# What literature says about Bioelectricity

Jeong-Wook Seo, MD
Director, Seoul National University Medical Library
Editor-in-chief, Basic and Applied Pathology
Professor and Chairman, Dept. Pathology, Seoul National University

Bioelectricity or bioelectromagnetics has varieties of meanings to Western medicine as well as Oriental medicine. Energy, resonance, pattern, fields, interaction are examples of concepts explaining the physiologic characters of the bioelectricity.

There are enough number of pieces of information that bioelectricity is useful. Pain control, facilitating bone healing, understanding the developmental phenomenon and bringing order out of chaos in neural function are examples.

Most challenging issue is that skepticism still exists within the scientific community due to lack of standardization and homogeneity with trial designs and dosages.

I would like to address views of some Western researchers on the bioelectricity as a new changing concept and how to evaluate the effect in a common scientific way.

Paragraphs listed below are selected copies of key issues raised by researchers in peer-reviewed literature.

**Brad M. Isaacson, Roy D. Bloebaum (Department of Veterans Affairs, Bioengineering, Orthopaedics, and Biology, University of Utah, Salt Lake City, Utah, 2010)[1]**

"The direct relationship between bone strain and electric fields has spurred continual interest in the field of bioelectricity over the past 160 years. It has been reported that stress-generated potentials alter cell proliferation and extracellular matrix secretion. The observation that endogenous electrical signals facilitate osteoinduction has lead to high production of electrical stimulation devices to fix bone defects.

Despite the reported 100,000 nonunions healed as of 1990 with electrical stimulation, skepticism due to lack of homogeneity with trial design and dosage still exists within the scientific community. The dynamic response of bone cells to alterations in localized mechanical stresses and electric fields has been vital for increasing secretion of growth factors, intracellular calcium, cell proliferation, and bone remodeling.

To improve the current understanding of electrical stimulation, more concentrated efforts must be made to evaluate current density and the subsequent electric field's affect on bone using randomized double-blinded clinical trials."

**GLEN REIN, Ph.D.[2] (*Quantum Biology Research Lab, Northport, NY, 2004*)**

"Scientific definitions of the biofield is endogenous energy fields of the body and includes nonclassical and quantum energy fields. The biofield is defined further in terms of its functional property to act as a resonance target for external forms of energy used as treatment modalities in energy medicine. The functional role of the biofield in the body's innate self-healing mechanisms is hypothesized, based on the concept of bioinformation which, mediated by consciousness, functions globally at the quantum level to supply coherence, phase, spin, and pattern information to regulate and heal all physiologic processes. This model is used to explain

wide varieties of anomalies reported in the scientific literature, which can not be explained by traditional biophysics and bioelectromagnetics."

**Abraham R. Liboff, Ph.D. [3] (Physics, Oakland University, Rochester, 2004)**

"Thee present paradigm in medicine, reflecting the groundbreaking research of Pasteur, Koch, and Fleming has held sway for more than 100 years. Some 50 years ago, Watson and Crick extended the emphasis on biochemistry to include DNA/RNA. The functioning of the body, its problems, and repairs, are now completely formulated in terms of biomolecules and their interactions. Today the medical community takes for granted that the best way to describe the living state is in terms of molecular biology, and that questions of illness and wellness must be ultimately answered in this context. How does electromagnetic therapy fit into this picture? Is it merely one more convenient physical tool useful sometimes in leveraging physiologic adjustments? Is electromagnetic therapy indicative of a strikingly different paradigmatic shift?

The medical community is so fixed in its ways that it does not quite know what to do with electromagnetic therapy. This is despite the small but increasing acceptance of electromagnetic techniques by clinicians in recent years. An outstanding example was the use of pulsed magnetic fields (Bassett et al., 1974) followed by ion cyclotron resonance magnetic field combinations (Diebert et al., 1994) to treat bony nonunions. Another has been the use of rapid transcranial magnetic stimulation (rTMS; Barker et al., 1985) to treat depression. One problem for the clinician is that there is no rationale to fall back on to provide guidance in choosing among the variety of electromagnetic devices. With pharmaceuticals, for example, the physician can at least make an educated guess. But there is no underlying theory connecting electromagnetics to physiology. To add to the problem, we find clinicians lacking even a rudimentary understanding of electricity and magnetism."

**Wayne B. Jonas, and Ronald A. Chez. [4] (Samueli Institute for Information Biology, Corona del Mar, CA, 2004)**

"The challenge is to optimize these common components of healing for the purpose of improving health and well-being in general. In our present culture, we approach healing by encouraging and promoting a lifestyle that includes clean air and water, a balanced diet, adequate exericise, relaxation and stress management practices, and a sense of social connectivity and support. We also discourage exposure to toxins and addictions to drugs, alcohol, smoking, and food or other destructive behaviors.

Additionally, we attempt to introduce healing via interventions that target the reduction of stresses that can interfere with recovery and repair mechanisms. These interventions range from physical (surgery, acupuncture, biologic toxins [vaccinations], chemical toxins and drugs, and exercise and manipulation) to psychologic (counseling, altruistic service, psychotherapy, and meditation) to energetic (*t'ai chi*, *qigong*, yoga, homeopathy, energy healing, exposure to nature, music, and singing). It is the responsibility of science to define which of these interventions is generally effective, while the art of medicine is required to identify which of these interventions is best suited for any one individual.

The first step to correcting these difficulties was the creation of clear, standardized, working definitions and research guidelines to create a foundation of consistency, completeness, and uniformity, thereby allowing a rational and systematic research agenda to be put in place."

Check list for healing research on bioenergy

1. Direct and Indirect Measurements of Bioenergy
2. Distant healing intention
3. Healing prayer outcomes studies
4. Clinical biofield energy healing
   Defining the study
   Specifying the intervention
   Evaluating controls, placebos, and masking
   Assessing outcomes
   Conducting the analysis
5. Healing relationships in clinical nursing
   Considering the protocol title and abstract
   Evaluating the scientific background and explanation of rationale
   Selecting subjects
   Assessing study methods and data collection
   Analyzing results
6. Healing relationships in clinical medicine
   Evaluating the study design
   Applying the critical multiplism strategy
   Addressing self and group issues of critical multiplism
   Assessing content issues and outcomes

**The 3rd Japan-Korea Workshop on acupuncture and EBM (2004)[5]**

Responsibilities of IRB/IEC in clinical trials (Institutional Review Board / Independent Ethics Committee

1. An IRB/IEC should safeguard the rights, safety and well-being of all trial subjects. Speci al attention should be paid to trials that may include vulnerable subjects.
2. The IRB/IEC should obtain the following documents;
   A. Trial protocol(s)/amendment(s), written informed consent form(s) and consent form updates that the investigator proposes for use in the trial, subject recruitment procedu res (e.g. advertisements), written information to be provided to subjects, investigator' s brochure (IB), available safety information, information about payments and comp ensation available to subjects,
   B. The investigator's current curriculum vitae and/or other documentation evidencing q ualifications, and
   C. Any other documents that IRB/IEC may need to fulfill its responsibilities.
3. The IRB.IEC should consider the qualifications of the investigator for the proposed trial, as documented by a current curriculum vitae and/or by any other relevant documentation the IRB/IEC requests.
4. The IRB.IEC should conduct continuing review of each ongoing trail at intervals appropr iate to the degree of risk to human subjects, but at least once per year.

**ROBERT O. BECKER[6] (State University of New York, Syracuse, 2004)**

"We are now in the process of revising the past century's biochemical concept, under which all major life processes are chemical in nature, to one that proposes that such processes are electromagnetic in nature. Because the practice of medicine is a direct descendant of each new

scientific paradigm we now have “energy medicine” as an alternative to “chemical medicine.” This new paradigm rests quite solidly on the fact that all chemical reactions are basically electrical or electromagnetic in nature.”

References:

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