The Science of Energy Therapies and Contemplative Practice

A Conceptual Review and the Application of Zero Balancing

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The topic of energy therapies is prompted by the increasing attention of healthcare practitioners and consumers to Eastern philosophies and ancient healing practices. This article includes a conceptual framework of quantum physics principles providing the basis of interpretation of energetic phenomena, along with the exploration of theoretical concepts involving energy as a communicational network. An overview of the contemplative tradition of meditation indicates its necessity as a requisite element of energy therapies, the practice combining a knowledge base of the core scientific precepts with the experience of restorative strategies. The relevance of energy therapies as a path to self-transcendence along with the application of a specific touch technique, Zero Balancing, is highlighted. **KEY WORDS:** *energy medicine*, *energy psychology*, *entrainment*, *mindfulness-based stress reduction*, *psychoneuroimmunology*, *putative energy fields*, *quantum physics*, *self-transcendence*, *stress*, *transcendental meditation*, *Zero Balancing* *Holist Nurs Pract* 2009;23(6):315–334

Our traditional medical model designed to address diseases once manifested, rather than to promote optimal health and prevent reoccurrence, delivers treatment more relevant to acute illnesses than chronic. Amazingly, the US healthcare industry spends $1.6 trillion annually, and yet, we rank 12th out of 13 industrialized countries in 16 major indicators. Americans spend more than $5000 per person each year and are 27th in life expectancy; Cuba, at 28th, spends $186.[1] Dissatisfaction with the American healthcare system, as well as interest prompted by Eastern philosophies and ancient healing practices reintroduced into Western culture, has brought about the key paradigm shift toward holistic medicine in the United States.

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Ironically, a contributing factor is medical progress itself: As people live longer, they develop many stress-related diseases, such as heart disease, stroke, diabetes, Alzheimer disease, and cancer. Stress in our lives tends to be viewed as a detriment, but in actuality it really implies any necessary adaptation, even one regarded as beneficial. It can, however, lead to "distress," as repetitive or overt demands cause a cascade of sympathetic nervous system responses.[2] In 1926, Hans Selye was one of the first scientists to consider the harmful physiologic response to stress and distress on health, theorizing potentially harmful effects on one's ability to handle and adjust to the demands of injury and disease.[3] The deleterious impact of stress continues to influence, and today, it has become widespread. In fact, as many as 90% of visits to primary care providers are for stress-related symptoms.[4] Work-related stress, the leading source of stress for adults, appears to be increasingly problematic. Swedish and American researchers report a 500% increase in colorectal cancer for those with job-related stressors that span a 10-year period, noting that occupational issues, intrinsically more chronic in nature, demonstrate a greater long-term effect than a more dramatic emotional occurrence, such as death of a spouse or child.[5] Researchers, considering animal

responses potentially applicable to humans, have demonstrated the effects of both acute and chronic stress on natural killer cell activity. These specialized cells eliminate foreign invaders, such as viruses and spontaneous malignant cells, and become suppressed with prolonged exposure to a stressful environment, thus likely predisposing to neoplastic disease.[6,7] Further, animal models have shown the effect of stress on DNA repair mechanisms, with malignantly transformed cells appearing to become active tumors.[7]

The effects of acute and chronic stress on immunity, healing, and the emotional response continue to be evaluated. Many authors[5,7–9] theorize that stress is an outcome of our traditional cultural repression of powerful emotions, such as anger, fear, loneliness, and grief, becoming depression, weakening our immune system, and ultimately leading to chronic disease. Researchers also note that stresses in humans can be influenced by perception, that is, those who psychologically sense their own capability to control appear to tolerate their situation better than those with overwhelming demands coupled with helplessness.[6,10]

The underlying assumption that a decline in health and quality of life from distress leading to chronic disease is inevitable and natural—an irreconcilable manifestation of genetic legacy and aging—is not inevitable or natural at all. Many of the basic causes of this decline can usually be understood, prevented, treated, and even reversed by controlling the influence of stress in our lives. Consumer enthusiasm for the use of ancient stress-reduction techniques in combination with conventional care continues to grow. Today, 63 million adults report using relaxation techniques, such as meditation, guided imagery, and energy healing, reflecting a 5% increase from 1990 to 2007.[11–14] In fact, these methods of controlling stress are the most frequently utilized integrative therapies used to treat chronic diseases, the cure of which, for many, is elusive.[13,15]

It is becoming clearer that most of the health and quality-of-life issues we are likely to witness during our lives can be prevented with greater attention to the combination of modern science with the wisdom of ancient healing. For patients living with chronic or life-threatening illness, as well as those who simply wish to increase self-awareness, enhance their well-being, and help prevent future health-related problems, these types of approaches can profoundly transform the physical, emotional, and spiritual dimensions of their lives.[16] Cultivating emotional and spiritual health through these interventional techniques and dealing with the sense of disconnection and loss of meaning and purpose that seems to be so common in our modern society, we can change the circumstances contributing to poor health and set free our full potential for good health and healing.

THE TOPIC OF ENERGY THERAPIES

The topic of energy therapies is prompted by the increasing interest of healthcare practitioners as well as consumers. The purpose of this article is to first allow for a review of the principles of classic physics that provide the foundation for quantum interpretation of energetic phenomena, along with the exploration of some theoretical concepts involving the body's potential for dynamic interrelationships. The second segment provides an overview of the contemplative tradition of meditation, outlining its importance as a requisite element in the practice of energy therapies. The relevance of energy therapies as a path to self-transcendence along with the application of a specific touch technique, Zero Balancing (ZB), is highlighted. The rationale of a manuscript devoted to 2 separate topics serves to underscore the necessity that the practice of energy therapies combines a knowledge base of the core scientific precepts with the experience of restorative strategies. This relationship between the contemplative traditions and the practice of energy therapies can be understood by considering the underlying principles of energy fields, with the idea of conscious reality as the underpinning of physical reality. Didactic and experiential education in energy therapies, as well as the continuation of a transformative, centering practice, clearly emphasizes that treatment of the patient/client actually begins with our own self-transcendence and restorative strategies.

BACKGROUND

The "innovative" theory that the mind, body, and spirit are all essential components in the healing process has ancient beginnings in the teachings of Hippocrates (ca. 400 BC). Hippocrates wrote of the integrative approach to healing and considered the patient's attitudes and beliefs as crucial contributions to treatment outcome.[3] This philosophy continued in the East. Conversely, "progress" in the West by the 17th century led to the Cartesian conceptual boundary between the mind and the body. New discoveries such as antibiotics, thought to have eradicated infectious

epidemics by the 18th century, appeared to reiterated man's domination over nature.[8] However, historians note that improved sanitation conditions and nutritional status likely provided the greater impact.[17] Healing continued to became compartmentalized, with the goal, healing of the physical body, and irrespective of the soul. As the division between the mind and body expanded, scientists developed concrete biological theories, thus reinforcing the prevailing opinion that emotion and subconscious perception were diseases of the mind and therefore did not exist.[3] Many today look to the East and consider our current Western-based philosophy as dismissive and nonprogressive. "If Western medicine is to have a truly cohesive physiological system, it must incorporate a unified theory that can account for the existence of energy fields within as well as outside of the human body."[9(pIII)]

ENERGY MEDICINE: THE DEFINITIONS

The National Center for Complementary and Alternative Medicine has classified energy medicine therapies into 2 basic categories: the *veritable* or bioelectromagnetic-based therapies, and *putative* energy field (also called "biofields") therapies.[18] The *veritable* energies employ mechanical vibrations and forces, that is, sound, light, and magnetism—all with measurable wavelengths and frequencies. The earliest known use of an electromagnetic therapy was recorded in 2750 BC, when one's illness was treated by exposure to the shocks from electric eels.[19] Diagnostic evaluations such the electrocardiogram and electroencephalogram (EEG), while easily accepted in today's medicine as conventional, are basically energy medicine as they measure the electromagnetic frequencies (EMFs) of the heart and brain. Radiation has long been considered standard for the treatment of certain cancers, with today's successful application of the newest technologies. Utilizing proton beams to hit the tumor and stop (in contrast with traditional radiation therapy in which radiation passes through the body and leaves a trail of damage) allows for higher doses, better control, and fewer side effects. Stereotactic radiosurgery of CyberKnife and Gamma Knife use high-dose x-ray or laser beams to treat tumors without making an actual incision. Other developments in the realm of energy therapeutics include microcurrrent stimulators as well as numerous applications of ultrasound technology, including safer and improved accuracy for the administration of neuroblocking agents and regional anesthetics. Bone growth stimulators utilize pulsing electromagnetic fields, the oscillation stimulating the healing process, with the most widely used application accelerating the repair of fracture "nonunions."[20] The Food and Drug Administration has just approved the first noninvasive brain stimulator, the transcranial magnetic stimulator, to treat depression. This device beams short pulses of magnetic energy through the skull, focusing at the limbic system structures and causing neuronal activity. The transcranial magnetic stimulator was developed from use as a research tool in brain studies. The National Institutes of Health is currently tracking 260 patients, evaluating safety and efficacy.[21]

TABLE 1. Energy therapies[a]

Acupuncture	Healing Touch	Reiki
Alexander Technique	Homeopathy	Rolfing
Aromatherapy	Jin Shin Jyutsu	Shiatsu
Bach Flower Essences	Polarity Therapy	Therapeutic Touch
Cranialsacral Therapy	Process Acupressure	Zero Balancing

[a]From Oschman.[20(pxxvii)]

The *putative* energy therapies recognize the body's vibrational energetic dimension as the vital moving force, the source of health and well-being. Many cultures over thousands of years have described this animating energetic consciousness. Traditional Chinese Medicine calls it '*Qi*' (or "*Chi*"), the Ayurvedic Medicine of India refers to '*prana*,' the Japanese describe '*ki*', and, early last century, Europeans named it '*vital force*.'[18,22] Sensitive physical and biologic detection technologies such as the superconducting quantum interference device (SQUID) are beginning to reliably measure this *putative* field, demonstrating the very properties that ancient civilization used, that perceptive individuals identified, and that contemporary science considers nonexistent.[20,23–25]

Energy therapies (Table 1) involve the putative energy fields can include a wide variety of modalities such as acupuncture, homeopathy, and aromatherapy, as well as the use of magnets, sound, and herbs. Other techniques include touch, nontouch and nonlocal/distance methods such as Reiki, Zero Balancing, Craniosacral therapy, Process Acupressure, Therapeutic Touch, and Healing Touch. Some

interventions use time-honored postures and movements, such as Yoga, Tai Chi, and Qi Gong, to bring about balance and harmony to the energy fields. All of these practices effectively guide life's energetic patterns by directing the *putative* energy of the body to influence health.[26]

CONCEPTS OF ENERGETIC REGULATION OF LIVING SYSTEMS

Principles of classic physics

Two fundamental electromagnetic principles of classic physics provide the basis of understanding the energetic phenomena. The first is *Ampère Law* (*Laplace's Law)*, which states that the magnetic field is proportional to the current and inversely proportional to the distance traveled by the current.[27] The important medical application of Ampère Law is essentially that any current within an organism must generate a magnetic field within and around the body. These currents can be any of the electrical oscillations created by the body, such as heartbeat and brain impulses, or produced in the surrounding environment and can move freely in and out of the body, unobstructed by skin.[23]

The second law of electromagnetism speaks to the energy field concept, and originated with Faraday's *Law of Induction*. Faraday, in 1831, knowing that electricity could produce magnetism, experimented with magnetism and attempted to create electricity. He was successful, producing a measurable electrical current through a coil of wire while applying a moving magnet.[27] There are 2 key points of this law to understand. First, simply placing the magnet in proximity to the coil of wire was ineffective. The magnet had to be in motion relative to the coil. Also, by increasing the number of coils, Faraday effectively diminished the magnetic field strength and induced a proportional increase in current. Change, therefore, in either movement or strength, becomes critical. Second, as the electrical current flows, it creates a magnetic line of force that fans out in a perpendicular pattern to the line of current, with strength proportional to the current and inversely proportional to the distance.[27] The resulting electromagnetic field continues traveling indefinitely and concentrically at the speed of light, analogous to a pebble dropped in a pond. The path of this outward flow is additive as it interacts with multiple concentric electromagnetic fields, becoming an increasingly powerful oscillating *force field*.[9] The application of Faraday's Law in the case of living systems requires moving or oscillating force fields to induce current flows within and throughout the conducting tissue planes.[23] Another consequence with significant therapeutic influence is that changing the motion or timing of the magnetic fields in the space around the body will also induce current flows within the body. As a result, Faraday's Law provides the physical basis for both energy-based therapeutic devices and touch and nontouch energy modalities.[20]

These electromagnetic oscillating fields continue to travel outward, forming additional interacting waves. When 2 waves are of the same frequency, that is, the number of times per second they move through a complete cycle of oscillation is equal, they are *in phase* (the "crest" of the waves are in synchrony). They entrain by adding together to create larger, more coherent waves, known as *constructive interference*. Waves that "trough" (crest in opposition) are considered *out of phase*, cancel each other, and are known as *destructive interference*. This addition and cancellation of waves is the *interference pattern*. Where the wave is weak, that is, a lack of waviness due to destructive interference, the amplitude is low. Where the waves have undergone additive constructive interference, the amplitude is high. The *potential* energy and information contained on the original waves is additive, retained, and not destroyed, with the interference patterns causing variations in wave coherency. The resulting waves are dynamic, becoming a complex total mix of resonant frequencies and phases, interference patterns, and fluctuating states of coherent and incoherent variations.[28] The ensuing electrical field of the body may be perceived as very complicated waves of quantum bioinformation moving throughout the integrative structures, such as ions, molecules, cellular processes, and tissues, and combining to become an organized vibrational network of meaningful communication.[24,29,30] Oscillating fields of particulate matter are fundamental to all therapeutic interactions, whether involving acoustics, sensation, pressure, temperature variations, herbs, light, aromas, or motion—all incorporate some configuration of informational vibration.[19]

Core of quantum interpretation

Vibrational duality of the particle and the wave

To understand this paradigm shift, we need to reconsider our Newtonian reductionist science, based on single cause-and-effect relationships, and apply the principles relevant to the realm of quantum physics.[20] Einstein proved by $E = mc^2$ that energy and mass

(matter) are dual expressions of the same substance, that of energy, the full spectrum of vibrating molecules, of which we all are composed. The assertion that all matter is energy provides the basic premise for the endless changing and evolving of living systems. With the advent of Einstein's theory of light, it became necessary for physicists to develop a *principle of complementarity* (contradictory properties) to explain light (energy/photon) exhibiting the seemingly paradoxical elements of both particle and wave, concurrently.[29,31] The application of *complementarity* to energy fields quantized energy into discrete bundles, with the size (and momentum) dependent on vibrational frequency. These discrete bundles, *photons*, are particle-like wave packets of light energy, consisting of multiple frequencies, and without a well-defined wavelength. Photons can either be in continuous undulation with weaker (low amplitude) wave interference, the energy spreading expansively. Or, the photons can be insignificant except at a strong oscillation (high amplitude) wave formation within a limited area. The photon is light energy; so, as long as light is not detected, it will perform as a wave with interference patterning. However, when the circumstance involves light, the individual photons can be located. In the presence of light, the photon is distributed in discrete wave packets, not spread out continuously, and therefore essentially acting like a particle. The relationship between the particle and the wave is purely statistical and based on wave amplitude. The more likely probability of locating a photon will be where the wave has a strong oscillation (high amplitude).[31,32] Quantum duality acknowledges that the photon attains some of the traits of particulate solids or mass while maintaining its energy (wave) characteristics.[26,30] Since our physical body is composed of matter, it has both the particle (biomolecular structures) and the wave (vibrational energy fields of information) components.[26] Newton's physics depends on the experimental data to dictate which descriptive model, the particle or wave, provides the better explanation. However, to move forward with the quantum schematic, we need to conceptualize the vibrational particle-wave duality as discrete packets of energetic information and as fundamental to the explanation of life.[29]

The uncertainty principle and collapse of the wave function

Quantization establishes a fundamental minimum amount of energy for any interaction. Newton's physics allows for the energy of the universe to be zero. Therefore, we could measure any position and momentum of a system with an accurate prediction. However, quantum physics tells us that the energy of the universe cannot be zero.[32] There exists a basic inaccuracy related to the wave-particle duality, causing our inability to simultaneously measure both momentum and position. Applying light (even a very low-energy photon) to the electron(s) of the system to measure momentum or position automatically changes the outcome by disturbing available information regarding the system prior to impact, and therefore ending any capacity to predict future behavior. The Heisenberg *uncertainty principle* acknowledges this dilemma of wave-particle duality, and recognizes that we clearly cannot examine the universe without inevitable change. By merely observing the world, we unalterably change it. No longer objective and disconnected observers, our presence influences the outcome of the experiment.[32]

A good example of the uncertainty principle would be 2 waves, existing concurrently and in the same location, forming a superposition, which is additive to either constructive or destructive interference. This interference phenomenon, a combination of 2 potential wave solutions, is a possibility secondary to the wave characteristics of matter and light in quantum physics. But, to measure a quantity, that is, to estimate the probability of the photon location, the system has to be forced into 1 definite state, causing the loss of the wave behavior. This is referred to as the *collapse of wave function* and forces the indeterminate wave function into one where we can identify the exact location of the photon. Quantum physics gives us a specific value of this measurement, but, in the process, the system's properties are lost, invariably resulting from the observer's interaction to achieve the observation. Quantization, the fact that the energy of the universe cannot be reduced to zero, greatly restricts our capability to observe nature at the atomic level; the implication being that just the act of observation unavoidably disturbs the observed system.[32]

The universe as a whole

In 1935, Einstein, Podolsky, and Rosen took 2 particles and proposed a hypothetical experiment (the EPR paradox), in which the spin dimensions of one particle automatically establishes the spin dimensions of the other particle.[32] Their premise was that neither of the particles' spins had an actual value until the left-hand spin was determined; and then, instantaneously, the right-hand spin attained its value,

regardless of proximity. In 1964, Bell's *nonlocality* theorem mathematically confirmed this remote distance relationship.[32,33] Actual experiments have been conducted with increasing sophistication since then, confirming these hypothetical results. In fact, a successful repetition of this experiment was conducted with the particles separated by the distance across Zurich, Switzerland. Newton's mechanistic approach required all elements to be separate and independent. However, Bohm[31] proposed that if all actions are energetic, the interactions between the systems comprise a structure of inseparable *nonlocal* relationships, interconnecting the entire universe as a whole, therefore interactive, infinitely and fundamentally linked. He further postulated that within this structure, each abstract thought (in the form of discrete wave packets) demonstrates the fundamental properties, wave or particle, and their relationship to that of the general environment, drawing a distinct parallel to that of living beings and their organs versus the interworking of mechanical machinery. According to Bohm,[31] these interactions, by necessity, would have to be transported at a speed faster than that of light (186 000 miles per second). Our conventional perception of the physical world exists at the speed of light.[9] However, the quantum tenet of *nonlocality* is that information transfer is independent of time and space and potentially beyond our 3-dimensional (3-D) experience.[9,24,31,33] Some have intimated that *nonlocality* phenomena be considered as a possible explanation for the efficacy of modalities involving distance healing effects, such as prayer and Reiki.[19,26,34]

Biological self-organization

Faraday's concept, as applied to the bioenergy field, is understood by many[24,29,33,35] as the internal self-organizing capacity of the organism. Prigogine, a Nobel laureate in chemistry for his contribution to nonequilibrium thermodynamics, and Jantsch[29,33] support this application and consider living organisms capable of maintaining a dynamic energy-driven relationship with their environment, exchanging energy, matter, and information to grow, sustain, and renew themselves. A variety of scientists have applied this model to humans, determining that the complex dynamics of self-organization does not arise by chance, but, in fact, increases the body's inherent order via the continuous flow of matter, energy, and information and is central to life's process of self-repair and regeneration.[20,24,29,36] A conceptual framework for the innate communicational aspect of biological self-organization is that of a 3-D hologram. The hologram is a laser photograph of the interference pattern of light waves reflecting from an object. It has a unique characteristic ability to convey the complete 3-D picture in each piece of the original photo, no matter the size. Even small fragments can retain the whole of recorded information of the entire holographic image. This suggests a model of holistic distribution of biographical information; each cell containing a template of coded information programmed for future repair and renewal and possibly the key to the body's global integration and self-organization.[24,29,31,37,38]

THEORETICAL CONCEPTS OF ENERGETIC RELATIONSHIPS

> If we knew what it was we were doing, it would not be called research, would it?
>
> —Albert Einstein

Expanding our notion to consider the complexity of body communication as multilayered transfer of information by a miniscule energy signal has propelled science to evaluate beyond current mechanical/neural (central and autonomic nervous systems/perineural system) and chemical (peptides/neurotransmitters) regulatory network models. Thus, information can be regarded as a unifying mechanism, impacting the organization of living systems, including mechanical/neural, biochemical, bioelectrical/vibration, and emotional stimuli. These additional models of communication are not limited by the physical structure, and therefore, have the potential to influence the body's overall regulatory processes.

Connective Tissue/*Living Matrix*

Langevin[39] has hypothesized the potential for connective tissue to be an energetic signaling network, on the basis of prior studies documenting the relationship between acupuncture points and meridians with the connective tissue planes.[40] She suggests that the 2000-year-old Traditional Chinese Medicine philosophy of the meridian network and practice of acupuncture reflects this same theory.[39] The premise of a connective tissue "*living matrix*" model has not been regarded by Western medicine as a bodywide communication system. In support of the *living matrix* model, Oschman[20] points out that the

interstitial connective tissue constitutes a flexible and responsive network affecting the overall body structure. The circulatory, nervous, respiratory, musculoskeletal, and digestive systems, as well as all the organs, are surrounded and permeated by this continuous weblike structural system. Oschman[20] purports the importance of expanding this concept, emphasizing that all body movements are produced by the tensions within this interconnected tissue. Notable and common to both within and surrounding the cells and nuclei is an organized crystalline layer of water, possibly functioning as the site of this rapid communicational network.[37] In fact, Nobel Prize-recipient Szent-Györgyi asserted, "Molecules do not have to touch each other to interact. Energy can flow through . . . the electromagnetic field . . . The electromagnetic field, along with water, forms the matrix of life. Water . . . can form structures that transmit energy."[19(p60)]

A property of this crystalline water composition of connective tissue is *piezoelectricity*—from Greek, meaning "pressure electricity."[20] Because of piezoelectricity, all component movements, that is, muscle, bone, and nerves, along with a subsequent corresponding vibration, produce a rapid response, generating the rhythmic coherences of bioelectric oscillations and microcurrents, and has been described by many.[20,41] For example, vibration produced by acoustical systems such as the heart, respirations, and muscles transmits piezoelectric signals proliferating throughout the *living matrix*. These signals are precise, reversible, and, due to the interconnection and conductive ability of connective tissue, ultimately able to communicate to every cell, thus affecting the body's overall energy fields.[20] In fact, piezoelectric effect on tissues responsible for the regulation of bone and tendon regrowth, a result of the research by Becker and Selden[42] and Bassett,[43] has provided the biological basis for today's innovative healing techniques for fracture nonunions and postoperative wounds.

Pienta and Coffey[44] have further theorized that vibrational information is transferred throughout the living matrix via a tissue tensegrity-matrix model. *Tensegrity*, adapted from *tens*ional int*egrity,* was coined as an architectural definition for a structural system that gains stability from continuous tension cables. The human body has been described as a tensegrity design, with compression components, the bones, held together by tension cables, the muscles, tendons, and ligaments and supporting the continuous fluctuation of shape and movement. The principle of tensegrity has also been applied to the dynamics within the cell structure, allowing for the relay of information via vibrational energy through wave motion directly to the nucleus, as a cell signaling process.[44] This theory provides the structural entity for a sophisticated and highly interactive communicative signaling system—that of the acupuncturists' meridian network—and capable of transmitting throughout a *living matrix* of interstitial connective tissue.[40]

Resonant Wave Entrainment

Brainwave oscillation innervates the brain and perineural systems by generating direct field currents throughout the body.[19,20] Studies by Becker and Selden[42] have measured the stimulating effects of these electromagnetic fields for both the regulation of the nervous system and wound healing. Moreover, the circulatory system, an excellent conductor of electricity, provides the primary channel for brainwave oscillation, along with the electrical signals from all other cell structures, including the heart's much greater field.[19] In fact, the cardiac electromagnetic field has the strongest vibrational frequency, roughly 40 to 60 times stronger than that of the brain,[9] measurable with SQUID-based magnetometers detecting vibration up to several feet off the body's surface.[41] Fundamentally, all waves produced collectively entrain, their coherence amplified by the sum of all energy fields, including sensation, movement, sound, and thought, and concentrically propagated throughout the system along with the larger waves of the brain and heart.

The work of McCraty and colleagues[45] focused on the influence of one's emotional state on the heart's electrical field coherence. Their recent studies utilize a "freeze-frame" method for measuring the sympathovagal balance of the heart rate variability. The freeze-frame technique teaches subjects to consciously disengage from an unpleasant experience and instead, focus on a sincere feeling and positive emotion toward someone instead of the traditional method of visualizing a past, positive memory. This self-induced technique has been used successfully to deal with emotion associated with current negative stressors. Heart rate variability analysis is used as a noninvasive test to distinguish sympathetic from parasympathetic regulation of the sinoatrial node. The researchers were able to associate cardiac electromagnetic coherence with positive and negative emotional states. Coherence decreased with

demonstrated anger and increased with love, kindness, and a caring attitude.[41,45] The researchers indicate that those psychological strategies supporting an increase of positive emotional states can improve cardiovascular function, possibly by inhibiting sympathetic efferent flow to the peripheral vascular circulation.[45] In addition, investigations further indicate that conscious human intention of sincere love or appreciation can inhibit growth of tumor cells in culture,[46] as well as influence both DNA replication and conformation states of the DNA helix.[41,46] These studies collectively suggest that cardiac coherence can be controlled by the individual and may, in fact, reveal the profound impact of the conscious mind on basic cell functions.[41,45,46]

External Low-Frequency Stimuli and the Human Energy Field

Animal responses to external low-electromagnetic frequency (EMF) stimuli have been demonstrated, with many of the effects linked to the nervous and endocrine systems.[47] Becker and Selden's research[42] evaluating the effect of EMFs on bone healing led to further study of the cellular and molecular foundation for the effects of accelerated healing in other tissues. The Siskin and Walker[48] review of hard and soft tissue responses to EMFs, including *in vitro*, *in vivo*, and human models, expands this premise, citing efficacy resulting from the application of extremely low-level frequency (1–100 Hz) signals (Table 2).

Other researchers have also considered the effects of these extremely low-frequency electromagnetic signals on cellular regulatory patterns. Lindström and colleagues[55] have measured wide low-frequency (5–100 Hz) effects on lymphocytes. They note an increase in interleukin production, indicating a similar response to that of antibody exposure, and speculate that low–magnetic field frequency may influence intermolecular interactions necessary for signal transduction.[55] Liboff[56] has demonstrated that intrinsic ion cyclotron resonance frequencies exist for a number of ions, including Ca^{2+}, with the concentrated strength of their electromagnetic energy likely compounded by exposure to the earth's magnetic field. The existing theory of cellular response and regulation indicates receptors interacting with selective endogenous ligands. However, these studies show that oscillatory electromagnetic energy, and not peptides or neurotransmitters, can also cause changing of the cell membrane gradient. The possibility that calcium-channel regulation could occur without the interface of a ligand does not correspond with current models of the understood function of ion channels. Liboff's inference is that the contribution of the ion cyclotron oscillatory resonance could be a part of an informational signaling network of the cell and may in fact be a natural outcome of biological evolution.[56]

Human Energy Exchanges

The concept of an energy exchange between people has been the subject of many investigations. Sigmund Freud, in *The Anxiety Neuroses*, proposed the possibility of the unconscious energetic client-practitioner relationship affecting a change in the overall well-being of the patient.[41] According to Rubik,[57] coherent resonance can result from the same entrained frequency, whether induced by an electromagnetic device or the practitioner's touch.

TABLE 2. Healing effects from low electromagnetic frequencies application[a]

Authors	Frequency, Hz	Site	Effect
Wilson et al[49]	27	Animal: sciatic nerve transection	Acceleration of nerve regeneration
Barclay et al[50]	27	Human: hand injuries	Reduced wound swelling and pain; faster functional recovery
Ito et al[51]	72	Animal: sciatic nerve transection	Accelerated restoration of motor function
Stiller et al[52]	22	Human	Decreased pain intensity, wound depth and venous ulcers area
Lin et al[53]	10	Animal	Increased tensile strength; capillary and patellar ligaments fibroblast proliferation
Walker et al[54]	2	Animal	Improved functional recovery; nerve sciatic nerve crush injury regeneration without muscle contractions

[a]From Siskin and Walker.[48]

Zimmerman[58] measured the biomagnetic field emanating from the hands of a Therapeutic Touch (TT) (a nontouch technique) practitioner. The practitioner and his patient were situated in a magnetically shielded chamber containing a SQUID detector. As the TT practitioner relaxed into the meditative state, the pulsations ranged from 0.3 to 30 Hz, with most of the activity at 7 to 8 Hz. The control group of nonpractitioners was unable to produce the biomagnetic pulses. Wirth[59] evaluated the effects of TT on wound closure, noting marked acceleration. The study design effectively controlled for placebo influence by physically separating the practitioners from the 44 study participants. Gronowicz et al,[60] also evaluating TT, measured the technique's effect on the growth of healthy human cells *in vivo*. The researchers were able to demonstrate an increase in tenocytes and fibroblast proliferation. D'Andrea-Winslow and colleagues[61] evaluated wound-healing effects on sea urchins by a standardized "hands near" (nontouch) technique. They were able to observe a faster healing rate in the treated group, as compared with the control group, evidenced by a more rapid presence of red spherule coelomocytes (effector cells of the immune system) at the wound site.

The McCraty investigation[41] concludes that the stronger electromagnetic field generated by cardiac current may, in fact, greatly amplify the effects of this exchanged energy. Their data, using signal-averaging techniques, reflect that the signal is strongest when people are in contact but is still measurable when subjects are in proximity without physical contact. This study demonstrates the potential for distance-dependent transference of cardiac electrical current between individuals.[41] The work of McCarty and colleagues implies that the therapeutic modalities involving direct physical touch or within 18 in of proximity, could be influenced by maintaining a positive emotional state, with the practitioner's field coherence potentially amplifying the effects on both their own and that of their client's cardiac fields.[41] These studies collectively indicate that energy is measurable and transmittable. The low-frequency energy exchanges emitting up to 18 in from the human body, a distance that would include both touch and many nontouch therapies, indeed appears to interact with biological tissue at the cellular level, thereby mimicking a similar response to that of externally applied pulsing electromagnetic fields.

Beck[19] measured the EEG brainwave patterns and activity of practitioners of diverse healing modalities from a variety of indigenous cultures. All were similar, averaging about 7.8 to 8.0 Hz during the treatment sessions and coinciding with the brainwave's alpha (8–12 Hz) band at frequencies usually associated with relaxation and meditation (Table 3). Beck's further evaluations of the practitioners discovered that their brainwaves were in rhythm with the Schumann resonance. This transverse waveband of low frequency (7–10 Hz) is the site of global electromagnetic resonances, stimulated by lightning discharges in the cavity spanning the earth's surface and the ionosphere (uppermost part of the atmosphere) and again closely correlating with alpha brainwave frequency (8–12 Hz). Periodic entrained coupling of both the therapist's and patient's brain and heart waves with similar coherent rhythms of the Schumann resonance may explain the unusual low-frequency emissions and calming state of relaxation common to many energy therapies.[19,29]

TABLE 3. Electroencephalogram measures of brainwave frequencies[a]

Brain wave	Frequency, Hz	Effect
Delta	1–4	Deep sleep and certain brain disorders
Theta	4–8	Light sleep, creativity, insight, and some emotional stresses including disappointment and frustration.
Alpha	8–12	Normal state of mind, reflecting a calm and peaceful yet alert state
Beta	13–21	Seen over the frontal portions of the brain during intense mental activity and/or anxiety; higher frequencies (up to 50 Hz) noted during intense nervous activation and tension

[a]From Wisneski and Anderson,[9] Oschman,[19] and Huang and Charyton.[62]

Biochemical Substrates of Emotion

Pert and colleagues have introduced the idea of a psychoneuroimmunology informational network in which neuropeptides serve as messengers throughout the body to every cell.[7,63] Since then, researchers have demonstrated the intricate interactions between the immune and neuroendocrine systems, which form a

2-way channel.[64] Neurons can have receptors for both hormones and neurotransmitters; many hormones can also perform like neurotransmitters (distinguished as neuropeptides), and immunocytes can not only synthesize, store, and secrete, but also receive input from neuropeptides.[64,65] This overlap of transmissions among the nervous, immune, and endocrine systems would indicate seemingly endless possibilities of interactions between stress and immunity.

Approximately 80 existing neuropeptides have receptors inundating the limbic structures (emotional center of the brain), the hippocampus (site of memory), and the amygdala (center for incoming sensory input for the negative emotions, such as fear, anger, and rage, as well as sexual feelings).[9] Receptors have also been located in the heart and digestive tract, as well as in the sites where nerve cells relay information from the skin and various organs via synaptic contact to the central nervous system.[6,7] As a result, when relevant cognitive stimulus is received by the brain, autonomic nervous system, or central nervous system, this message is transmitted by hormonal pathways either directly or indirectly to receptors on immune cells. This concept broadens with the realization that any thought, aspect of personality, and coping mechanism can affect many functions, including aggression and sexual behavior, sleep, autonomic responses, as well as impacting habitual and addiction patterns, memory, and learning abilities, ultimately influencing the course of diseases. These findings indicate the potential magnitude of one's emotional state impacting on biochemical responses to infection and neoplasms. Therefore, emotions, as the causal link between the mind and body, become the physical basis of mental influence on immune functioning and disease.[9,65,66] Current research in neural-immune communication continues to evaluate the role of emotion, specifically activity in the limbic structures and neocortex, leading to new therapies in immune disorders.[67]

> From an evolutionary perspective, it makes sense that social/environmental conditions and concomitant emotional states—fear, anxiety, sadness, anger, joy—should have immunological correlates, because these conditions and emotions necessitate a more or less vigorous defense of the integrity of the self. Our emotions provide a way to prioritize the competing information to which the body-mind must pay attention.[7(p34)]

Analysis of cell changes such as shape, motility, and signal transduction demonstrates that neuropeptides and their receptors ". . . vibrate, shimmy, and even hum as they change shapes, awaiting the arrival of their matching ligands."[7(p39)] Because cells and intercellular components are capable of shifting and vibrating in a dynamic manner, many authors[7,20,29] appear willing to consider classifying the interface of energy-based models with neuropeptide-based models as a communicational network that integrates the electromagnetic biofields with membrane receptors. For example, consider both the emotional and physical imprints of "ecstasy" or "despair." Compartmentalizing these feelings as either energetic or biochemical presents a challenge, because, in reality, the mind-body response to these experiences is concurrent and inseparable.[7] ". . . the pivotal role of emotional expression . . . may be the best available marker for psychospiritual vitalization of the life force. . . ."[7(p40)]

MEDITATION AND THE SUBCONSCIOUS MIND

Meditation, an ancient tradition, supports the individual's transcending process through contemplation and reflection. It is an intentional and conscious "mind" process allowing one's conditioned reflexive reaction to develop into a clearer state of awareness. Meditation allows the individual to access the alpha and theta brainwaves (Table 3) for deep relaxation, as well as provides the opportunity for insight into relationships between behavioral patterning and physiological responses—both states facilitated by differing or "altered" levels of consciousness.[68] A consistent practice can provide a platform for a range of goals, from attainment of a higher state of consciousness and self-awareness to personal growth and transformation, or simply for a peaceful frame of mind.[68] Various forms of meditative practices have evolved over the centuries and throughout many cultures. Transcendental Meditation is the ancient Vedic tradition of enlightenment in India and has been practiced for thousands of years. This technique, in which practitioners concentrate on a specific word or phrase, a "mantra," eventually calms distractive thoughts, allowing the body to attain deep rest as the mind settles inward to a state of conscious alertness. Minimized sensory input combined with a single focus of intense concentration (the repeated *mantra*) can facilitate *hypnagogic reverie*. This dreamlike transitional state between wakefulness and

sleep is considered the conscious but deeply relaxing experience of theta waves and can lead to clarity and insight.[9,68] In the early 1970s, Herbert Benson began evaluating the physiological differences of Transcendental Meditation practitioners, such as the reduced response by the sympathetic nervous system to stimuli, and by using the already-familiar term, *relaxation response*, he developed a "relaxation" procedure. Incorporating the features of Transcendental Meditation common with those of other world religious beliefs, Benson developed a very effective "nondevotional" relaxation method utilized for clinical applications.[69]

Another form of meditation is the Buddhist practice of *Vipassana*, in which practitioners attend to their breath, training their mind to simply notice and accept, without thought, attachment, or judgment, the emotions, sensations, and perceptions as they surface while letting go of mental distractions.[70] A review by Schwartz[71] suggests that this form of self-attention, or "mindfulness", has self-regulating and therapeutic effects, especially when the self-attention incorporates biofeedback and relevant guided imagery. Delmonte[68] notes the efficacy of mindfulness meditation for coping mechanisms as well as a source for well-being and personal development strategies. Kabat-Zinn[72] took this technique and by extrapolating the element of "moment-to-moment" awareness, created *Mindfulness-Based Stress Reduction* (MBSR). MBSR is taught at more than 100 hospital-affiliated educational programs throughout the United States, as well as internationally, with more than 17 000 graduates of the program.[73]

Jung and Fromm saw meditation as a method to access the unconscious mind through the "altered state of consciousness."[67(p45)] This level of the subconscious reflects responses typical of the preverbal period in childhood when focus is on imagery processing rather than on logical processing. Meditation is viewed as similar to free association in that it can be a method to encourage "loosening" of the individualized, structured belief system, thereby stimulating change and allowing for a new experience. As such, Delmonte[68] suggests that meditation can promote insight as well as catharsis, producing a gradual detachment and desensitization to repressed experiences, which in the present can be reviewed, understood, and cognitively processed. A meditative discipline can induce a varying depth of relaxation related to the technique, length of practice, and the experience of the meditator. Experienced meditators can actually maintain a "no thought" level of cognitive stillness while continuing to be deeply restful and consciously alert. This is a result of successfully learning and practicing concentrative focus, as well as allowing the consistent processing of repressed issues.[68(p49)]

Brain Activity and the Influence of Meditation

Studies looking at both the EEG and functional magnetic resonance imaging (fMRI) as assessment tools have been used to evaluate brain activity during meditation.[74,75] EEG changes in the course of meditation (Table 3) vary from an increase in alpha amplitude at the beginning, to eventual rhythmic theta trains occurring with more experienced meditators.[74,76] The fMRI studies during meditation show stimulation of brain structures associated with autonomic control (amygdala, hippocampus, and midbrain) and attention (frontal and parietal cortex), indicating an anatomical basis for the relaxation response.[75] Davidson et al[77] measured significant increases in left-sided anterior brain activity in relationship with improved immune responses by utilizing MBSR. Left-side anterior brain activation is associated with positive emotional regulation and is likely due to a more adaptive response to and faster recovery from negative events and stress. The study demonstrated a rapid rise of antibody titers to influenza vaccine, thus inferring a correlation among meditation, positive emotional states, and an improvement of immune function for those with a greater left-sided brain activation shift.[77]

Davidson[78] suggested a direct connection among meditation, the right hemisphere (site of nonverbal and abstract thinking, loose associations, and clarity), and the insightful processing of the subconscious mind. This relationship is consistent with studies[79] correlating the connection of a correct answer triggered subconsciously in the right hemisphere prior to cognizant retrieval, but only for solutions linked with the sudden awareness (the "Aha" moment) and without clear cognitive processing, considered characteristic of insight and a distinguishing attribute of creativity. In fact, the study by Kounios and colleagues[79] of EEG changes during problem solving demonstrates this relationship. The researchers evaluated subjects who, while experiencing the resting brain state, used the problem-solving strategy of deriving sudden insight, versus those utilizing the analytical "search" method, more prevalent during an

awake brain state. According to Kounios et al,[79] the sudden awareness of correct answers to verbal problems was associated with short bursts of gamma-wave activity, along with a corresponding increase in fMRI signal originating in the right anterior superior-temporal gyrus, and transmitted just prior to the subject's conscious awareness of the correct answer. These findings may possibly reflect that split second of clear insight. The researchers also theorized that both analytic and insight processing can occur simultaneously, given the subconscious characteristics of the right hemispheric activity contributing to an insightful response.[79]

Meditation and Pain Management

A review by Bonadonna[69] of the many successful applications of meditation reflects reductions in stress, anxiety, and depression, as well as pain relief and improvement of mood and self-esteem. Pain management, in particular, has been a focus of the evaluation of meditation techniques. Studies of practitioners of Eastern meditative rituals have revealed the mind's ability to alter and control pain perception, possibly via the periaqueductal gray region of the midbrain and the site of opiate receptors.[7] Kabat-Zinn et al[80] evaluated of the use of MBSR and hatha yoga for chronic pain intervention over 4 years with 30% to 55% of the participants describing improvement. More recently, a quasi-randomized trial and long-term observational follow-up study by Grossman et al[81] demonstrates the efficacy of MBSR for female fibromyalgia patients with sustained benefits over a 3-year period. Some authors note that meditation may enhance the individual's ability to manage chronic illness, with the resultant self-awareness providing subtle internal cues allowing anticipation of an impending health crisis.[26,68,69]

THE PARADIGM OF ENERGY MEDICINE

The Einsteinian model of healing maintains diverse support in the fields of science and medicine. Many view the human being as a multidimensional organism and consider that successful healing begins at the interface of the complex energetic fields that underlie and contribute to the functional expression of the physical body. Physicist Herbert Froehlich reiterates the energy field theory, indicating that self-regulation is an outgrowth of an internal coherent biocommunicational field extending throughout the living organ systems. Predilection for a disease process may be an outcome of vibratory disturbance of these energetic fields. Froehlich and colleagues speculate that resonant frequency interventions are healing specific; that is, certain external frequencies are efficacious, with others causing vibratory disturbance of the biocommunicational fields and leading to disease.[57]

The "dissipative structures" or "chaos theory" perspective of influence on the complex energy field theory applies the principles of self-organizing systems to humans and was instigated in the 1980s by Ilya Prigogine and his colleagues.[29] Prigogine views living systems as self-organizing and, while actually flourishing on instability, are able to generate order from chaotic circumstances when necessary.[82] These systems may respond to both internal and external influence, leading to a new model of either increasing order or chaos. The influences may be miniscule but effective in creating new patterning and may be the energetic source of either disease or health and well-being.[29] Rubik[29] further speculates on the concept of the chaos theory as an explanation for the efficacy of low-frequency electromagnetic interventions and the likelihood for subtle energetic stimuli producing amplified effects on living systems indicating significance for bioregulation and the future of medicine.

Rogers[83] has established a solid foundation for energy healing techniques to be incorporated into nursing practice. Rogers[83] believed that the human energy field extended beyond the physical body, reiterating Bohm's perception of an ever-connecting and interacting universe. Her theory, Science of Unitary Human Beings, considers the complex energy field relationships of humans and their environment, with the *principle of resonancy* conceptualizing the developmental necessity of attaining a higher-frequency wave coherency for good health and well-being.[84] Watson has extended Rogers' premise into the current nursing philosophy of energy practice with her Intentional Transpersonal Caring-Healing model and challenges the individual to draw upon ". . . deeper sources of inner healing. . . ."[85(p15)] Many within nursing literature[86] indicate the role of *intentionality* as an essential component of the healing experience. Watson contends that this intentionality is not an aim that guides an action, but rather a mindful conscious awareness, centering the practitioner's

focused attention on the client.[85] This awareness cooperates instinctively within the energy field, allowing resistance to reorganize and dissipate, thus reinforcing Prigogine's theory of self-organization, creating clarity from chaotic energy. She asserts that intentionality and consciousness are united in the ". . . energetic field of emerging possibilities. . ."[85(p14)] creating a new vision of nursing practice.

A rapid energetic/vibrational field communication theory may account for the efficacy of systemwide body therapies that energize, integrate, and organize, with an informational network regulating encoded signal transmissions.[29] We can now start to understand how these unique organizing fields significantly influence our physical and emotional balance, with indications as to why, for some, stress becomes a repetitive pattern of distress, eventually leading to a continuous state of disease. A vibrational field communication model allows for the concept of healing at the level of human energy.[26] With consideration that the classical Newtonian approach is limited to physical interactions, an energetic model not only will allow practitioners to conceptualize healing techniques that are applicable at a more basic level but will also be integrative and more efficacious with our current medical model. Quantum reality provides the key for understanding the dynamic relationship between the structure of allopathic medicine and fluidity of energy-based therapies. This "new" energy paradigm penetrates to the heart of the holistic mind-body-spirit, allowing us to step well beyond a compartmentalized outlook limited to physical treatment and allow conscientious all-encompassing investigations for progressive healing models.

THE LIFE-CHANGING PRACTICE OF ENERGY THERAPIES: THE PROCESS FOR SELF-TRANSFERENCE (or . . . How to Stay Healthy for a Lifetime)

Humans have an inherent tendency toward self-improvement, attempting to broaden our horizons and search for life's purpose. This process of cognizant pushing beyond our limits to expand our boundaries is the experience of *self-transcendence*.[82] Self-transcendence has relevancy to all aspects of one's physical, mental, and spiritual life. However, the key is the illuminating journey of self-discovery, the path leading to our unfulfilled potential. Practicing self-transcendence demands personal involvement and effort, a willingness to look inward, with an understanding that insight into one's emotional interpretation of past events and view of the future can directly impact the present.[82] Compelling events and chronic stress in our lives may lead us to realize the necessity of self-transcendence. Reed[82] purports that expansion of self-boundaries can provide positive indicators for health and well-being. According to Haase et al., several authors have also noted the positive effects of self-transcendence, including ". . . enhanced feelings of self-worth. . . a greater sense of connectedness with others, nature and God. . . personal growth. . . finding purpose and meaning in life. . . and a sense of feeling healed."[87(p145)] These statements certainly indicate the importance of self-transcendence to healthcare and nursing practice. And, in fact, Haase and colleagues[87] note the self-transcendence concept evolving in commonality with nurse theorists Parse, Newman, Rogers, and Watson. Newman[88] considers the expansion of consciousness as key to good health and well-being, with self-transcendence as an essential part of the process. Watson concurs with this introspective theory in her Intentional TransPersonal Caring-Healing model, viewing consciousness as the foundation of human transcendence.[85]

Effective self-care approaches to encourage the personal expansion of boundaries and consciousness of self-transcendence involve the experience of energy therapies[36] enhanced with a concurrent restorative meditative practice.[82] According to Feinstein and Eden,[89] body-centered energetic therapies can be self-care tools and are considered by many[36,85,90,91] as a powerful foundation for the transformative process of emotional and physical repatterning, leading to a more stabilized response to stress as well as a more connected relationship to life in general. The individual can utilize energy therapies to ascertain energy imbalances and apply appropriate measures, as well as continue the maintenance of a healthier lifestyle by forestalling and even preventing distress and disease.[89,92] The self-care transcending experience of energy therapies with a restorative meditative practice, reflective of the holistic nursing model, is not only personally applicable but may also be an idea to encourage for clients under stress, those with chronic diseases as well as those looking for good health and well-being.[92]

ZERO BALANCING IS THE BRIDGE

Zero Balancing is an energetic system of touch therapy that balances the relationship of energy and structure within the bones and deep tissues of the body.[90] It was created in the early 1970s by Dr Fritz Smith, both a medical and osteopathic physician. Smith, after becoming an acupuncturist and with continued study including cranial osteopathy, Rolfing (with Ida Rolf), yoga, meditation, and Taoism, was able to gain an understanding that energy actually exists as a specific factor in the body. According to Smith, therapies involving the putative energy assess and use vibration as a healing tool. Regardless of the distinction among techniques, that is, how various practitioners connect with the energy fields and whether the technique is touch, nontouch or nonlocality/distance, these methods can contribute to the restorative balance of vibratory energy.[36] A reflection of his unique perspective, ZB bridges the gap between Eastern healing philosophies and traditional Western science and medicine. Designed to heighten the harmonious balance, it follows a holistic model, transforming the mind, body, and spirit of the individual. Smith, the author of *Inner Bridges*[36] and *The Alchemy of Touch*,[92] and the faculty of Zero Balancing Health Association at http://www.zerobalancing.com have taught thousands of healthcare practitioners internationally since 1973.

Zero Balancing has been used for both acute and chronic disease states, as well as emotional and generalized stress conditions.[93] Although not yet considered an evidence-based technique, ZB is one of several methods reporting success within the field of energy psychology. This emerging practice utilizes imagery and narrative-generated psychotherapy/counseling approaches paired with various energy-based interventions.[94] Edmonds and Gafner[93] report dramatically improved results with the combination of hypnotic ego strengthening and ZB for the treatment of depression and posttraumatic stress syndrome for victims of torture. Williams, a physician and Certified Zero Balancer with a private psychiatry practice, also indicates ZB's significant success as a stand-alone treatment or paired with a variety of psychotherapy methods for treatment of dissociative identity, bipolar and panic disorders, as well as chronic pain, depression and attention-deficit hyperactivity disorder (M. Williams, DO, written communication, February 2, 2009). Hollyday, an acupuncturist and Certified Zero Balancer at the Penn-North Clinic, in Baltimore, Maryland, has also noted successful outcomes for ZB as a stand-alone technique or in combination with traditional or auricular acupuncture for the treatment of long-term drug addiction (G. Hollyday, MAc, written communication, October 20, 2008).

The foundations of the technique are rooted in natural law. ZB considers the additive potential of the force fields of energy and bioinformation on the wave-particle duality moving through the cells and tissues. The method entrains the vibratory fields to increase and amplify wave coherency. Applying this information, ZB takes into account energy and the underlying skeletal bone structure and addresses the relationship between the 2, perceiving the body as a whole. Many therapies recognize the connection between energy and structure; however, most choose to work with one or the other. For example, homeopathy and Reiki concentrate on energy, while modalities such as Rolfing and chiropractic care attend to physical structure. ZB is unusual because it affects both simultaneously. The purpose is to bring about the most cohesive relationship possible between the energy of the body and the physical bone structure.[90] This balanced relationship creates optimal functioning for an individual. ZB is nondiagnostic of pathology, choosing, rather, to improve the daily circumstances of living with a disease process.[90] It is also a therapy for those who simply wish to enhance their well-being and help prevent future development of disease.[95]

Bridging Energy and Bone

Zero Balancing focuses on the bone because it is the deepest and strongest tissue in the body structure, able to transmit and conduct mechanical forces while carrying powerful currents of energy.[90] Piezoelectric current produced through stretch, compression, and tension and conducted via the rapid energy communicational model of connective tissue, is directed throughout the entire body, moving energy from bone to bone, indirectly affecting cartilage, ligaments, and soft tissue.[90] The ZB practitioner evaluates the bone energy in the key foundation joints, such as the ribs, the sacroiliac joint, and the articulations between the tarsal bones of the feet. These joints have limited range of motion, providing mechanical and energetic balance and leverage, rather than the freer motion associated with joints providing movement and locomotion. And as such, these joints are particularly suitable sites for influencing the flow

of energy.[90] In the absence of significant musculature to absorb or respond to the stretch, creating a minimal but well-targeted degree of tension, facilitated by the touch of the therapist, can send a piezoelectric signal causing greatly amplified consequences throughout the entire body. Since the foundation joints lack the proprioceptive interaction from muscle groups, dysfunctions and imbalances tend to remain just below the individual's conscious perception.[96] Concentrating on these specific joints can expand the subconscious boundaries into conscious awareness and comprehension. As a result, ZB considers these particular sites to be a bridge connecting the subtle energy fields and the physical structure of the body; a bridge to reach unconscious boundaries, offering a new sense of potential and opportunities for change.[36,97]

Interface Touch

The basic working premise of ZB is that both the energy body and the physical body can be accessed together by a singular kind of educated touch, referred to as *interface*. Interface requires the skilled practitioner to have an intellectual and tactile understanding of energy in terms of tissue and bone tension. Energy boundaries are precise and clear, that is, the client and the practitioner are energetically separate within a nondependent relationship.[97] A specific field of tension is accomplished by using the interface touch to construct the *fulcrum*, a precise and complex hold creating a single point of stillness, and potentially inducing brainwave entrainment. Brainwaves move away from beta (13–21 Hz) linear thinking to alpha (8–12 Hz) and theta (4–8 Hz), correlating with the meditative state of deep relaxation and leading to the hypnagogic "expanded" state of consciousness. According to Edmonds and Gafner,[93] their clients' response during these moments appear to be somewhat hypnotic, as well as a mild dissociation. Characteristic of hypnagogic reverie,[68] this momentary disentanglement, or "loosening," of the mind's relationship to the body's behavioral patterning, initiates a detachment and disconnection to illness or behaviors, with the ZB practitioner using the vibratory energy fields to release old emotional and/or physical patterning and tissue-held memories, thus allowing the client to reintegrate a new experience. The fulcrum is the catalyst that instigates the internal regeneration and biological self-organizing capacity redefining a clearer stronger (ie, more organized) energy field.[36] Delmonte[68] indicates the "destressing" or tension release as a result of loosening leads to feelings of well-being. Clients' descriptions of these experiences during a ZB session have included statements of "well-being" and "relaxation,"[93(p216)] "sense of calmness," and "restored hope."[96(p33)]

Smith[36] speaks of maintaining *attention* instead of *intention*, thereby preserving a quiet mind and one open to possibilities, free of projection and perception. Free-flowing attention without demand for change can, in itself, be transformative. This is a belief couched in Eastern healing philosophies.[90] The Taoist concept of change does not result from a calculated action, but rather by innate spontaneity and in harmony with natural order. The sixth century B.C. philosopher Lao Tzu, considered the father of Taoism, is often quoted "By non-action everything can be done."[98(p117)] As a result, the ZB technique encourages the practitioner to maintain attention along with sincere appreciation as an efficacious necessity. "Attentiveness" by the therapist shares a common perspective with the "person-centered" psychotherapy approach of Carl Rogers: the belief in the innate human ability to grow and achieve one's fullest potential.[97] Critical to this theory is the presence of a safe, supportive, and accepting milieu. Rogers felt that when persons are simply understood from their own point of view, and not evaluated or judged, emotional healing could occur.[99] According to Smith, ZB practitioners do not attempt to influence conditions, but instead hold their client in the highest regard with sincere appreciation. "If you can balance something to neutral without judgment or comparison by holding it in its own space, it will naturally move to its highest possible potential" (F. Smith, DO, MD, oral communication, May 10, 2007). The positive emotional state derived from sincere appreciation and a caring attitude amplifies the vibratory coherency of cardiac energy fields of the practitioner and client, effectively increasing broader brainwave entrainment.[41,45] Hence, the goal of the ZB practitioner is to simply create these 2 circumstances, both serving to invite but not demand the client's innate tendency toward self-transcendence and healing.[97]

ADDING THE SELF-RESTORATIVE PRACTICE OF MEDITATION

A consistent meditative practice provides a foundation for the self-transcendence expansive experience of

energy therapies.[36] Meditation teaches us to consistently turn our attention to the present moment—no past, no future. Frequent practice will trigger the quieting of our state of mind, allowing us to produce the desired brainwaves, alpha to theta.[62] For example, as individuals follow conscious concentration, they may notice color images (characteristic of alpha waves) shifting to black and white images (common to theta waves).[9] The practice is learning to focus on ourselves, experiencing a higher state of consciousness and self-awareness, connecting our thoughts with their emotional consequences. Attending to the present moment allows one to see the eventual detrimental effect of internalizing negative emotions. As we learn of these relationships, we will also learn to make a conscious choice, relating the cause and effect, as well as what triggers negative and positive thoughts in our lives. Out of 60 000 thoughts experienced daily by an individual, only 10% are new.[100] A meditative practice can allow not only a mental refocusing but also a physical disruption of the cumulative excitatory autonomic cascade resulting from repetitive negative emotions and possibly influencing the balance of the body's sympathetic/parasympathetic response.[68,71,100] Emotional negativity, likely the product of long-term held beliefs and habitual patterns, can carry with it the consequences of chronic stress in the forms of headaches, insomnia, anxiety, and pain, eventually becoming a vicious cycle. Delmonte[68] notes emphasis on the self-transcendence aspect of meditation, whether the Eastern philosophy of moving beyond repressed memories or the Western tradition of infusing gained insight into our daily lives. The outcome of a consistent practice from either perspective could be a reduction or even avoidance of many of the stress-related disease processes, profoundly impacting our future health.

CLEARING OUR ENERGY FIELDS

> We can't solve problems by using the same kind of thinking we used when we created them.
>
> —Albert Einstein

Healthcare professionals seemingly race from task to task, a result of the demands of the job, the requisite staffing shortages, and treatment compartmentalism, not to mention the countless scenarios of exposure to pain and disease with the accompanying feelings of frustration and guilt, ultimately ending in sadness and futility. And, unfortunately, our professional demeanor demands that we do not consider or place value on acceptance and resolution of these emotions as an integral part of our process. All healthcare providers are educated to empathize and lessen suffering and yet we do not learn to develop methods to identify and understand our own reactions and emotions, experienced and absorbed as a result of our professional responsibilities.[101] Daily exposure to stressful circumstances can cause any number of unpleasant and unexpected personal responses. Insight into these responses is necessary for maintenance and continued growth within the healthcare profession. We suffer through the unrealistic expectations that we place on ourselves and others, the anguish of causing pain and the need to mask our emotions.[101] Our patients' right to self-determination and autonomy taking precedence over our professional judgment—even if we believe the consequence may result in higher risk for illness, harm, or even death—is firmly entrenched within our ethical philosophies.[102] However, accepting and providing the care prompted by our patients' decisions can threaten our personal spiritual beliefs.

Many recognize that our own healing process of mind, body, and spirit allows us to share deep empathy and fully support others in need, thereby providing the essential component for our efficacy.[103] The healing process, however, is the experience, expression, and acknowledgment of all our emotions. This personal clearing process leads to an integrative balanced flow of energy of the mind, body, and spirit. Pert and colleagues[7] advocate that basic emotions, such as anger, fear, grief, sadness, and joy, are all essential to the full gamut of human experience and are a likely outcome of evolutionary adaptation. However, long-standing states of distress, such as helplessness, hopelessness, and despair, are often an outcome of repressed anger and the repetition of "old" issues and behavioral habits and eventually become immunosuppressive and deleterious to health.[7] The key to this personal evolving progression, however, is the awareness of our emotional process and acceptance of the necessity of healing ourselves, as we provide healing for others. Without awareness, we render ourselves not only therapeutically ineffective but also incapable of moving beyond our own needs. For many, to consider "ourselves" first does not come naturally. However, neglecting our own emotional issues will cause the draining of our energies, increase

our burden of care, and leave us less likely to be able to accompany our patients along their own healing paths.[103]

By sheer numbers, the influence of healthy professionals will have a huge impact on the well-being of our entire healthcare system. Those who nurture themselves recognize the connection between their own healthy balance and how this influences their ability to focus and stimulate the innate healing within themselves and their patients.[103] The physiologic evidence demonstrating the impact of varying emotional experiences on cardiac field coherency, coupled with the finding that this emotion is readily absorbed by others through entrainment, certainly provides an insightful explanation of the psychological influence by the individual. Realizing the tremendous power of the putative energy exchanges resulting from physical contact or close proximity gives a much greater understanding of the potential depth and power of the therapeutic bond between practitioners and their patients, no matter the circumstances or field of practice. Our energy field coherence has the capacity to entrain those around us with implications that extend far beyond practitioner-patient interactions. Multiplying our energy fields with the ever-increasing and broader wave entrainment effects from others brings a new understanding to any interface, and especially to the ". . . concept of touch as the first and most fundamental means of communication and facilitator of human interactions."[41(p367)]

Expanding our consciousness by learning, using, and receiving energy therapies and interventional techniques as well as developing and maintaining a restorative practice, we can transform our therapeutic connection to a clearer and healthier level. We can increase our ability to intrinsically attain and maintain longer periods of the relaxed alpha and theta states, bringing a sense of focused awareness and calm to our daily lives. Our reactions and responses to stress change as we are able to alter and even eliminate long-held and repetitive behavioral perceptions. We learn to give ourselves the opportunity to resolve long-term, destructive patterns, likely a result of "legitimate" emotional or physical experiences; however, patterns that, now, simply "no longer serve." This philosophy allows us to expand beyond our emotions and "the story," finding channels for resolution and freedom from the past. The central concept to understand involves the balance of our conscious energy and how it can manifest as illness or wellness. Our energetic consciousness begins to evolve as we accept that in reality we are essentially spiritual beings existing in a physical state. Many therapeutic strategies can address these imbalances; however, to achieve wellness, we must embrace the concept of self-transcendence and look within and accept responsibility for our own choices and recovery. Our goal is to bring about the balance of mind, body, and spirit by making positive changes that will remove the source of imbalance; otherwise, continued stress becomes distress with the potential for ensuing illness and disease.[26]

Over time, our coherent entrainment amplifies, enhancing the interactive energy fields with those in close proximity. Our relationships, personal and professional, become clearer and healthier, allowing for the grounded, nonjudgmental, and impartial therapeutic support and key for the progression of our patients' healing. Maintaining this level of physical, psychological, and spiritual awareness for our patients underscores their experiences, allowing patience and acceptance to prevail. Simple listening skills that can initiate a meaningful connection will come more easily and naturally, encouraging each unique "story" to be heard. This clearer connection is supportive of an empowering relationship in which patients also become more aware and hopeful, more able to guide self-treatment and resolution, and therefore, more likely to regain control over their lives. Conscious energy has downstream effects, encouraging acceptance and contentment for those with major illnesses or disabilities, with noticeable improvement in overall well-being and quality of life. The reality is as one continues self-transcendence by routinely learning, giving, and receiving energy therapies while advancing and deepening one's own personal growth through the restorative and contemplative traditions, the path to more life in health, relationships, career, spirituality, and creative expression will become very clear—with the infusion of new energy, vibrancy, insight, and inspiration.

CONCLUSION

Supported by the National Center for Complementary and Alternative Medicine and coupled with expanding interest from both the public and healthcare professionals, ". . . energy therapies are here to stay. . . ."[19(p2)] While the technological advancement of allopathic medicine has impacted healthcare worldwide, clearly, there is an increasing mainstream acceptance of these gentle complementary techniques

uniting their potential to reduce stress while enhancing quality of life. This inclusive response is the key for the paradigm shift toward holistic approaches now occurring in healthcare. The next phase requires a new system for thinking about health and illness. Emerging research of innovative concepts is starting to reveal the relationship of illness versus good health in a clearly different way, thus potentially illuminating a new direction in healthcare. The practice of energy therapies is at the cutting edge in this new direction, and the emphasis must be on the safe, efficacious, and evidence-based integration into the American healthcare system.

The proposition of this article is not that physics *proves* the existence of conscious energy, but rather that quantum principles provide a conceptual framework of contemporary science, that is, a point of reference, for those with a more Western philosophical background. Opening our minds to the possibilities for energy in healing challenges us to transcend our conventional thought and consider ". . . what is unknowledgeable to one generation is mere technical challenge to another. . ."[104(p513)] and realize that the true meaning of evidence-based practice is to explore modern medicine as well as ancient cultures and integrate all elements that demonstrate patient satisfaction as well as efficacy. Understanding that conventional acceptance of energy therapies will be dependent on the formulation of a solid science foundation, we should also consider the necessity of revising the current biomedicine paradigm to apply our new insights into successful therapeutic strategies.[22,57]

Because energy therapies spotlight the individual's inner resources as the path to self-transcendence, self-awareness, well-being, and prevention of potential health-related problems, they have possibilities beyond simple acceptance. The influence of healthier professionals can greatly impact, and likely revolutionize, this future direction in healthcare. Our collective and conscious energy acknowledging the necessity to heal from within can and will ultimately change the face of tradition, allowing the philosophy of self-responsibility to transform healthcare—the very reason many of us originally chose our careers. The mind-body-spirit holistic approach of energy therapies is our new vision of health and healing.

This new paradigm is really about the art and science of healing. We are living on the verge of comprehending the natural processes that can promote and maintain good health, longevity, and quality of life. According to Gallup, "If the focus of the 20th has been on *outer* space, the focus of the 21st century may well be on the *inner* space. We are entering a new era of discovery—not of the world around us, but of the world within."[105(p212)] The practice of energy therapies has opened the door into the biological foundations of thought, feeling, and behavior and their connection to health and the conscious experience of life. These recent breakthroughs are revealing a new understanding of who we are, with the implications truly compelling.

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