. The induction of current, related to Faraday's law is defined by dB/dT. dB stands for the change in intensity and dT stands for change in time. So, with each pulse of a magnetic field, the intensity moves from zero to a peak and then decreases back to baseline, depending on the waveform. It takes time, T, for the pulse to occur. This is usually measured in microseconds or milliseconds. The resulting measure is Tesla per second. The higher the dB dT the greater the induced current in the tissues. Another phenomenon of a magnetic field is that it decreases in intensity as the field moves further from the applicator. This is subject to another law of physics called the Inverse Square Law. This principle is frequently used in medicine, particularly in radiation therapy, to determine the

dose of radiation to be delivered into a target tissue, deeper in the body. There are other ways of measuring the loss of intensity of the magnetic field with distance but this is one of the most commonly used in medicine.

The electric fields induced by PEMFs vary with the intensity the magnetic field. The highest intensity magnetic fields are typically found in MRIs of between 2-5 T. High intensity magnetic fields are also used in transcranial magnetic stimulation, commonly referred to as rTMS. The peak magnetic fields used in rTMS can be as high as about 0.8 Tesla. rTMS with conventionally used protocols induces peak electric field strengths of around 100 mV/mm. (Zmeykina) At these high field strengths electrophysiological effects are consistently found in the brain. The effective threshold for rTMS can be much lower. Animal studies have shown weak, but reliable, electrophysiological effects at electric field strengths of 0.3 and 1 mV/mm. Even the weak electric fields induced by sham rTMS (~5 mV/mm; 15-fold weaker than active rTMS) can induce short-lasting electrophysiological aftereffects in humans. One should be able to see immediate electrophysiological effects with electric fields between 20 and 50 mV/mm.

Energy healing techniques are usually associated with very small magnetic fields and voltages, which are often very short lasting. PEMFs can be used over extended periods of time, continually producing charge in the body. PEMFs range in intensity from picoTesla to 1 Tesla. Choosing the right magnetic field intensity for the problem being treated is very important. For example, bone fracture healing devices often need to be applied for 4 to 12 hours at a time daily for 4-8 months to produce results. Another recent finding is that it requires about 15 Gauss optimally to target adenosine receptors to reduce inflammation in the body. The intensity of the PEMF device has to be considered in order to achieve this optimal 15 Gauss intensity deep in the body.

It would be expected that results from PEMF therapies would be more consistently reliable and less dependent on conditions. As observed with therapeutic touch practitioners and energy healers, they may not always produce consistent levels of energy. Obtaining PEMF treatments from practitioners, similar to that received from energy healers, is episodic and may be less reliable in producing enduring results because of the lack of repeated treatments. Energy medicine approaches have a history in humanity at a time when technology for healing was not available. Since PEMFs are a very recent introduction in our healing tool chest, dating back to the 1970s, it made sense before then to rely on human-based healing energies. PEMF technologies make energy medicine available to everybody to be able to be applied consistently and regularly to obtain optimal results.

Alternative PEMF actions

Most of the effects PEMFs have on biology have been looked at primarily from the perspective

of induced charge or electric fields in the tissues. Similarly, energy medicine reactions may also include other effects, other than purely electrical or magnetic. To what extent these other effects happen during any particular energy medicine application is largely unknown. It is much more likely that some of these alternative healing effects or actions are present with healing done at a distance, called remote healing.

Other effects of PEMFs have been described as well. These include quantum effects, magnetic spin effects, genetic magnetoreception, macromolecular effects, and the electromagnetic theory of consciousness. It is beyond the scope of this e-book to delve into these to any significant extent.

PEMFs in biologic systems act on charged and magnetic particles that are often microscopic in size. It is natural to expect that the actions of magnetic fields on the brain and other biologic structures, are governed by quantum laws at the most basic levels. Quantum effects are thought to occur below the level of the atom, or the subatomic level. Every molecule has both a classical physics aspect and a quantum aspect. Quantum actions may be happening and be different from actions expected from classical physics. Research into the actions of quantum effects in biologic systems has become an individual discipline known as quantum biology.

The spin of electrons in tissues is another target of magnetic fields. PEMF stimulation can change the state of electrons spin systems (radicals, ions, or triplet molecules), which in turn can influence the chemical activity of corresponding compounds. In addition to weight and charge, basic particles like electrons and protons have an “angular momentum” called “spin” and therefore have an associated spin magnetic momentum. The magnetic properties of atoms are determined primarily by the spin of electrons. Chemical reactions in the body are spin-selective, which means that they only allow those reactions where the spin states of the reacting molecules coincide, and are forbidden if the spin is changed. These types of spin acting on free radicals (particularly oxygen) result in the production of ATP.

Genetic magnetoreception is related to the actions of PEMFs on the genome or genes of the body. There is a significant amount of research demonstrating the effects of PEMFs on genes in almost all parts of the body. Even weak magnetic

fields can induce certain genetic effects due to the actions of specific proteins which are magnetosensitive. Some of these very ancient regulatory proteins are present in virtually all living organisms, including the cells of bacteria, plants, insects, and animals. They are predominantly in the cell nucleus.

"Macromolecular" mechanisms of PEMF stimulation involve large molecules or parts of cells, called organelles. These large molecules can be oriented or deformed under the influence of a magnetic field. This type of change alters their properties and reactivity, including the production of electrical charges, called the piezoelectric effect. The charged particles in living matter, such as ions and molecules that are involved in physical and chemical processes, appear to act as messengers or activators to the next biological level when the effects of magnetic signals are changed in the body, called transduction. Fine adjustments in protein activity, performed by the interaction of biology and physics, involve ions and messenger molecules that shift metabolic processes. These are particularly seen by the effects of PEMFs on ion channels in cell membranes that rely on changes in voltage. These ion channel changes produced by PEMFs result in changes in large "macro" molecules, and therefore the end results of PEMF stimulation in affecting circulation, inflammation, swelling, tissue regeneration, and ATP energy production.

There is an electromagnetic theory of consciousness that suggests that an electromagnetic field induced by the brain (by thought, emotion, or PEMF stimulation) is the carrier of consciousness and conscious experience. The concept is that every time brain neurons generate action potentials, they also generate a disturbance in the surrounding electromagnetic fields around them that is then experienced by surrounding cells. Therefore, the "information" carried by patterns of frequencies or oscillations produced by "excited" neurons affects the electromagnetic fields of the brain that affect consciousness.

Physicist Dr. Claude Swanson states that at least one of the mechanisms of action of PEMFs is through torsion fields. Right-handed torsion fields are created by processes that increase entropy at the source. Left-handed torsion fields are created by processes that decrease entropy at the source. In torsion fields, energy of the same polarity is attracted to itself and opposite polarities are repelled. Torsion fields travel through most physical media without any lessening. The spin patterns of physical particles can be altered by a torsion field. Therefore, torsion fields can affect matter in unpredictable and paradoxical ways.

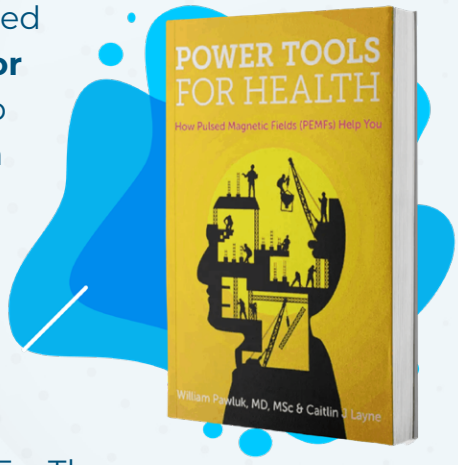
The conclusion we can draw about what these non-classic effects of therapeutic magnetic fields might have on biology is that they are vast. In most of our experience, PEMF effects are positive and useful. We may not always be

able to explain how the benefits happen, but that's true for most of what we do in healing work and in medicine. Nevertheless, the longer we work with magnetic fields to help people, the more in awe we are of how they help us achieve better health. PEMFs are truly tools we need to be healthier physically, spiritually, and emotionally.

Selecting a PEMF system for personal use

Because there are so many different devices available, so many confusing claims made by different manufacturers, and poor training for how to obtain optimal results with equipment that is intended to be used, professional support is critical to get the most value from equipment being used.

There are now thousands of studies on the benefits of PEMF therapies. A significant amount of evidence is presented in the book by Dr. William Pawluk, **"Power Tools for Health: how pulsed magnetic fields (PEMFs)"** help you. The book discusses what magnetic fields are in how they work, presents about 25 different mechanisms of action of magnetic fields, reviews 50 health conditions with their supporting scientific evidence, types of magnetic fields available, and some basic concepts on how to apply the magnetic fields. There are over 500 references in the book to provide support for the value of PEMFs. The book is available on Amazon as a soft cover or e-book.



For professional support in making an optimal-value purchasing decision, contact drpawluk.com to obtain information and/or request a consultation from our medical team.

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