

ARTICLES OF INTEREST ON MAGNACARE WEB SITE

**Principles of Magnetic Field Energy Induction Therapy**  
**also called MAGNETIC ENERGY RESONANCE INDUCTION THERAPY (MERIT)**

Magnetic Field Energy Resonance Induction Therapy works through the process of inducing specifically pulsed magnetic energy that gently oscillates and mimics the natural bio-electric system activity of the human body. The patient's bio-electric current may, because of medical problems, or resulting from damage to body tissues, e.g. nerve, blood, or bone, be operating abnormally. The harmonic effects of specifically pulsed and oscillating induced magnetic energy produce a bio-resonance, assisting in the return to a normal range of cellular activity, promoting the healing process, and reducing the sensation of pain.

Basic to any initial medical treatment is the effort to return the patient's body functions to within normal ranges. This includes everything from respiration, blood circulation, fluid and electrolyte levels, to minute electrical currents, and essential tissue's mineral and gas transferability at the cellular level. Doctors medicate to achieve even minimal variances in pressures and strengths, and consider this work basic to the successful management of their patient's problems, including any associated pain.

Induced magnetic energy fields within biological parameters are a non-invasive, non-toxic, comfortable and a beneficial method of accomplishing the same result in the seriously ill or injured, the recuperative, the young or old, in fact, even the healthy who simply choose to achieve and maintain optimum health and well being.

This must not be confused with electromagnetic radiation in the high to very high frequency and voltage ranges as in power lines, appliances, and mobile phones in the microwave band, which may be potentially hazardous and damaging to body tissue at the cellular level over a period of time. The beneficial magnetic energy induction is at less than 20 Hz (cycles per second) and at very low levels of strength. The correct complex waveform and pulsing frequency combinations are very important.

Magnetic field energy induction works by generating magnetic pulses that induce micro-volt and micro-current levels of electrical signals simulating healthy cell activity within the body. This assists the body's electrical system to normalize, and then maintain its natural biological function.

**“When all the cells are healthy - you have a healthy body”.**

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## **THERAPEUTIC MAGNETIC ENERGY**

Using magnets to induce good health is far from new. In Egyptian times, Cleopatra wore a necklace of magnets around her neck and strung them around her head for good health. In fact, magnetic therapy dates back to 850BC. The ancient Greeks found that by placing magnets on spear wounds, the pain intensity decreased, while the healing process quickened.

It has only been in recent times that magnets, and more particularly electromagnetic energy induction as magnetic resonance therapy, are emerging as one of health's fastest-growing fields.

The real value of this therapy lies in the effect of magnetic energy to induce certain changes within the cells, assisting them to absorb nutrients and oxygen, and then help eliminate waste matter more effectively. It promotes the transport of oxygen via the red blood cells more efficiently throughout the body, improving peripheral blood circulation and helping alleviate any pain.

Magnets themselves or electromagnetic treatments do not heal, but they can stimulate the body, along with good nutrition, to heal itself. Magnetism is a natural therapy - it is neither magic nor a cure. If every cell in the body is healthy, then the person will be healthy. Magnetic therapy merely helps body cells to exist and to function at their most effective level.

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## ?? **Electro Magnetic Energy Resonance Induction Therapy & the MAGNAFIELD**

### Background leading up to the development of the Magnafield

During the past fifteen or more years much research worldwide into the effects of Magnetic Fields on body tissue has resulted in a better understanding of how and why magnetism is so important and essential for the balanced operation of every cell in the body. The magnetic forces emanating from the earth also have a subtle but important effect on all living matter (a).

Russian cosmonauts have proved that man cannot remain in space away from the earth's magnetic field (7.5 to 10.5 Hz) for long periods without serious damage to the intricate biological function of the human body, unless a similar magnetic environment is provided. NASA has always recognised this fact.

Several types, makes and models of electro-magnetic field therapy devices have become available during recent years, most of which have utilised the 'direct' or 'uni-directional' mode of electro-magnetism, and usually operate at higher frequencies. The very specific selection of correct frequencies and waveforms, the low level of induction power, and the type of magnetic energy field generated, are all-important factors to produce beneficial results. After several years of research, development, refinement, and clinical experience combined with recent technology, the Patented Magnafield system, developed by Randa Medical during the 1980's and then by Magnacare, is one of the most advanced and effective magnetic therapy units currently available.

### ?? A BASIC EXPLANATION OF WHAT THIS THERAPY DOES

The principle of the therapy is that extremely low frequency - low power complex form pulses of gently oscillating electromagnetic energy forces, with specific harmonics, are introduced into the body subjecting nerve and cell tissues to changing electrical potentials inducing an analgesic effect (temporary relief of pain), and promoting the healing of damaged tissues. This modality is now referred to as Magnetic Energy Resonance Induction Therapy (MERIT).

Among several effects of MERIT at the cellular level, the cell wall membranes become polarised, and the ionic transfer effects a stabilising of the cellular voltage and metabolism. The body chemistry is influenced by the application of specific frequencies of magnetic induction and the transport and utilisation of available oxygen is improved. Many other associated effects (b) have been noted from several thousand medical and scientific papers on this therapy, including:

- \* **Ionic transfer - Calcium, Potassium and Sodium balance is restored (at 0.5 – 15Hz),**
- \* **Protein synthesis increased and absorbed more rapidly (at 8,10,12,15Hz),**
- \* **Inflammation, swelling and pain are reduced (at between 0.5 - 4 Hz), (temporary relief)**
- \* **Cell regeneration and healing improved (8Hz), DNA content of cell increased (at 5 Hz)**
- \* **Blood flow increased (at 12 or 15 Hz), especially beneficial in peripheral nutritive capillaries, by allowing improved vascular wall flexibility (peripheral circulation)**
- \* **Stimulation of phagocyte cell production and autoimmune system, counteracts infection (1 - 4 Hz, predominantly at 2Hz). Lymphatic drainage assisted at 0.5 Hz and 3 Hz,**
- \* **Endorphin, Enkephalin, Serotonin and Noradrenaline release for inhibiting pain (at 0.5 – 4Hz),**
- \* **Increased production of neurotransmitters (at 0.5 –12Hz),**
- \* **Synchronization of dominant brain waves (at 0.5 Hz particularly, also at 10Hz).**

(a) Van Dyke, Halpern, Busby, 'Space Biomagnetics' Space Life Sciences (1968).

(b) Bassett, Pawluch, NY Acad of Science (1974); Gross, Lawrence, Fed Proc (1961); Kolin, Brill, Broeberg, Biol & Med (1959); Degen, Vracdelo (1971); Freeman, Magnetism in Medicine - Journal of Appl Physics(1960); Grace, Pulse frequency specificity in magnetic energy treatments, Bemic (1993)

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**Electro-magnetic** and electrical stimulation, including electro-acupuncture and TENS type treatment in the extremely low frequency range, i.e. 0.5 Hz - 20 Hz has some remarkable effects. Particularly if the current is less than 10 mA R.M.S. and the pulse is between 2% and 10% ON, 98% to 90% OFF, for electrical stimulation, and 50% on-off duty cycle for magnetic field therapy.

According to recent bioelectric research, this type of current is much closer to the natural current produced by the body's cells than that produced by the more powerful TENS units and other popular electrotherapy devices, and thus is able to stimulate the cells in a more natural way.

When the area of pain is stimulated at appropriate frequencies and amplitudes, the body responds with a release of endorphin, alleviating even severe pain for hours or days.

The idea that electrical stimulation might boost creativity and other high-level mental functions becomes plausible when we understand how the electricity is interacting with the neurons in the brain. This interaction is explained by Dr. William Bauer of Case Western Reserve University school of Medicine and Chief of Otolaryngology, VA Medical Centre in Cleveland, Ohio:

"Basically, absorption of electromagnetic energy increases the kinetic energy of molecular constituents of the absorption medium. There is much evidence that the molecular organisation in biological systems needed to sense stimuli, whether thermal, chemical or electromagnetic, may reside in joint functions of molecular assemblies or subsets of these assemblies.

That is, electromagnetic fields, provided they are of the correct magnitude and frequency, can act on the brain cells in the same way as many brain chemicals do, causing them to alter and grow in size and dendritic length (the process of converting ATP to cyclic-AMP that Bauer mentions above is the key to cellular growth). Which is to say, according to Bauer, that electromagnetic fields of the correct magnitude and frequencies are setting up fluctuations that cause the brain to recognise signals at a higher level of complexity and coherence.

In summary, the mechanism of tissue interactions with electromagnetic fields may be as follows: an electro-magnetic field of the correct magnitude and frequency causes a 'perturbation' or repositioning of the molecular plasma membrane of cells. This may influence membrane enzyme systems by favourably altering molecules in much the same manner as chemical reactions."

Recent research by neuroelectric-therapy pioneer Dr. Margaret Patterson in collaboration with biochemist Dr. Ifor Capel at the Marie Curie Cancer Memorial Foundation Research Department, Surrey, England, has proved that simple low-frequency currents induced through or across body tissue can dramatically speed up the production of a variety of neurotransmitters, with different waveforms (for example, Patterson and Capel have found that a 10 Hz signal boosts the production and turnover rate of serotonin). According to Capel, "Each brain centre generates impulses at a specific frequency based on the predominant neurotransmitters it secretes. Like the brain's internal communications system - its language is based on frequency. When we send in waves of electromagnetic energy at, say, 0.5Hz, 4Hz, or 10 Hz, certain cells in the lower brain stem will respond because they normally fire in response to a specific frequency. As a result, particular mood-altering chemicals associated with that region will be released".

Many investigators of electrical stimulation believe that in addition to the specific effect certain waveforms and frequencies have on individual neurotransmitters, some magnetically induced electric currents, such as the very low 0.5 Hz wave, can act as a 'toner', resonating and stimulating all the brain's cells and bringing them into balance.

Reference: "Understanding electro-activity and electro-magnetic activity in the body"  
by Michael Hutchison, U.S.A. 1986

Electromagnetic effects - some observations and results.

"As you know, electricity works on many different levels and can affect the body a lot of ways. What I think is happening, just to isolate one mechanism that is beneficial, is that by sending out the proper frequency, proper waveform and proper current (and this cannot be over-emphasised) we tend to change the configuration of the cell membrane...because an electromagnetic wave is pure impulse. There is no mass involved it's just pure energy that somehow is interacting or having an interface the only place it can...at the cell membrane. There is evidence that there is a balancing process going on. Cells that are sub-optimal levels stimulated to 'turn on' and produce what they're supposed to produce; probably through DNA, which is stimulated through the cell membrane. I believe that normal tissue simply resonates with the electrical impulses we send in because there is nothing to turn on...they're already doing their job. But diseased cells will take up this energy and literally be turned on".

"You're 'charging' the cells through a biochemical process that can possibly balance the acetylcholine or whatever neurotransmitter needs to be turned on. So it's a very holistic treatment. You're literally getting the body back into balance...and that's why you get so many beneficial effects simultaneously."

"In every single living system, we have found that the same level of current is required to exert cellular control. If the amplitude and frequency do not fall within a specific range, cells fail to respond. Only within the biological waveband is it possible to establish a dialogue with cells. 'An electromagnetic field of the correct magnitude and frequency causes a perturbation or reportioning of the molecular plasma membrane of cells. This in turn may influence membrane enzyme systems, one of which converts ATP (the universal energy storage molecule) to cyclic AMP which responds to nerve signals by carrying the message from the nerve cells' outer membrane to the cell's internal machinery. By this mechanism the cell itself can be manipulated on a metabolic level. In other words, an electromagnetic field may act in the same way as a hormone upon the cell membrane."

"We have demonstrated consistently favourable results with sinus disease, eustachian tube dysfunction, peripheral vascular disease and benign positional vertigo. Personal reports from others in this field claim very favourable results with asthma and rheumatoid arthritis."

"We have demonstrated a high rate of success in most cases of intractable pain which have failed all other modalities of treatment. The effectiveness of treating multiple sclerosis has been demonstrated. Formerly untreatable diseases such as sensorineural hearing loss and tinnitus have also shown improvement with this treatment. The total lack of side effects is especially encouraging.

Reference: Article from 'Electromedicine' 1991, quoting Dr. William Bauer, M.D. M.S.

*NOTE: This is an extract to explain the principles of the modality, not of any particular products.*

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### **Interesting comment regarding the Magnafield MERIT System by one of the greatest scientists of the 1900's, Prof. Linus Pauling.**

During a discussion with Prof Pauling in Tulsa Oklahoma, USA in 1992, explaining to him the principles we developed and used in this patented system, he thought for a moment and then said **"What you are doing with this system, Bob, is you are talking to the body in a language that the body understands, and the energy signals are creating a balancing effect at the cellular and even the molecular level. This is true bioenergetic medicine, involving electrical, magnetic, chemical, and physiological changes in the human body"**.

Some praise from an active 91-year-old scientist who was the only person to receive 2 unshared Nobel prizes and listed on a par with Albert Einstein, Marie Curie, and Isaac Newton.

## **BIO MAGNETIC ENERGY IN PAIN RELIEF AND HEALING**

Health is much more than diet. It follows from healthy cellular and tissue function.

Most people are now at least aware of some of the detrimental effects to the body of high frequency electro magnetic fields, e.g. from 50 Hz mains power, and mobile phones at around 900MHz. (Hz = frequency in cycles per second).

On the other side of the coin, there are some very important beneficial effects to health of electro magnetic fields which many people are not aware of.

The magnetic field of the Earth, and especially the extremely low frequency (ELF) resonance between the surface and the stratosphere (7.5 – 10.5 Hz) has a subtle but important effect on all living matter. The Earth's magnetic field is one of the most important controlling factors on biological processes.

It is now accepted that the predominant pulsing of the geomagnetic fields average 9.6 Hz and there is also what is called the Schumann Resonance frequency range 7.83 to 7.96 Hz, generated between the ionosphere and the Earth's surface.

It is probably not a coincidence then that the average frequency of a relaxed healthy adult is on average 10 Hz (in the Alpha range 8 – 13 Hz).

The Earth's magnetic field density has been gradually decreasing so people are now within a much smaller field than during evolution.

All spacecraft are equipped with devices which generate the electro magnetic waves to simulate those found on Earth. It was discovered early that being in space away from this natural environment (in which we evolved) caused serious disruption to the biological functions of astronauts.

The complex electromagnetic signals generated by the brain to influence cellular function can be recorded on an electro encephalogram (EEG). The waves fall into four main ranges – alpha (8-13 Hz), beta (13-18 Hz), delta (0-4 Hz) and theta (4-8 Hz). Each controls special cellular functions throughout the body.

A medical study in England (1998) <sup>[a]</sup> showed that people with multiple sclerosis have specific frequency deficiencies within their EEG spectrum. Using complex pulsed magnetic field therapy <sup>[b]</sup>, which provides these complex frequencies it has been found that many had significant relief from MS symptoms.

Within the health – dis-ease spectrum there are essentially three phases.

1. Healthy function – body adjusts its functions and is able to heal itself: called homeostasis.
2. Out of control – where the body exhibits hyper or hypo symptoms.
3. Loss of control – where the body also exhibits more severe symptoms, e.g. Cancer – uncontrolled proliferation of cells (too much), or Ulceration – loss of tissue function due to breakdown.

It is in phase 3 especially where the body needs external support (as it is clearly not doing it by itself).

Permanent magnets have been used for centuries for the relief of minor pains and to assist with circulation. However, if these are placed on (or near) the body for significant periods of time the body does whatever it normally does to any constant influence, it adapts and exhibits an effect called tolerance or accommodation.

One of the benefits of modern technology is that we can now generate pulsed electro magnetic energy fields at specific frequencies and with complex wave shapes that simulate natural nervous system (EEG) fields, through the use of Magnetic Energy Units.

The benefits are a greater effect with less field strength and the ability to provide natural support towards healthy function, especially in disorders in the phase 3 areas.

Pulsed magnetic field energy induction is non-invasive, as the field generated by an induction coil gently permeates throughout the tissues influencing each cell. Healthy cells mean healthy tissues which means healthy body. Problems such as carpal tunnel syndrome and arthritis meet with relief of symptoms.

Research into the effects of pulsed electro magnetic field energy induction has revealed some very interesting physiological effects.

In the lower range (delta, 0-4 Hz) there is a sedating calming effect. There is mild vaso-constriction (reduced blood flow) and importantly stimulation of lymph drainage for waste removal. (This is important in injuries. The currently accepted method of using ice slows blood flow but also reduces lymph drainage.)

[a] Copy available from Magnacare Pty Ltd

[b] Only found in the Patented Magnafield system

Around 10 Hz there is the promotion of a stabilising effect. (Recall that the average frequency of a relaxed healthy adult is on average 10 Hz), and above this there is a general stimulation of circulation. Above 10 Hz there is a promotion of blood flow to supply nutrients to tissues.

A world leader in pulsed electro-magnetic therapy and medical data collection systems is situated in Adelaide. It is Magnacare, at 103 Main North Road, Nailsworth, South Australia, and Pulsed Electro-Magnetic Therapy Units can be obtained from them. There is a standard unit used in clinics and homes; a small portable pocket size unit and an electro-acupuncture pen. These units are used

initially for the temporary relief from the discomfort of such things as arthritis, rheumatism, injury, migraine headache, sinusitis, colds, etc. and most types of pain, but primarily for the promotion of healing through restoring natural healthy function in the cells. Because of the stimulation of natural functioning, relief from pain results.

The systems have been scientifically validated in successful clinical trials at Monash University for pain reduction and tissue repair associated with injuries.

For over a decade, Adelaide's Bob Grace PhD has been involved in evolvement of this non-invasive gentle healing system and is regarded as an authority in this field. Units are exported to the US, Canada, Israel, UK, S.E. Asia, etc.

For more information you can contact (08) 8344 6609.

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## MAGNAFIELD UNIT COMPARED WITH OTHER TYPES OF MAGNETIC FIELD THERAPY DEVICES.

<u>PERMANENT MAGNETS</u>	<b>OTHER UNITS</b>	<b>MAGNAFIELD</b>
<p>Permanent magnets have been used for centuries for the relief of minor pains and to assist with circulation.</p> <p>However, if these are placed on (or near) the body for significant period of time the body does whatever it normally does to any constant influence, it adapts and exhibits an effect called tolerance, adaptation or habituation.</p> <p>The un-naturally high local magnetic fields after the phase of symptom relief continue to provide a constant now detrimental effect on cellular function.</p>	<p>A family of magnetotherapy units, many originating in Europe using <u>old technology</u> and principles</p> <p>Most use ...</p> <ul style="list-style-type: none"> <li>?? higher frequencies which can have a stimulatory effect, not advisable in tumour type activity, or inflammatory conditions.</li> <li>?? Usually a sawtooth type of wave, <u>not natural to the body</u>.</li> <li>?? Some have selected frequencies, usually only power intensity changes.</li> <li>?? Output levels vary.</li> <li>?? High power level restricts amount of time per day that it can be used.</li> </ul>	<ul style="list-style-type: none"> <li>?? Specifically includes the frequency of 0.5 Hz which is known to inhibit rogue cell mitosis, (i.e. proliferation).</li> <li>?? The frequencies and especially the wave shape simulate the <u>natural</u> frequencies/waves of the healthy body.</li> <li>?? The patented feature is the use of harmonics at certain specific frequencies.</li> <li>?? The MF998 &amp; MF2000 models use programmed micro circuitry to achieve the correct frequencies and wave shapes.</li> <li>?? Selection of appropriate frequencies.</li> <li>?? 'Repeat' and 'Auto' modes for continuous convenient use.</li> <li>?? <u>Single</u> applicator pad provides a larger field volume and avoids interactive fields from multiple coils.</li> <li>?? Basis of <b>promotion of healthy function</b>... with resultant symptomatic relief.</li> </ul>