

PULSED ELECTRO MAGNETIC FIELD THERAPY

REVOLUTIONIZING TREATING DISEASES

By Matthew Chan & Keval Patel



TABLE OF CONTENTS

CHAPTER ONE INTRODUCTION	3
CHAPTER TWO WHAT IS PULSED ELECTRO-MAGNETIC FIELD THERAPY	8
CHAPTER THREE HOW DOES PULSED ELECTRO MAGNETIC FIELD THERAPY WORKS.....	10
CHAPTER FOUR BENEFITS OF PULSED ELECTROMAGNETIC FIELD THERAPY	13
CHAPTER FIVE PRECAUTIONS ON HOW TO GET THE PEMT AND WHAT IT ENTAILS	15
CHAPTER SIX MECHANISMS AND THERAPEUTIC EFFECT OF PULSED ELECTROMAGNETIC FIELD THERAPY	22
CHAPTER SEVEN RECOMMENDATION AND CONCLUSION	26

CHAPTER ONE

INTRODUCTION

The hearse moved closer to the cemetery, nearly everyone in the convoy of mourners were weeping, wailing or gnashing their teeth or doing all in rapid successions. Many people said, “he was too young,” others said “ this could have been avoided” others simply bowed their heads and wished the present circumstance was avoided. Sadly, it wasn’t so. A young man had died leaving behind, elderly parent, a young family and lots of friends. He is one of the demography, he is one of the 30 million individuals who die as victims of the dreaded of the HIV/AIDS virus annually or one of the 700 million people that succumb to cancer worldwide. The body about to be dumped in the freshly dug earth once carried life even if such life was affected by illness.

Interestingly not everyone has succumbed to death but many patients are suffering from several illnesses across the world. These ones are fortunate enough to have life although without the right medication or the right therapies these lots will encounter the same fate as the dead body.

The truth is, the world is a better place to live now for a lot of reasons but the way sicknesses and diseases are consuming individuals has cast a deep scar /stain on this advancement.

In the early nineties, the medical world experience a remarkable landmark when the penicillin was discovered. This was a landmark because many years before then thousands to millions of lives were lost to bacteria's or diseases caused by bacteria's from syphilis to cholera to pneumonia and others.

With the introduction of penicillin, the incidence of death was drastically reduced and almost completely eliminated. However, bacteria's or illnesses caused by bacteria were not the only threat to health and human life, there were seemingly mild issues like pain that seem harmless but weren't, they were responsible for a lot of issues, health issues individuals faced.

Managing pain or suppressing pain was another health challenge that the health industry faced, until the discovery or invention of anesthesia by Karl Koller in the late 19th century. With the invention of anesthesia, pre- and post-operation pain and other forms of pain have been regulated and controlled to an extent.

Other landmark events that have occurred in the field of medicine include the discovery of insulin, the x-ray and the MMR vaccine. Sadly, just like how some bacteria have become resistant to penicillin and some pains have become too painful to be suppressed by anesthesia, many of the landmarks recorded by

science have become less effectual by the passage of time, resistance of the bacteria and several other factors.

Suddenly it seems that there is no help in sight for individuals suffering from an illness like cancer, pains, arthritis, depression and many others. As the years progressed, however, an Avant-garde technology that uses the power of electricity and magnetism has become the wonder “therapy” for the range of illnesses, diseases, infection, and ailments. This technology has been subject to a lot of skepticism, distrust, and unbelief even with the success that has been recorded upon application and treatment. Overall, the use of these Avant-garde therapy has been shrouded with a lot of ambiguity and despite this, physicians and patients are asking questions after questions if they should opt for it or stay away from it.

Many have claimed that since this therapy involves electrotherapy or the use of electric currents, its side effects might surpass the cure or the role it plays, well, if you are one of these skeptics, you will have to read this book to find out if that is the case or not.

It was expedient to show a rundown of all the landmarks in the medical professions up to this point as the list will allow the reader to have an

understanding of the different roles the different treatments and therapies have played in alleviating or eliminating these ailments.

This book was written to ensure that the lies and the ambiguities that hung over this therapy are confirmed or dispelled. In the pages that follow this introduction, the reader will find out what pulsed electromagnetic field therapy means, how it is used, what its effects and defects are and most importantly, if it is a choice that should be considered.

This book has been termed "*the miracle or myth of the EMFT*" for the sole reason that it has worked wonders in the bodies and minds of patients that have been subjected to its use. On the flip side, some folks have also claimed it hasn't done anything to improve or alleviate their conditions. This part of the book doesn't intend to let the cat out of the bag but to let the reader into a peep of what this book holds.

It might seem that this therapy is a new and totally unexplored aspect of medicine, the reader will find out that reverse is the case as the use of electricity to treat bones have been employed since about 300 years before the publication of this book, but like the name suggest, this therapy is not electro-based entirely,

Before we go into the basics of this therapy in this book, it is the aim of the writer to answer the questions which might be in the mind of the reader. Questions like is this book exclusively for the sick in body and mind or is it open to everyone?

Well the answer is, this book is for the sick but also for the athletes who are mostly the victims of fractures, sprains and broken bones and other forms of injuries that plague athletes and other individuals that undergo intense physical activities.

This is just the introduction, there is so much more within the pages of this book which will introduce to you the reader our new and exciting technology. Sit tight, fasten your seatbelts and be ready to explore the world of electromagnetic field therapy.

CHAPTER TWO

WHAT IS PULSED ELECTRO-MAGNETIC FIELD THERAPY

It is sometimes called low field magnetic stimulation, pulse magnetotherapy, or low field magnetic stimulation or pulsed magnetic therapy. Whatever name you know it as it means the same thing because of what it achieves.

Pulsed electromagnetic field therapy is a therapy that is mostly used in the treatment of fractures, spinal cord injuries, and cerebral palsy.

Before going further, it is vital to consider the history of this said “wonder-working” therapy that has become a favorite amongst athletes and many others.

According to history, the use of electric and magnetic therapies date back to as early as the invention of electricity. It was commonly used by veterinarians who used them to heal the broken legs of racehorses. Details of the success of this therapy in animals are sketchy and it wasn't until over 125 years that it was approved for human use.

Pulsed electromagnetic field therapy first caught the attention of scientists in the mid-1950's and it wasn't until about twenty years after that it was used to

treat a delayed fracture using a low-frequency signal in an experiment led by Australian scientist Alan Dwyer.

It is mostly used in orthopedic medicine to treat non—union fractures and the many other listed defects or illnesses.

The question on the minds of most individuals is how does it help with fractures? To set up PEMF to treat a defective or a fractured bone electrical energy is used to direct magnetic pulses towards the tissue which also induces an electric charge that initiates the tissue healing process.

PEMF is great for soft tissue wounds as it serves as a quick and lasting fix for such wounds that occur in soft tissue.

CHAPTER THREE

HOW DOES PULSED ELECTRO MAGNETIC FIELD THERAPY WORKS

Just like how it was stated in the introductory part of this research work, the so-called Pulsed Electro-Magnetic Field Therapy is science-oriented and research has made it known that it uses bunches of electronic magnetic radiation to affect the body system. You should ask how.

By this process, the damaged tissues and bones in the body system arose back to work because using the low level of electromagnetic radiation, the pains, injury, as well as the disease of the body system reduces and thereby stimulates the body system.

In addition, there is something known as the Mitochondrial in the body system. This Mitochondrial is a powerful bone and similarly the battery pack of an individual cell. its usefulness in the body system is to generate energy so as to pop up the biochemical reactions of the cell.

Through this process, the part of the body charges well thereby affecting the whole body. Mitochondria produces energy in the body system and the chemical energy is known as adenosine triphosphate(ATP).

The way the mitochondria works affect everything one does and thus relate to the pulsed Electro-Magnetic field therapy. The Pulsed Electro Magnetic Field Therapy frequency is similar to the one individual encounter in nature.

The body system knows how to deal with it that's while most of the treatment as regards the Electronic magnetic radiation does fall within the range of 5-30 Hz which is categorically lesser than the one been gotten from a thunderstorm.

The Pulsed Electro Magnetic Field Therapy has been tested well as it works for diseases, help to heal bone faster, remove pains, and regenerate some parts of the liver if not function properly

Through scientific research, the Pulsed Electro-Magnetic Field Therapy has been tested working to cure different illnesses and even cancers. It's not a joke because you can as well testify to it.

It has also been used to improve energy in the areas of depression, immune functions, blood circulation, bone healing, injury healing and many more. Its

major functions are to cure chronic pains, injuries, chronic conditions like
Diabetes, cancer and even severe illnesses.

CHAPTER FOUR

BENEFITS OF PULSED ELECTROMAGNETIC FIELD THERAPY

As the continent increases in the Digital world, so also there's the invention of new technologies that would cure many unsolved problems. The Pulsed Electro-Magnetic therapy is seemingly a new technology that controls all the cells in the body and to the extent of bringing back the cells that have lost charge to its normal situation.

However, by introducing the Electronic Magnetic field therapy, the body charges up and it restores back healthy electrochemical exchange. Through this now, the body is able to heal itself from health-related problems.

The functions of this technology is extremely much because it work faster than drugs and do correct any slight imbalance in the body system as quick as possible. Research also made it known that it restores a sluggish organ that is making the body to perform slowly.

To understand it better, check the health benefits of Pulsed Electromagnetic field therapy below:

- Regeneration of nerve fibers in the spinal cord and the peripheral nerve is one of the benefits of Pulsed Electromagnetic field therapy.

- The Pulsed Electromagnetic field therapy reduces severe pains ranging from chronic pain to chronic conditions as well as illnesses like Cancer, Diabetes, sleeping disorders, depression, and many more.
- If you are the type that has engaged in plastic surgery before, this technology is the one you need to have because it reduces pains and does not allow the operated part to swell.
- The PEFT reduces or sometimes eliminate the issue of rotator cuff injuries of an individual.
- It improves pain and functional performance in the people that have arthritis.
- Another advantage of this technology is that it improves osteoarthritis in an individual by keeping body cartilage from breaking down.
- The PEFT has also helped in the growth of bones that later form bone tissues in lab tests.

CHAPTER FIVE

PRECAUTIONS ON HOW TO GET THE PEMT AND WHAT IT ENTAILS

You can get the Pulsed Electromagnetic Therapy (PEMT) certainly in one of two ways: you could go to a professional, typically a bodily therapist or chiropractor, or you could get PEMT gadget to apply at home.

Currently, insurance doesn't cover the cost of PEMT remedy, so prepare to pay a price consistent with the session. If prolonged therapy is needed, typically the health facility will offer session applications that will save you some money over the direction of your remedy.

If you're within Canada, **CENTURION Tesla Technology for human health** provides PEMF treatments. Or, you can get your own equipment. PEMF devices aren't labeled as regulated medical gadgets, so there's no need for you to be a medical doctor or a chiropractor to shop for a Pulsed Electromagnetic field therapy device.

If you can find the money for it, you may get a PEMF mat, pad, or ring.

Affording it's far the intricate part. The cheapest PEMF mats move for \$1, three hundred or more, and the charges cross up from there. As with anything, you get what you pay for, and higher-first-class gadgets run into 5 figures.

It's absolutely reasonable to pay a pair hundred dollars for a series of classes to deal with a sore shoulder that's been bugging you for decades or to help the latest damage along. PEMF therapy is one of those things you have to experiment with your self to see if you notice improvements.

A one-off remedy might not do much, but a full direction might marvel you. With scientific backing and no outside effects, it's well worth a talk together with your chiropractor approximately PEMF remedy.

If you're acquainted with Oska Pulse, you could have studied an aspect or two about Pulsed Electromagnetic Field remedy (aka PEMF remedy). However, there's still a lot you could have questions approximately—like how precisely PEMF machines work, their origin, and what sorts exist past Oska Pulse. So study on for some of these facts and extra.

1. PEMF machines work in conjunction with the frame's own recovery procedures to relieve pain by restoring cells' ability to feature efficiently. Our skin, bones, and organs are composed of tiny cells. The membrane of a healthful cellular has both tremendous and negative prices which might be required for the change of potassium, sodium, and calcium ions. When cells end up distressed from disease, trauma or toxins, they lose their capacity to

function efficiently. PEMF restores the fantastic and negative prices inside the mobile, allowing it to carry out its natural feature at the same time as rushing tissue recovery.

2. PEMF machines operate on distinct frequencies and this is what often sets them apart. Everyone's frame responds otherwise to electromagnetic waves and distinctive frequencies target unique tissue kinds. Oska Pulse emits a completely unique collection of Pulsed Electromagnetic Fields at precise frequencies centered on four key tissue types ensuing relieved pain.

3. The human body requires power to send signals through the frame and to the brain. PEMF remedy works efficiently to re-align the electric ability of our cells. Resting cells are negatively charged on the inside, while the outside of the cell is greater positively charged.

The glide of expenses throughout the cellular membrane is what generates electrical currents. When a mobile is stimulated, it allows fine charges to enter the mobile through open ion channels. The inner of the cell then will become extra positively charged, which triggers similarly electrical currents that can turn into electric pulses, known as motion potentials.

Our bodies use positive patterns of motion potentials to initiate suitable movements, thoughts, and behaviors. A disruption in electric currents can

cause illness. Pulsed Electromagnetic Field Therapy (PEMF) can repair the disruption of the electrical cutting-edge to its regular state, therefore, helping restore the cellular.

4. Unlike x-ray machines, PEMF wave frequencies are absolutely PEMF Therapy Electromagnetic fields (EMFs) are invisible regions of energy, often referred to as radiation, which are associated with the usage of electrical energy and various sorts of natural and man-made lighting.

EMFs are typically characterized by means of wavelength or frequency into considered one of radioactive categories: Non-ionizing: low-degree radiation which is commonly perceived as harmless to humans Ionizing: high-level radiation which has the capability for cell and DNA damage (source)

5. PEMF therapy has a 60+ 12 months long track report of clinical fulfillment. PEMF therapy has 60+ years of clinical achievement in relieving pain at the source through pulsing electromagnetic waves at precise frequencies, rushing the body's recuperation at a mobile degree.

PEMF therapy changed into authorized by the FDA in 1979 in particular for the restoration of nonunion fractures, which got here after a Columbia University examine that changed into encouraged through NASA, and has currently received attention inside the U.S. The value of pulsed

electromagnetic discipline remedy has been shown to cover a wide variety of conditions, with nicely documented trials accomplished through hospitals, rheumatologists, physiotherapists, and neurologists.

6. PEMF technology turned into developed after WWII (though its origins move back tons further) and turned into researched and adopted by using NASA. PEMF remedy sincerely originated from NASA's research related to the benefits of pulsed electromagnetic fields on astronauts for fatigue, depression, bone loss, and other signs and symptoms following even quick journeys to outer space.

Scientists observed that the motive was because of astronauts being without this useful herbal area emanating from our Earth. (supply) NASA did a 4-yr collaborative observe at the efficacy of electromagnetic fields to stimulate increase and restore in mammalian tissues. You can download the findings here.

7. Many of the first PEMF machines originated in Eastern Europe. Prior to the invention of the primary PEMF system, Nikola Tesla created the first magnetic loop coil, which might be now used in all contemporary PEMF machines.

Some of the primary gadgets had been invented in the Czech Republic and then brought to Hungary in the 1980s. By the overdue 1990s, a lot of Europe

changed into already familiar with PEMF therapy. (source) Oska Pulse originated in Australia, but is manufactured inside the United States

8. The first PEMF gadget become quite large. The original PEMF gadgets consisted of a Helmholtz coil—a life-size, space-age looking machine, that produced an almost uniform vicinity of magnetic fields. The patient become located internal this gadget to supply treatment.

Today, the majority of PEMF wellness devices resemble a yoga mat in dimensions, however, they are slightly thicker to house numerous flat spiral coils to produce a good electromagnetic discipline. Oska Pulse is unique in the enterprise in that it's small, wearable, and travels with you.

You positioned it at once on or near your location of pain and cross about your ordinary activities.

9. PEMF therapy become FDA approved many years ago. PEMF technology has been FDA authorized for 25 years for bone healing, post-surgical ache and healing, ache and inflammation, knee ache or even depression. 10. PEMF machines aren't only for people.

Animals respond to them, too! Veterinarians became the primary fitness professionals to use PEMF therapy, usually to heal broken legs in racehorses.

In fact, our company, Oska Wellness, is called after a koala that had been badly burned in a bush fire. His whose wounds weren't responding to treatment.

The prototype of Oska Pulse became laid subsequent to the koala, and in just 3 days his wounds started out to heal. The koala's name was Oscar, which feels like Oska when said with an Australian accent.

CHAPTER SIX

MECHANISMS AND THERAPEUTIC EFFECT OF PULSED ELECTROMAGNETIC FIELD THERAPY

In an introductory level, we need to understand whether this technology can cure diseases like cancer because it's a common thing that has been causing death to over 50% of the world population.

Furthermore, Cancer is one of the most common causes of loss of life worldwide. Available treatments are associated with several aspect results and handiest a low percentage of patients reap complete remission. Therefore, there may be a strong want for new therapeutic strategies.

In this regard, pulsed electromagnetic field (PEMF) therapy presents several potential advantages together with non-invasiveness, safety, lack of toxicity for non-cancerous cells, and the possibility of being combined with other available therapies. Indeed, PEMF stimulation has already been used in the context of diverse cancer sorts which includes skin, breast, prostate, hepatocellular, lung, ovarian, pancreatic, bladder, thyroid, and colon most cancers in vitro and in vivo.

At present, only limited utility of PEMF in most cancers has been documented in humans. In this article, we evaluate the experimental and clinical evidence of PEMF remedy discussing future perspectives in its use in oncology.

A study by means of Crocetti and coworkers 38 investigated whether or not ultra-low depth and frequency PEMF remedy could result in apoptosis in human breast adenocarcinoma cells (MCF7). PEMF exposure become cytotoxic to MCF7 cells, however not to normal breast epithelial cells (MCF10).

Both MCF7 and MCF10 cells have been uncovered to PEMF remedy and the cytotoxic indices had been measured as a way to design PEMF paradigms that would reduce selectively neoplastic mobile proliferation. The PEMF parameters tested have been:

- frequency of 20 Hz
- Depth of 3 mT and
- Publicity time of 60 min/day for up to a few days.

Four independent strategies of monitoring cancer-precipitated apoptosis (trypan blue assay, apoptosis dedication by DNA strand smash detection, evaluation of cellular electrical properties by using impedance microflow cytometer, and apoptosis willpower through Annexin V staining) confirmed that this particular set of Pulse Electromagnetic Field Therapy(PEMF) parameters become cytotoxic to breast cancer cells.

While this treatment selectively brought on apoptosis of MCF7 cells, it had no impact on MCF10 cells that have been more proof against apoptosis in reaction to PEMFs.

Although these consequences are encouraging, PEMF publicity becomes limited to 3 days. Long-term PEMF publicity wishes to be assessed in similarly research primarily based on the idea that PEMF effectiveness is strictly linked to the signal parameters, publicity magnitude, period, signal shape, length of treatment as well as the type of cells exposed to the magnetic area 56, 57.

The antineoplastic impact of PEMFs has also been investigated in human breast most cancers MDA-MB-231, colon cancer SW-480, and HCT-116 cell traces. These cells were uncovered to 50 Hz PEMFs for 24 and 72 h 58. PEMFs decreased the number of feasible cells in all the cellular strains tested, achieving 55% after 24 h and 20% after 72 h within the MDA-MB-231 cell line, 11% after 24 h and 6% after seventy-two h within the SW480 cell line, and 2% after 24 h and three% after seventy-two h within the HCT-116 cell line, compared with unexposed most cancers mobile lines used as controls, as assessed via a laptop reaction-diffusion version, a mathematical model widely employed to take a look at mobile proliferation and infiltration 59.

The lower percentage inhibition of neoplastic mobile proliferation became observed after 72 h, displaying that PEMF remedy had antiproliferative activity which decreased over time. This motion is exerted in vitro by means of interfering with microtubule spindle polymerization.

Indeed, Pulsed Electromagnetic field therapy publicity reduces the fraction of polymerized microtubules, disrupts the mitotic spindle structure, inhibits cell division, thereby main to chromosome missegregation and cancer-brought about apoptosis 60. In summary, research in human breast and colon most cancers mobile strains are promising to be reduced by this technology and might warrant further investigations if you want to testify.

The therapeutic use of magnetic remedy is now well-established, with a developing range of double-blind placebo-controlled research and a growing range of modalities now approved via the United States FDA, United Kingdom, and regulatory bodies worldwide for pathologies which includes bone repair, pain, inflammation, and chronic repair.

BRT gadgets appoint very low-amplitude PEMF signals, in which the lifestyles of bioeffects for PEMF are supported by the literature.

CHAPTER SEVEN

RECOMMENDATION AND CONCLUSION

Human and animal studies have disclosed that the main usefulness of this technology is basically to cure cognitive and mental functions. Moreover, exercising the body serves as a drawing increasing research for life-style in order to enhance neurocognitive functions. Low frequency and low amplitude Pulsed Electromagnetic Fields (PEMFs) recapitulate a lot of the advantages of workout by using the equal mobile 2nd messenger cascades activated by means of mechanical input (exercise) without offering a physical strain on the cells.

Through research and methodology with respect to a sequence of in vitro and in vivo experiments, the investigators and researchers have proven that at field strengths of 1-2 mT amplitude, the pulsed electromagnetic field therapy gadget stimulates muscle without physically stressing the tissues and promises the listed factors below.

- slows muscle loss
- improves muscle energy
- releases important regenerative and metabolism-enhancing agents.
- Workable for all Cance problems and illnesses
- Reduces Severe body pain and chronic action

To talk on the brain and its relationship with the pulsed electromagnetic field therapy, there is a functional near-infrared spectroscopy (fNIRS) which is a pretty new optical imaging generation that makes use of light in the near-infrared spectrum to non-invasively screen the hemodynamic responses and this make the body to perform to the fullest.

It also involve using neural hobby via measuring the adjustments in oxyhemoglobin (HbO) and deoxyhemoglobin (HbR) concentrations inside the cerebral cortex The expanded blood supply to the vicinity of neural activation typically lead to an increase in HbO concentration whilst a lower is located in HbR due to the blood's washout effect.

To make comparisons between the Pulsed Electromagnetic field therapy and its relationship with the brain, The HbO and HbR responses from fNIRS measurements were proven to be spatially and temporally correlated with the blood oxygen level-established signal obtained by way of fMRI.

The advantage of fNIRS over different imaging modalities is that it's miles inexpensive, non-invasive, non-ionizing and portable, making it a highly popular modality for implementing mind-computer interfaces. Therefore, a scientific term known as OBELAB NIRSIT is a commercially available, high-

density fNIRS tool that optically measures hemodynamic variations inside the pre-frontal cortex (PFC).

Low-frequency and coffee amplitude pulsed electromagnetic fields (PEMFs) recapitulate lots of the healthful blessings of workout by means of activating lots of the same cellular second messenger cascades activated via mechanical input (exercise) yet, without presenting a physical strain on the cells.

In conclusion, **Centurion Telsa Technology** is one of the best organization that provides good health services and here, our mission is to manufacture products to satisfy the need of the consumer with our quality services.

However, the new product in our company known as the pulsed electromagnetic field therapy gives you the solution to all your deadly diseases and lot more. We provide quality services, durability with affordable prices in line with government standards in the many of certified medical equipment in Canada.