

A Brief History of

Pulsed Electro- Magnetic Field Therapy

Background

Five hundred years ago, Paracelsus, a Swiss physician and alchemist, wondered if diseases could be manipulated by magnets, using lodestones as the best magnets available then. But natural lodestones are quite weak and few people paid much attention to his ideas until the discovery of carbon steel magnets in the 1700's.

During the 1800's, most of the discoveries relating electricity to magnetism were made by the early pioneers of our modern technical world by men such as Gauss, Weber, Faraday and Maxwell.

One of the more interesting magnetic theories postulates a "Magnetic Field Deficiency Syndrome."

It is offered as an explanation of bio-magnetic effects by Dr. Kyochi Nakagawa of Japan. The Earth's magnetic field is not fixed in position or strength. In the last hundred years, it has weakened on average by about 6 percent. In the last thousand years it has fallen nearly 30 percent. Dr. Nakagawa argues that since humans evolved in a magnetic field, it is necessary for proper health. A falling magnetic field puts us at risk and magnetic therapy can make up the deficit.

In truth, no one really understands the mechanisms by which magnetic fields effect human health. There are many theories and very little consensus. It is a problem as complicated as the construction of the human being, concerning dozens of organs and thousands of different molecules.

However, just because you can't explain something, doesn't mean it can't happen.

For two hundred years, electro-magnets have been built from coils of wire powered by electricity. Such devices can be pulsed to produce rapidly changing magnetic fields. This opens a whole new world of medical applications since changing magnetic fields can induce tiny electrical currents in human tissue.

As far back as 1890, the American Electro-Therapeutic Association conducted annual conferences on the therapeutic use of electricity and electrical devices by physicians on ailing patients.

Today, Pulsing Electro-Magnetic therapy is approved by the FDA to promote the healing of non-healing bone unions.

Powerful electro-magnets are also used in brain and muscle research to generate currents strong enough to fire nerves that trigger sensations and flex muscles.

There have been thousands of research studies and clinical trials on Pulsed Electro-Magnetic Field Therapy.

[Click here to find samples](#) from over 2,000 University level double-blind studies concerning ailments ranging from Arthritis to Vision.



Pioneers in the field of PEMF

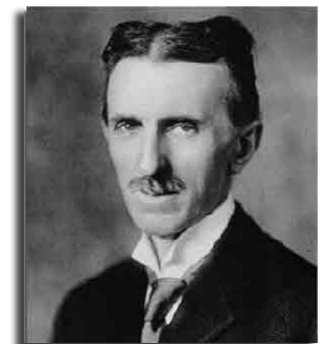
Nikola Tesla

In 1895, through the genius of Nikola Tesla, the Niagara Falls Power Company began sending alternating current (AC) to Buffalo, NY, twenty-five miles away. Cities throughout the world followed suit and made commercial AC power available

to the general public, even miles from the power generating station. As a result, Tesla's high voltage coil devices, which were powered by AC, started to become widely known and applied.

In 1898, Tesla published a paper that he read at the eighth annual meeting of the American Electro-Therapeutic Association in

Buffalo, NY. He states that one of the early observed and remarkable features of pulsed magnetism was its apparent harmlessness, which made it possible to pass relatively great amounts of electrical energy through the body of a person. Coils up to three feet in diameter



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Types of Magnetic Therapy

Constant Energy Magnets

Long popular in Japan, magnet therapy has entered public awareness in the United States, stimulated by golfers and tennis players extolling the virtues of magnets in the treatment of sports-related injuries. Magnetic knee, shoulder, and ankle pads, as well as insoles and mattress pads, are widely available.

Magnet therapy has a long history in traditional folk medicine. Reliable documentation tells us that Chinese doctors believed in the therapeutic value of magnets at least 2,000 years ago and probably earlier than that. In 16th century Europe, Paracelsus used magnets to treat a variety of ailments.



Two centuries later, Mesmer became famous for treating various disorders with magnets.

In the middle decades of the 20th century, scientists in various parts of the world began performing studies on the therapeutic use of magnets. From the 1940s on, magnets became increasingly popular in Japan. Yoshio Manaka, one of the influential Japanese acupuncturists of the twentieth century, used magnets in conjunction with acupuncture. Magnet therapy also became a commonly used technique of self-administered medicine in Japan. During the 1970s, both magnets and electro-magnetic machines became popular among athletes in many countries for treating sports-related injuries.

In the United States, it was only in 1997 that properly designed clinical trials of magnets began to be reported. Results of several preliminary studies suggested that both static magnets and electro-magnetic therapy may indeed offer therapeutic benefits for several disorders.

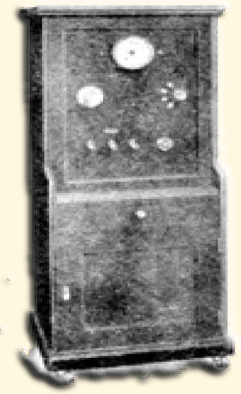
These findings have escalated research interest in magnet therapy.

Pulsed Electro-Magnetic Energy

Pulsed Electro-Magnetic Field Therapy is non-static, quite unlike therapy with standard magnets, which is static.

Pulsed Electro-Magnetic Field Therapy is used in two main ways: Pulsed Electro-Magnetic Field Therapy (PEMF) or a special version of PEMF called repetitive transcranial magnetic stimulation (rTMS).

PEMF therapy has been used to stimulate bone repair in non-union and other fractures since the 1970s. This use has been approved by the FDA. Although bone has a remarkable capacity to heal from injury, in some cases the broken ends do not join: these are called non-union fractures. PEMF has shown promise for other conditions as well. Now, many studies are showing its benefits in healing soft-tissue wounds; suppressing inflammatory responses at the cell membrane



level to alleviate pain, and increase range of motion.

PEMF is now being investigated experimentally for osteoarthritis, stress incontinence, migraines, and many other conditions.

A special form of Electro-Magnetic therapy, repetitive transcranial magnetic stimulation (rTMS), is also undergoing close study. rTMS is designed specifically to treat the brain with low-frequency magnetic pulses. Many studies suggest that rTMS might be beneficial for depression. It is also being studied for the treatment of Parkinson's disease, epilepsy, schizophrenia, and obsessive-compulsive disorder.

....Continued - Pioneers in the field of PEMF

were used for magnetically treating the body without contact, though ten to a hundred thousand volts were present "between the first and last turn". Tesla concludes that bodily "tissues are condensers" in the 1898 paper, which is the basic component (dielectric) for an equivalent circuit only recently developed for

the human body. In fact, the relative permittivity for tissue at any frequency from ELF (10 Hz-100 Hz) through RF (10 kHz-100 MHz) exceeds most commercially available dielectrics on the market.

This unique property of the human body indicates an inherent adaptation and perhaps innate

compatibility toward the presence of high voltage electric fields, probably due to the high transmembrane potential already present in cellular tissue. Tesla also indicates that the after-effect from his coil treatment was certainly beneficial.

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...Pioneers continued

Georges Lakhovsky



Georges Lakhovsky's philosophy was that "the amplitude of cell oscillations must reach a certain value, in order that the organism be strong enough to repulse the destructive vibrations from certain microbes." He goes on to say, "The remedy in my opinion, is not to kill

the microbes in contact with the healthy cells but to reinforce the oscillations of the cell either directly by reinforcing the activity of the blood or in producing on the cells a direct action by means of the proper rays." Lakhovsky's Radio-Cellulo-Oscillator (RCO) produced low frequency ELF all the way through gigahertz radiowaves with lots of "extremely short harmonics." His book, *The Secret of Life* was first published in English in 1939. In 1949, a review of Lakhovsky's work was published as *Waves That Heal* by Mark Clement. Lakhovsky's theory is that each cell in the body of an organism—be it a plant, an animal, or a human being—is in itself a little radio receiver and works on its own special little frequency. Each cell, in addition to being tissue, in addition to being biology, is also electricity. On that theory, he held that pathology was a not matter of biological concern or intervention, but one of electrical concern and intervention. The record of his treatment of degenerative disease, with what amounts to an early "energy-medicine" device, was remarkable.

Antoine Priore



Antoine Priore's electro-magnetic therapy machine was perfected during the 1960's and early 70's as a team of leading French scientists demonstrated conclusive, total remissions of terminal tumors and infectious diseases in hundreds of laboratory animals - all funded by the French Government. Complete remission of the treated diseases was obtained. In addition,

the animals' immune systems were restored to normal. Antoine Priore began working in 1944-45 to develop an electro-magnetic device which cured cancer. He got the backing of some very interesting and courageous people, including the world-famous immunologist Dr. Raymond Pautrizel of the University of Bordeaux II, who did all the animal work. When Dr. Pautrizel arrived on the scene, he decided to take the research in another direction and began to use the machine to treat what he knew best which was sleeping sickness in animals. Sleeping sickness was of primary concern to Dr. Pautrizel because it is a widespread affliction in tropical countries. When he injected rabbits with the pathogen trypanosome, which causes sleeping sickness, the

rabbits would all die within 72 hours. But when exposed to the Priore device, these same rabbits would live. Yet their blood was still teeming with the trypanosomes which could be extracted from the radiated rabbits and injected into other control rabbits, which would then die. This implies that the machine was doing something electromagnetically to the rabbits' immune systems such that they were able to fight off a lethal disease which would normally kill them in 72 hours!

Robert Becker



A pioneering medical doctor in the 1960's, Dr. Becker is most famous for his book, *The Body Electric*, which gives an autobiographical account of his life experiences with bioelectro-magnetics. Not only did he establish that the Chinese meridians of the body are skin pathways of decreased electrical resistance, but he discovered a host of other bioelectric

effects within the body as well, such as electrostimulating limb-regeneration in mammals. He also worked on electrically stimulating bone growth with Dr. Andrew Bassett, who along with Dr. Arthur Pilla, developed a very effective PEMF generator to stimulate bone fracture healing, now approved by the FDA with an 80% success rate. Similar PEMF signals recently have been used effectively to prevent osteoporosis even in patients with an ovariectomy.

Abraham Liboff



A modern-day physicist and inventor, Dr. Abraham Liboff is the discoverer of electric-field and geomagnetic ion cyclotron resonance, which more reliably explains the resonant interaction of static magnetic fields with endogenous AC electric fields in biological systems. A physicist with Oakland University, he has introduced

significant physics principles into the field of bioelectromagnetics. His "Method and Apparatus for the Treatment of Cancer" (US Patent #5,211,622) tunes an alternating magnetic field superimposed on a static magnetic field, to maintain a combined effect that has the proper cyclotron resonance frequency so that the neoplastic tissue containing a preselected ion can be treated to bring about a decrease in the proliferation rate of the cancer cells. It also can be combined with a chemotherapeutic agent for a synergistic effect. However, it is noted in the patent disclosure that "up to 100 days of treatment will provide beneficial results".