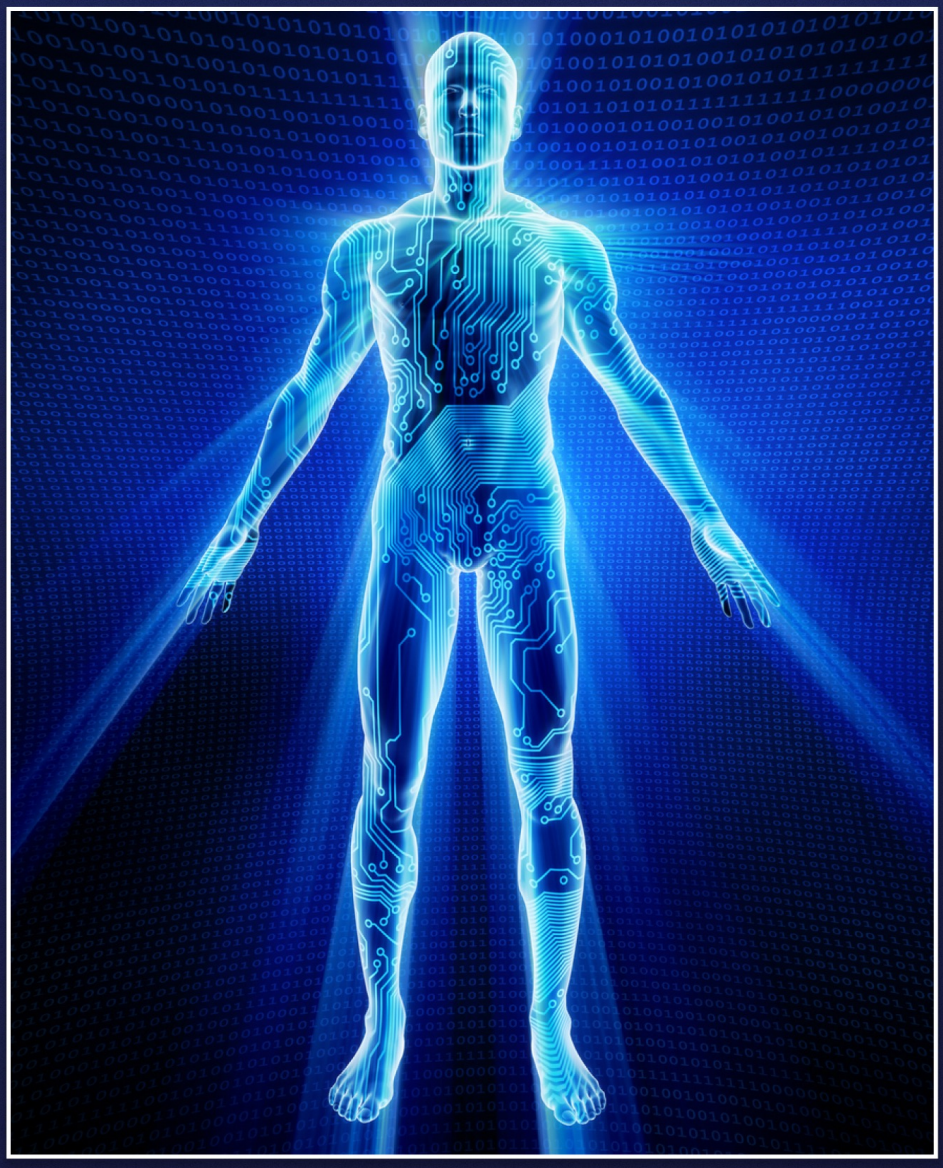
Treating Complex Pain and Addictions with Bio-electrode Therapy



An Acupuncture Point Stimulus Method for Relieving Human Suffering

Les Moncrieff, R Ac.

With Doni Tamblyn

"When you learn something from people, or from a culture, you accept it as a gift, and it is your lifelong commitment to preserve it and build on it."

~Yo-Yo Ma

To the Ogopogo and all the other curious and wonderful sentient beings I have met on my way to school.

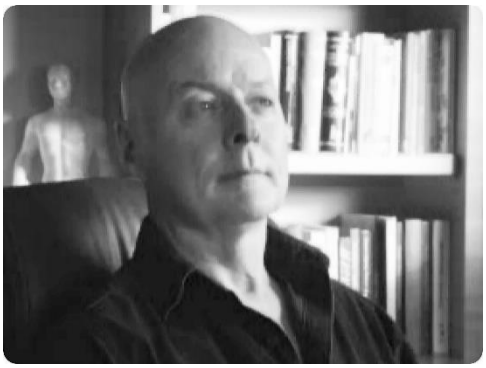
To my mother, who taught by example about love, acceptance, and commitment.

To my tormented war veteran father, without whom I would never have taken this path and written this book.

Treating Complex Pain and Addictions With Bio-electrode Therapy:

An Acupuncture Point Stimulus Method for Relieving Human Suffering

By Les Moncrieff, R. Ac.
With Doni Tamblyn



Les is a Registered Acupuncturist and healthcare professional employed by the Provincial Health Authorities Addiction Services since 1984. His primary focus has been addiction treatment and pain management. He has spent several years living and studying in Asia. Les has found great success and satisfaction integrating a wide variety of complementary and alternative therapies as an adjunct to mainstream medicine practice. Empowering clients to heal themselves using the skills and understanding of energy medicine, consciousness, and the principles of quantum physics is fundamental to his therapy practice.

Doni has authored two books on adult learning, which have been translated into five languages.

Acknowledgments

I am indebted to all the many patients and addiction professionals who had the trust and courage to step outside the limitations of conventional medicine and consider alternative therapeutic methods.

Particular recognition must go to my teachers and mentors who have been so bold and creative in their devotion to their healing arts, seeking effective treatment solutions for relieving suffering.

Dr. Woo Tai Yoo, the creative genius and founder of Korean Hand Therapy, who developed and popularized the practice of using electrically conductive metals as acupuncture point stimuli on the hands.

Dr. Dan Lobash, Master Teacher of Korean Hand Therapy. Dan first introduced me to Korean Hand Therapy in 1996, and has since shared valuable insights, collaboration, and constructive critique of Bio-electrode Therapy.

Dr. Garth McIver is a longtime friend and mentor. As the past Medical Director of Addiction Services in Vancouver, he has provided critical and consistent guidance and support for the integration of complementary therapies as adjunctive approaches in the complex and difficult field of addictions.

Dr. Henry Dent is a friend, colleague, and mentor with whom I routinely explore new, innovative therapies. Henry was the first to embrace and incorporate Bio-electrode Therapy into his busy Chinese Medicine practice.

I want to express my gratitude to my many friends that have made this project possible: my longtime friend, Doni Tamblyn, who wore a multitude of hats in producing this book, my videos, and the website; my friend and videographer, Don Walchuck; my incredibly talented app designer and developer, Hardi Bahaalddin Salih.

Medical Disclaimer

The information in this book is provided for the purpose of educating healthcare professionals and the public about innovations in Chinese medicine, and for scholarly research purposes. Content is not intended to be a substitute for independent professional medical judgment, advice, diagnosis, or treatment. Any application of the information presented here is at the reader's discretion and sole responsibility. The author is a registered acupuncturist by profession and is not responsible for harm or injury that may arise as a result or misuse of the information contained on this website, app, or the book. Never ignore professional medical advice in seeking treatment because of something you have read on this website, the app, or the book. If you think you may have a medical emergency, immediately call your physician.

PRECAUTIONS: When using Bio-electrode Therapy, a sense of well-being, relaxation, and relief from pain is to be expected. Incorrect placement of the electrodes may result in only temporary symptomatic relief and/or a partial reduction in pain. If one experiences undesirable symptoms such as anxiety, agitation, restlessness, headaches, and/or other symptoms such as chest pain, arthritis or muscle cramping, simply remove the electrodes. The body is resilient and will rapidly rebalance itself from this stimulus.

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Introduction

Bio-electrode Therapy is a simple treatment method in which tiny metal electrodes are attached to the end points of the meridians, found on the hands and feet to act as a form of acupuncture point stimulation. When the electrodes are placed on the skin in this way, they harness and direct the body's own endogenous electrical properties.[1] This novel approach is currently being used successfully for treating opioid and other drug and alcohol withdrawal distress, as well as many kinds of complex pain.

Bio-electrode Therapy applies our modern scientific understanding of electrophysiology and bioelectricity to Chinese Medicine acupuncture meridian theory. When electrodes are placed on specific acupuncture points of our electrolyte bodies, they generate an ionic charge, resulting in a beneficial electro-physiological response in injured and diseased cells and tissues.[2] This book will describe the technique, and its physiological foundations, in detail. The primary purpose of this book is to provide the theoretical basis and show health practitioners and their patients how to apply this simple therapy to relieve pain and detoxify from drugs.

Briefly, many human bodily functions (heart, brain, muscle movement, etc.) are dependent on electrical factors.[3] In a recent *Pub Med Journal* article, researchers. M.A. Messerli and D.M. Graham have written:

> Endogenous DC electric fields (EFs) are important, fundamental components of development, regeneration, and wound healing. The fields are the result of polarized ion transport and current flow through electrically conductive pathways. Nullification of endogenous EFs with pharmacological agents or applied EFs of opposite polarity disturbs the aforementioned processes, while enhancement increases the rate of wound closure and the extent of regeneration. EFs are applied to humans in the clinic, to provide an overwhelming signal for the enhancement of healing of chronic wounds. Although clinical trials, spanning a course of decades, have shown that applied EFs enhance healing of chronic wounds, *the mechanisms by which cells sense and respond to these weak cues remains unknown*. EFs are thought to influence many different processes in vivo. However, under more rigorously controlled conditions in vitro, applied EFs induce cellular

[1] https://www.journals.uchicago.edu/doi/10.1086/BBLv221n1p79
[2] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4440595/
[3] https://www.physiology.org/doi/full/10.1152/physrev.00020.2004

> polarity and direct migration and outgrowth. Here we review the generation of endogenous EFs, the results of their alteration, and the mechanisms by which cells may sense these weak fields. *Understanding the mechanisms by which native and applied EFs direct development and repair will enable current and future therapeutic applications to be optimized.*[4] (Emphasis mine)

The mechanism for influencing the healing process using electrodes and electrical fields may be optimized by understanding and integrating Chinese medicine principles, meridian theory and various microsystems. Acupuncture points on the body are known to have higher electrical conductivity than surrounding skin tissue.[5] For example, when gold and silver electrodes are applied to acupuncture points, a microcurrent is generated between the electrodes via tissues of least resistance (a.k.a. "meridians"). The Chinese Medicine theory of health is based on the efficient passage of *energy* throughout the meridian system (in electrophysiology terms, the "electrical grid") of the body. Any disruption in the normal flow of energy in the meridians manifests as pain and development of disease in the tissues. With the judicious application of electrodes, a microcurrent can be directed to target meridians passing through injured or diseased organs and tissues. When injured or diseased cells have been electrically stimulated by the electrodes, the permeability of the cell membranes is affected.[6][7] The result is a balancing of positive and negative ions (sodium, potassium, calcium, magnesium, etc.), the restoration of intracellular fluid levels, replenishment of electrolyte levels, removal of toxins, and re-establishment of homeostasis. The Chinese Medicine principles and protocols for using stimuli like electrodes on acupuncture points has been shown to be useful as an adjunctive complementary therapy for the treatment of addictions and complex pain. Rigorous, high-quality trials of Bio-electrode Therapy are required to improve on the level of evidence.

[4] https://www.ncbi.nlm.nih.gov/pubmed/21876112
[5] https://www.e-jar.org/journal/view.php?doi=10.13045/jar.2018.00122
[6] https://www.ncbi.nlm.nih.gov/pubmed/20109370
[7] https://pressbooks.bccampus.ca/dcbiol12031209/chapter/12-4-the-action-potential/

PART I: THEORY

Chapter 1—The History of Bio-electrode Therapy

> *"It is probably true that, in general, the most fertile developments in the history of human thought are born at the intersection of two currents of ideas. These currents may originate in the midst of totally different cultural conditions, in diverse epochs and places. But from the time that they effectively meet and maintain a relationship sufficient for a real interaction to take place, one can hope for new and interesting developments to occur."*
>
> ~ Werner Heisenberg
> Nobel Prize for physics

The first questions that most Western medical professionals ask when being introduced to Bio-electrode Therapy is: Is it evidence-based? Is there research to support this therapy? I will begin by confirming that the theoretical basis for Bio-electrode Therapy is supported by multiple scientific studies, which I reference throughout the text.

In the past several decades there has been a growing interest, and a resurgence of research, in the exciting field of developmental bioelectricity. There are many excellent studies supporting the use of microcurrent therapies and electrical fields for tissue repair, regeneration, and healing.

Most if not all major discoveries are simply unique and innovative applications of the current science and technology. Bio-electrode Therapy is a novel application and integration of bioelectricity with the theory and practice of Chinese medicine acupuncture. For the past several decades practitioners of Chinese medicine and acupuncture have been developing a wide variety of sophisticated microcurrent devices. Bio-electrode Therapy takes this research and practice to the next level. No electrical stimulation devices are used. According to Dr. Rudolf Pekar,[8] "Every biological process is also an electric process" and "health and sickness are related to the bio-electrical currents in our body." This innovative application of using only electrodes to regulate and direct our endogenous energy takes the science of bioelectricity out of the university laboratories and into

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[8] *Galvanotherapy Percutaneous Bio-Electrotherapy for the Elimination of Malignant Tumors (alternativehealth.co.nz)*

the hands of health care professionals everywhere, to address some of the most complex and costly medical conditions of our time.

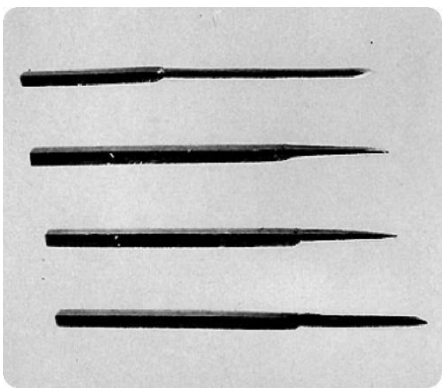
Qi and Electrical Energy

I am not limiting my definition or explanation of electrical energy to the circuitry in your house from the light switch to the sockets. I relate the electromagnetic energy fields and forces of the Cosmos (our universe) to the subtle life force of microcurrents required for the function of every cell in our body. Both the Chinese medicine concepts of *Qi* and our understanding of electromagnetic fields may not represent precisely the same life force but share many elements and the essentials for life.

The conventional medical application of electricity and electrode technology has primarily been for diagnostic purposes: sensing and monitoring the electrical signals or bio-electrical fields of the body using medical equipment such as Electrocardiography (ECG), Electromyography (EMG) and Electroencephalography (EEG). Electrode technology is also used therapeutically, for example in defibrillators to restore or reboot a normal heartbeat by sending an electric shock to correct an arrhythmia or restart heart function if the heart suddenly stops. Bio-electrode Therapy combines the science of bioelectricity with the basic principles of a 5,000-year-old established system of medicine.

Historically in China, the therapeutic use of gold and silver metals for acupuncture needles occurred as far back as 2,200 years ago. Fig.1.1 shows a set of needles discovered in the Prince of Liu Sheng's tomb, which dates from the second century BCE. Four needles were gold and five were silver.

Fig. 1.1
Gold and silver needles from Liu Sheng's tomb



The ancient Chinese physicians were using the healing properties of gold and silver metals to stimulate acupuncture points. It is very likely that these acupuncturists were aware of the therapeutic properties of these metals. Such acupuncture needles acted as a form of subcutaneous electrodes, with the ability to strongly affect the energy, or *Qi*, in the meridians. These metals, both gold and silver, also have anti-microbial properties.[9]

In more recent times (i.e., 1956), the concept that gold, silver, and also copper needles could generate positive and negative ions was first recognized by Korean Dr. Song T. Sok. The fact that particular metals could affect the bioelectrical fields of the body was further studied and developed by Dr. Manaka Yoshio of Japan. However, it was Dr. Woo Tai Yoo, who, in 1971, successfully incorporated this method of acupuncture point stimulus with "copper and *silver colored* [aluminum] metal pellets" in his popular Korean Hand Therapy ("*Koryo*") microsystem. In this therapeutic system, the whole body is holographically represented on the hand. This microsystem—and variations on it—became popular internationally amongst acupuncturists due to its efficacy and ease of use. For many decades, for example, auricular acupuncturists in France and Germany have been using tiny gold and silver electroplated (and magnetic) metal spheres and needles to stimulate ear points, based upon Dr. Song T. Sok's original research work.

Fast-forward to today. The therapeutic practice of using gold or copper and silver electrodes to stimulate acupuncture points can now be explained by the research and understanding of ions and electrophysiology.[10] Bio-electrode Therapy integrates the scientific medical understanding of electrolytes and electrical fields with the Jing Luo theories (acupuncture meridian theory) of Traditional Chinese Medicine, by using tiny metal spheres, inks, or discs as electrodes to stimulate acupuncture points. As a clinician, I have found this therapy more efficient and efficacious than any of the other innovative techniques I've explored since being introduced to acupuncture over 30 years ago. In 1999, I was introduced to Korean Hand Therapy using copper and aluminum metal discs. I have always been impressed by the way that a simple application of aluminum metal discs on acupuncture points of the hand consistently resulted in significant and often complete relief of pain in a remote part of the body. A clear therapeutic response was virtually

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[9] Alexander, James. (2009). "History of the Medical Use of Silver," *Surgical Infections*. 10. 289-92. 10.1089(s)ur.2008.9941.

Borkow, Gadi & Jeffrey Gabbay. (2005). "Copper as a Biocidal Tool," *Current Medicinal Chemistry*. 12. 2163-75. 10.2174/0929867054637617.

[10] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2706303/

assured when a metal such as aluminum came into contact with acupuncture points in this microsystem.

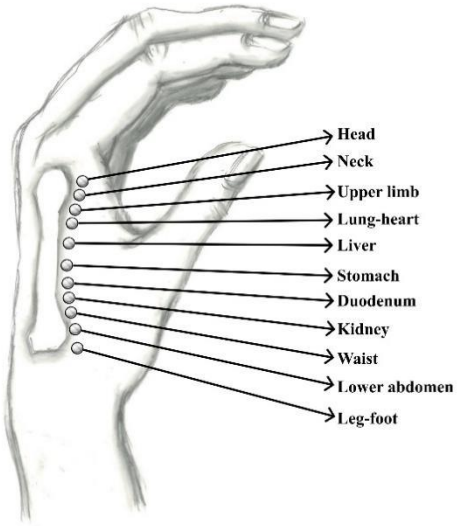
Evolving applications

In 2013, I began practicing Tung-style acupuncture[11] for the treatment of complex pain. Tung-style acupuncture is unique amongst other systems of acupuncture because only a few needles are used, and the therapeutic response is uniquely rapid and dramatic. Originally from mainland China, Master Tung escaped to Taiwan after the Cultural Revolution. The secrets of Tung's acupuncture had been kept in the family through oral tradition for many generations. In 1962, Master Tung Ching-Chang broke with tradition and accepted 73 disciples who were not family members. Since then, Master Tung's family's system and its unique set of acupuncture points has become famous for its simplicity, convenience, and clinical efficacy. As you will see in Chapter 9, Bioelectrode Therapy incorporates many Tung treatment principles and protocols but uses electrodes rather than needles. These Tung-style electrode protocols can be used either alone or combined with other protocols to enhance and reinforce the effectiveness of a treatment strategy.

Since needling palms, fingers, and feet can be quite painful, I experimented with using silver electrodes on the Tung-style acupuncture points of the hands and feet. I observed that when silver electrodes were secured using Tung acupuncture protocols, I achieved positive results similar to using needles. Tung-style acupuncture is actually a *system of many microsystems* throughout the body. Traditional Chinese medicine recognizes many different, distinct microsystems that holographically image the body on different anatomical parts. The hand, foot, ear, face, scalp, tongue, teeth, and abdomen are all examples of popular microsystems. Tung-style acupuncture steps beyond the concept of individual microsystems, finding microsystems on every long bone and extremity of the body.

[11] http://www.drweichiehyoung.com/dr-young-tungs-acupuncture/

Fig. 1.2
Tung-style long-bone correspondence



Eventually I began applying the electrodes to the Jing-Well acupuncture points on the fingers, toes and the soles of the feet. The Jing-Well points are the source of the movement of *Qi* and blood throughout the meridian system (see Fig. 1.3). According to the Chinese Medicine classic, *Neijing Lingshu*, these points are where the *Qi* arises and affects the meridians and organs. The *Qi* of the yin and yang meridians intersects at the hands and feet. The direction of flow of *Qi* is from the Jing-Well Points numbered 1 (i.e., the beginnings of the meridians) towards any higher numbered (the ends of the meridians). Each meridian is named after the organ through which the meridian passes, and which it affects. It then connects with another organ meridian and carries on to that meridian's end point. These points are accessible and easy to accurately locate. When I applied the electrodes to the Jing-Well points, I observed the same rapid biological response that I was accustomed to from Tung acupuncture, but with a difference: The effects were often much stronger and faster, and a greater variety of complex pain and illness could be successfully treated. The entire meridian and connecting paired meridians were being affected. The therapeutic effect occurs in the cells, tissues, and organs along the paired meridian pathways, from the gold to the silver electrodes. *The choice of the particular metals used (gold, silver, copper, and aluminum) will affect the strength and direction of the body's endogenous current*. For the purpose of this manual, I am using the meridian

theory (*Jing Luo*) and popular microsystems with these metal electrode combinations. Other treatment strategies can be utilized, but for simplicity's sake these treatment methods work very well.

There are a variety of methods for stimulating acupuncture points. These include acupuncture needles, moxibustion, acupressure, bloodletting, lasers, various types of electro-stimulation devices (referred to as microcurrent therapy), and even intention. While effective, these methods are not without problems: They are often painful, cumbersome. expensive, and require extensive skill and years of training to administer. By contrast, Bio-electrode Therapy is a technique that treats a broad range of pain and disease without the use of needles or technical equipment. It is safe, painless, very effective, and affordable. It can be easily mastered by an acupuncturist or other trained professional—even, in many cases, by the pain sufferers themselves.

The Directional Flow of *Qi* in the 12 Regular (Organ) Meridians

An understanding of the way the *Qi* flows throughout the system of meridians is very useful, but not essential to practice Bio-electrode Therapy. For those readers whose objective is to simply relieve specific pain and treat identified medical condition, Chapter 9 will show the precise placement of the electrodes. However, when using the meridian system for treating pain conditions, simply identify the meridian flowing through the location of pain and follow the meridian to the Jing-Well points and apply the electrodes according to the protocols. The following links from the "Natural Health Zones" website will take you to detailed illustrations of the electrical/*Qi* flow via the regular meridians.

↓ Stomach meridian (yang) flows to the ↑ Spleen meridian (yin)

↑ Heart meridian (yin) flows to the ↓ Small Intestine meridian (yang)

↓ Bladder meridian (yang) flows to the ↑ Kidney meridian (yin)

↑ Pericardium meridian (yin) flows to ↓ Triple Warmer meridian (yang)

↓ Gallbladder meridian (yang) flows to the ↑ Liver meridian (yin)

↑ Lung meridian (yin) flows to the ↓ Large Intestine meridian (yang)

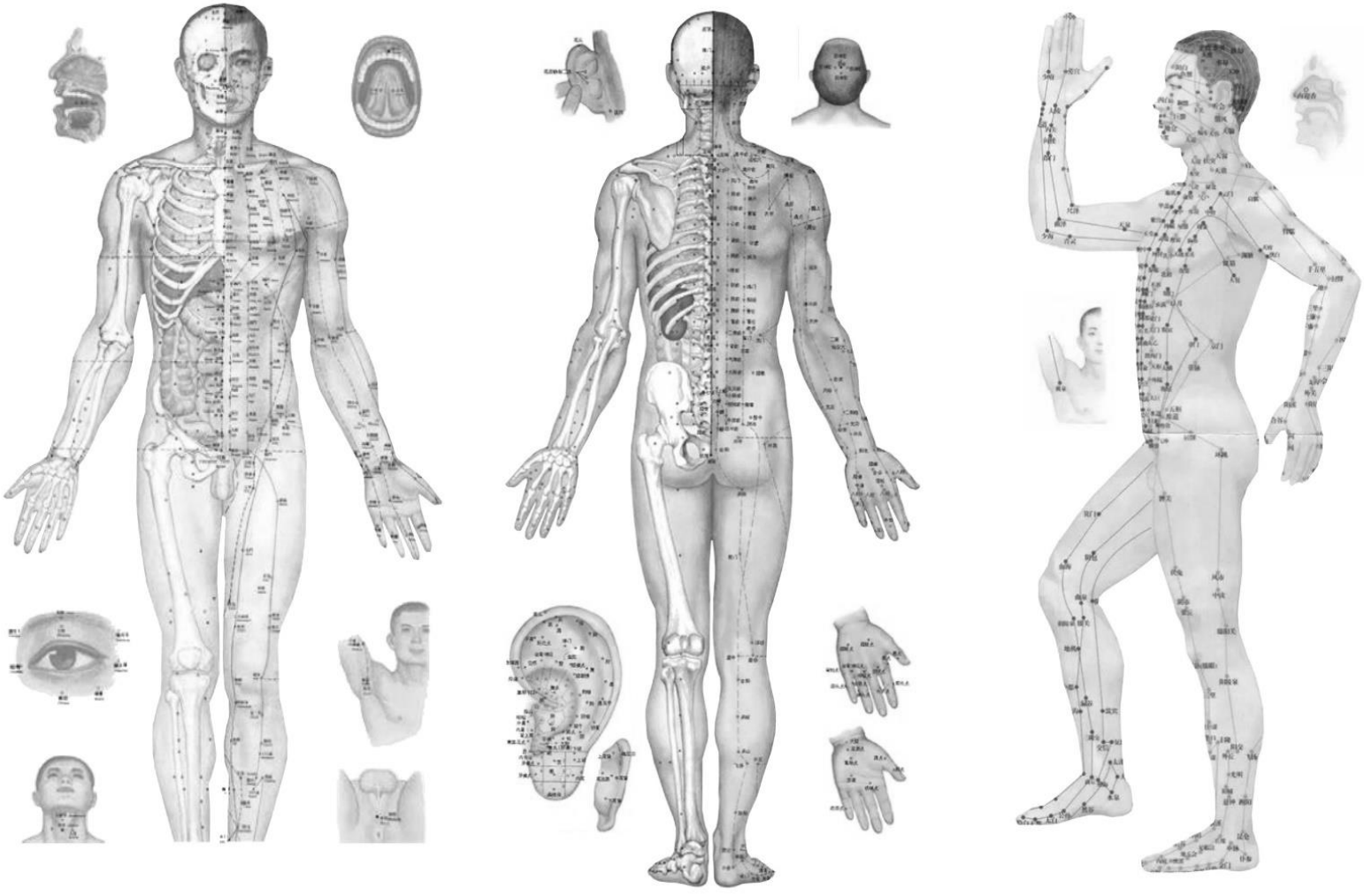
Fig. 1.3
Paired Meridians

Jing-Well Points	Jing-Well Points
Large Intestine 1 - Gold	Stomach 45 - Silver
Spleen 1 – Gold	Heart 9 - Silver
Small Intestine 1 - Gold	Urinary Bladder 67 - Silver
Kidney 1 - Gold	Pericardium 9 - Silver
Triple Warmer 1 - Gold	Gall Bladder 44 - Silver
Liver 1 - Gold	Lung 11 – Silver

Fig. 1.4
Paired Meridians

Jing-Well Points	Jing-Well Points
Large Intestine 1 - Silver	Stomach 45 - Copper
Spleen 1 – Silver	Heart 9 - Copper
Small Intestine 1 - Silver	Urinary Bladder 67 - Copper
Kidney 1 - Silver	Pericardium 9 - Copper
Triple Warmer 1 - Silver	Gall Bladder 44 - Copper
Liver 1 - Silver	Lung 11 – Copper

Fig. 1.5
Acupuncture Points and Meridians



Chapter 2—The Body is Electric

An Oxford Professor: What is electricity?

Student: Oh, Sir, I am sure I have learnt what it is – I am sure I did know – but I have forgotten.

Oxford Professor: How very unfortunate. Only two persons have ever known what electricity is, the Author of Nature and yourself. Now one of them has forgotten.

~ from *Bridging Science and Spirit,* by Norman Friedman

The success I was achieving with the simple application of electrodes to the Jing-Well points and various microsystems was impressive, but not surprising. Since it works so well for the popular microsystem Korean Hand Therapy, it was only reasonable that the same theories should work on other microsystems.

I was reminded by my skeptical colleagues that achieving results in the clinical setting can be complex, and many factors may contribute to therapeutic success. This is certainly true, so could the positive clinical results that I was experiencing be replicated by others? I realized that if I was going to share this acupuncture point stimulus innovation, I had to better understand how and why it works. Electrical engineering terminology such as "ions," "electrolytes," "bioelectricity," "anodes," "cathodes" and electrical fields had to somehow correlate with the language of Chinese Medicine ("*Qi*," "channels," "blood stasis," and "*Qi* stagnation"). Could bioelectricity be a form of *Qi*? How do simple electrically conductive metals generate such a powerful therapeutic response when in contact with an acupuncture point? So many questions.

When electrodes come into contact with any two acupuncture points in the body, an immediate physiological response is generated between the electrodes; and when applied to particular Jing-Well points, the entire meridian and related or connecting meridians are affected. This is what I knew for certain. The question was, what caused this to happen?

At the time, I wasn't aware of what ions, electrolytes or electrical fields were, or of the crucial role they played in this technique's unusual effectiveness. When I began to learn about ions, electrons and electrolytes, and the transmission of electrical current, I

realized that ions, electrons, and electrolytes may indeed be a form, or the basis, of *Qi*. Chinese Medicine theory is founded on the efficient transmission of *Qi* and blood, which indeed seems to parallel the Western paradigm of electrophysiology, microcurrents, and balanced electrolytes. Any disruption in the flow of *Qi* in Chinese medicine—or of microcurrents in Western medicine—manifests as pain or disease.

As has been noted by Dr. Robert O. Becker, author of *The Body Electric*[12], the human body is a battery system. Robert Otto Becker, MD (1923–2008), the father of electrotherapy and electrochemically-induced cellular regeneration, was a pioneer in chronic wound care and regeneration of tissue. He postulated that we are electromagnetic beings—essentially vessels of electrolytic blood and tissue. In *The Body Electric*, Becker states:

> Although neurophysiologists had studied pain for decades, there was still no coherent theory of it…. The prevailing view in the West was that if acupuncture worked at all, it acted through the placebo effect…. I proposed a more elegant hypothesis. The acupuncture meridians were electrical conductors that carried an injury message to the brain…. For currents measured in nanoamperes and microvolts, the amplifiers would have to be a few inches apart—just like the acupuncture points! …. I envisioned hundreds of little DC generators, like dark stars sending their electricity along the meridians, an interior galaxy that the Chinese had somehow found and explored.... If the integrity of health really was maintained by a balanced circulation of invisible energy through this constellation, then various patterns of needle placement might indeed bring the currents into harmony…. Our readings indicated that the meridians were conducting current…. Each [acupuncture] point… had (an electrical) field surrounding it, with its own characteristic shape. It was obvious… that at least the major parts of the acupuncture charts had, as the jargon goes, an objective basis in reality.… We looked at the meridians that seemed to connect these points. We found that these meridians had the electrical characteristic of transmission lines, while non-meridian skin did not. We concluded that the acupuncture system was really there, and that it most likely operated electrically.

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[12] Becker, Robert. *The Body Electric: Electromagnetism and the Foundation of Life.* (William Morrow Paperbacks. 1998.)

Electrolytes are the key

Electrolytes are nutrients or salts such as calcium, magnesium, potassium, sodium, and other trace elements, that conduct electricity in our body. Electrolytes are essential for many bodily functions; many automatic processes in the body rely on an electrical microcurrent in order to function, and electrons and electrolytes provide this microcurrent. A balance of different electrolytes is therefore critical for healthy function: hydrating the body and cells, balancing blood acidity (pH) and blood pressure, regulating nerve and muscle function, and helping to rebuild damaged tissue.[13]

When dissolved in water or solution (or blood and tissue), electrolytes separate into positively and negatively charged ions. Nerve and muscle function are dependent upon the proper exchange of these ions in and out of the cells.[14],[15] Electrolytes must exist in the body within a narrow concentration range in order to effectively serve a variety of critical functions (see Fig. 2.1). The normal range is measured per liter of blood. Electrolyte imbalance refers to a value higher or lower than the normal range and can cause a variety of symptoms that manifest in many different diseases. [16]

Electrolyte imbalance is commonly caused by loss of body fluids through prolonged vomiting, diarrhea, sweating, or high fever, or simply through not adequately hydrating or properly nourishing the body during detoxification from drugs and alcohol. Patients may be malnourished as a result of reduced food intake due to eating disorders (e.g., anorexia nervosa), depression, drug addiction, alcoholism, cancer (and cancer treatment), aging, and even poverty. Individuals with a reduced absorption of nutrition, due to conditions such as inflammatory bowel disease and celiac disease, are also at high risk. Other factors that may contribute to an imbalance are a high-stress lifestyle, overwork, blood loss, and certain medications[17] (e.g., diuretics). An electrolyte imbalance may lead to a number of symptoms, depending on which electrolyte is out of balance and whether the level is too high or too low. If you have altered potassium, magnesium, sodium or calcium levels, you may experience one or more of the following symptoms:

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[13] Becker, Robert. *The Body Electric: Electromagnetism and the Foundation of Life.* (William Morrow Paperbacks. 1998.)

[14] https://pressbooks.bccampus.ca/dcbiol12031209/chapter/12-4-the-action-potential/

[15] https://www.frontiersin.org/articles/10.3389/fgene.2013.00076/full

[16] https://www.healthline.com/health/electrolyte-disorders

[17] http://www.jgmh.org/article.asp?issn=2348-9995%3Byear%3D2016%3Bvolume%3D3%3Bissue%3D2%3Bspage%3D108%3Bepage%3D122%3Baulast%3DSahoo

- Muscle spasm
- Weakness
- Twitching
- Numbness
- Confusion
- Lethargy
- Nausea
- Vomiting
- Stomach Pain
- Constipation
- Anorexia
- Excessive thirst
- Dry mouth or throat
- Frequent Urination
- Neuropsychiatric disorders
- Lack of appetite
- Blood pressure changes
- Irregular heartbeat
- Nervous system disorders
- Convulsions
- Seizures
- Fatigue
- Lethargy
- Moodiness
- Irritability
- Confusion
- Extreme muscle weakness
- Irregular heartbeat
- Coma

During my years of employment in a residential detox center, I frequently witnessed the beneficial results of IV electrolyte restoration and rehydration for opioid withdrawal pain. When our clients experienced extreme discomfort and our medication regimens were not managing their pain, we would send them by ambulance to the hospital. Several hours later, they would return to our facility, walking unassisted with the bag of electrolyte solution hanging from a pole, looking relaxed and comfortable (indeed, often looking better than the staff!). It was clear that electrolytes were a key factor in their restoration.

AN IMPORTANT NOTE: Essential electrolytes should be replenished *slowly* along with the gradual intake of nourishment. Electrolyte restoration can often result in a seri-

ous condition called Refeeding Syndrome.[18, 19, 20] Refeeding Syndrome can be defined as dangerous electrolyte and fluid shifts that occur in malnourished patients when replenishing vitamins and electrolytes too quickly, whether orally, through tube feeding, or intravenously. High-risk patients include those who have been chronically undernourished for more than five days. The consequences can be grave, and even lethal. [21]

It is my belief that electrolyte imbalances are far more common than we realize and may often go unrecognized as the basis for many diseases. Bio-electrode Therapy seems to be able to rapidly reestablish electrolyte balance at a cellular level, relieving the symptoms and restoring homeostasis.

[18] https://www.hopkinsmedicine.org/gim/_pdf/consult/refeeding_syndrome.pdf
[19] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2440847/
[20] https://www.amjmed.com/article(s)0002-9343(98)00267-8/pdf
[21] http://www.ihi.org/resources/Pages/Changes/ReduceAdverseDrugEventsInvolvingElectrolytes.aspx

Fig. 2.1
Functions of electrolytes and their normal ranges*

Electrolyte	Functions in the body	Normal adult range*
Calcium	Necessary for muscle contraction, nerve function, blood clotting, cell division, healthy bones and teeth	4.5-5.5 mEq/L
Chloride	Maintains fluid balance in the body	97-107 mEq/L
Potassium	Regulates heart contraction, helps maintain fluid balance	3.5-5.3 mEq/L
Magnesium	Necessary for muscle contraction, nerve function, heart rhythm, bone strength, generating energy and building protein	1.5-2.5 mEq/L
Sodium	Maintains fluid balance and necessary for muscle contraction and nerve function	136-145 mEq/L

*Values may vary from laboratory to laboratory.

A microcurrent stimulus regulates electrolytes

Modern scientific research has confirmed that the process of healing, growth, and regeneration in all living organisms is mediated by the flow of an endogenous electrical microcurrent.[22, 23] and electrical fields. This endogenous current, or bioelectricity, is measured in the trillionths and billionths of an ampere range. Injury and disease affect the electrical potential or voltage of cells in the damaged tissues and creates an area of much higher electrical resistance than that of the surrounding tissue. This decrease or short circuit in the electrical flow through the injured or diseased tissue affects the cellular capaci-

[22] Yong-Heum Lee, Myeong Soo, et al. "Effects of Acupuncture on Potential Along Meridians of Healthy Subjects and Patients with Gastric Disease." *The American Journal of Chinese Medicine*, Vol. 33, No. 06, pp. 879-885 (2005) https://doi.org/10.1142(s)0192415X05003478

[23] https://www.researchgate.net/publication/8929511_A_Role_for_Endogenous_Electric_Fields_in_Wound_Healing

tance, resulting in an impairment in the function of the cells. An imbalance of ions [24] or electrolytes at the cellular/tissue level is the basis of this dysfunction, which manifests as pain, inflammation, swelling, pH imbalance, etc. Contemporary cell researchers have demonstrated that our cell membranes contain special protein receptors that respond to electrical energy signals from their external and internal environment, thereby directly controlling these cellular activities.

When gold or copper and silver electrode discs are strategically placed on acupuncture points on either side of the injured or diseased tissues, a microcurrent of positive and negative ions is immediately generated, relieving these problems.[25] When using acupuncture meridian theory, a microcurrent can be directed through the tissues via the meridians to the injured site or diseased tissue. The twelve "regular meridians" (that is, those that are associated with the organs of the body) connect with each other one by one in sequence to form a circuit through which the *Qi* (microcurrent) may circulate continuously. The twelve regular meridians travel through both sides of the body *in pairs*. By applying the electrodes to the beginning and end points of these "paired" meridians, we are able to stimulate and improve the function of the tissues and organs all along those meridians.

I hypothesize that this electrode-directed microcurrent activates and balances the electrolytes at the cellular level of the injured or diseased tissue.[26] The electrical stimulation affects the permeability of the cell membranes, opening and *regulating ion channels* (voltage gated channels) therein, [27, 28, 29] and rapidly restoring the natural electrical charge to every injured cell, recharging them just as a weak battery is recharged.[30] The resistance of the injured tissue is eliminated, allowing bioelectrical microcurrents to pass through, and triggering the body's own natural biochemical healing processes. The results are a balancing of electrolytes and the restoration of intracellular fluid levels, replenishment of cell voltage, electrolyte and pH levels, removal of toxins, and re-establishment of homeostasis.

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[24] https://www.frontiersin.org/articles/10.3389/fncel.2014.00125/full
[25] https://wfww.ncbi.nlm.nih.gov/pmc/articles/PMC2706303/
[26] Lee, Y. H. "Investigation of electrical responses to acupuncture stimulation: the effect of electrical grounding and insulation conditions," *Journal of Acupuncture Meridian Studies, 2009; 2 (1): 4955.* https://www.ncbi.nlm.nih.gov/pubmed/20633474
[27] https://www.frontiersin.org/articles/10.3389/fncel.2014.00125/full
[28] http://europepmc.org/articles/pmc3295319
[29] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2706303/
[30] https://www.linkedin.com/pulse/could-correcting-voltage-answer-curing-disease-mark-thomas/

Electrodes can be used as acupuncture point stimuli on *any* of the many microsystems and Jing-Well points known in Chinese Medicine.

Theory summary

- Acupuncture points are widely acknowledged to have greater electrical conductivity than other areas of the skin.
- A beneficial biological response is achieved when certain metal electrodes come into contact with acupuncture points.
- The response is further enhanced when electrodes are strategically applied to the Jing-Well points (end points of meridians).
- No external electrical devices are necessary; metals alone will generate electrons and ions when in contact with an electrolytic body.[31],[32]
- *Meridians are essentially electron and ion pathways.* The Chinese Medicine's meridian system is an electrical grid.[33]
- The meridians are named after the organs through which they travel. If your patient has knee pain, select the meridian or meridians that pass through the location of pain in the knee. For sciatic pain, select the meridian closest to where the location of the pain is most intense. *Note that more than one meridian may be affected.*
- According to Dr. Robert Pekar, "Every biological process is also an electric process" and "health and sickness are related to the bio-electric currents in our body."

[31] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4440595/
[32] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2706303/
[33] Ahn, Andrew C., *et al.* "Electrical properties of acupuncture points and meridians: A systematic review." Wiley Online Library, January 31, 2008. https://onlinelibrary.wiley.com/doi/abs/10.1002/bem.20403

Chapter 3—East Meets West at the Jing-Well

"The twelve meridians control human life,
yet they are the place where disease can live.
If disease starts in the meridians,
the physician can use the meridians
to treat the root cause of disease".
~Nei Jing (Classic Chinese text,
475-221 BCE) [34]

Traditional Chinese Medicine and modern Western medicine are vastly different medical paradigms, with dissimilar cultures and languages, and each with its own arcane medical terminology to describe anatomical concepts, treatment principles, and energy. How can they possibly communicate and establish a relationship? How can the Newtonian reductionist, linear, and mechanistic approach of allopathic medicine reconcile with the Taoist, organic, energy-based, quantum physics approach of Chinese Medicine, and vice-versa?

Fundamental to Asian medicine are the concepts of *Qi*, energy pathways (called channels or meridians), and balance (*Yin Yang).* Fundamental to western medicine are technology, electromagnetic energy, bioelectricity, and chemistry. In Bio-electrode Therapy, our Western concepts and principles of electrophysiology and bioelectricity are compatible with the ancient established practice and principles of Traditional Chinese Medicine: *In health, the* Qi, *or current, flows in one direction, from one meridian to the next, and to the next, ultimately completing a circuit.* Pain and disease are manifestations of a disruption or disturbance in the efficient and full flow of the *Qi* and blood. From a bioelectrical perspective, when there is pain and disease, there is a depletion of voltage in cells and tissues. The body's endogenous electrical microcurrent is unable to flow efficiently,[35] resulting in a pH and electrolyte imbalance, etc.

What are the Jing-Well points? Briefly, they are *the first and last acupuncture points of the organ meridians,* almost all of which are found on the hands and feet. These points are numbered according to whether they are at the beginnings or the ends of their respective meridians; the number 1 indicates the starting point of a given meridian, and higher

[34] http://www.biblio.nhat-nam.ru/Huang_Di_Nei_Jing_Su_Wen-Unschuld-Tessenow-1-2.pdf
[35] https://chemistry.stackexchange.com/questions/16785/positive-or-negative-anode-cathode-in-electrolytic-galvanic-cell

numbers (i.e., anything over 1) indicate the end points. (As you might have surmised, these numbers also indicate the number of acupuncture points on the particular meridian and the directional flow of microcurrent, or *Qi*.) The cycle of *Qi* or microcurrent travels via the twelve regular meridians to complete a circuit. Figs. 3.1 and 3.2 show the Jing-Well points on both hands and feet. Jing-Well points are precisely located at the proximal corner of the finger and toenails, with one exception. Kidney 1, which is located at the bottom of the foot.[36]

[36] https://www.healthcmi.com/Acupuncture-Continuing-Education-News/1230-new-ct-scans-reveal-acupuncture-points

Fig. 3.1
The Twelve Jing-Well Points

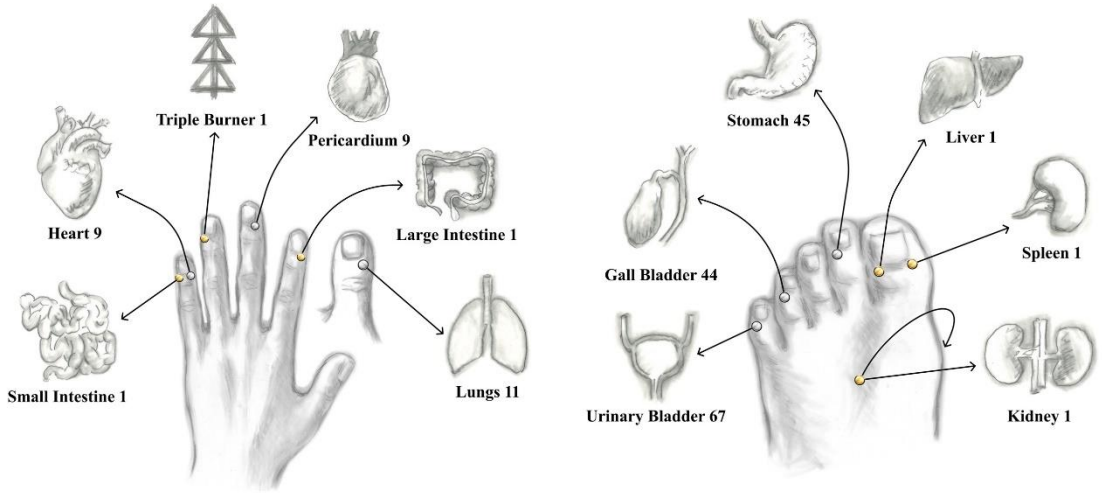
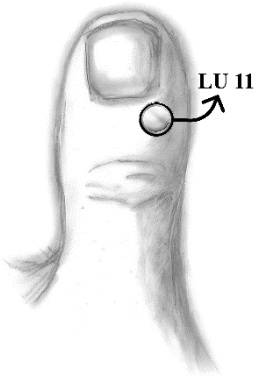


Fig. 3.2
Location of Jing-Well Points in Relation to the Nail Bed



Jing-Well points are precisely located on the proximal corners of the fingers and toenails

You may note that a given meridian will not begin on a finger and end on a corresponding toe. For example, the Spleen meridian begins on the big toe, but does not end on any finger. As noted in Chapter 1, this is because the meridians *pair up*, connecting with each other as they pass through the body. Specifically, the Kidney meridian pairs up with the Pericardium meridian, Large Intestine meridian pairs up with the Stomach meridian, Spleen meridian pairs up with Heart meridian, Small Intestine with Urinary Bladder meridian, Triple Warmer with the Gall Bladder meridian, and the Liver meridian pairs with the Lung meridian. (see again Fig. 1.3) The *Qi*, or microcurrent, in the meridians cross over from one side of the body to the other, from one meridian to the next.

When I began to explore the theoretical basis for Bio-electrode Therapy, I soon realized that electrical engineers and Western medical practitioners had little interest or patience in understanding the esoteric and poetic language of Traditional Chinese Medicine. Likewise, very few Chinese Medicine practitioners had an interest in exploring the concepts of electrophysiology and bioelectricity. It's complicated. I believe that as Bio-electrode Therapy becomes more widely used, these two paradigms will continue to merge (as, indeed, they have gradually been doing for several decades now). Fortunately, one is not required to understand the complexities of Chinese medicine or electrophysiology to administer Bio-electrode Therapy, any more than we have to understand the mechanisms of a car, a computer, or an aspirin tablet to effectively use and benefit from them. For the treatment of opioid withdrawal stress and many complex pain conditions, simply apply the electrodes according to the illustrations in this book for each particular ailment.

Chapter 4—Understanding the Microcurrent Flow in Our Body Using the Chinese Medicine Meridian System

"The unceasing circulation of Qi and Blood in the Channels activates all life processes in man."
~Huang Di Nei Jing-Su Wen
(Chinese classic text on medicine, 475 – 221BCE)[37]

The history of medicine in Western culture suggests that Dr. William Harvey discovered the circulation of blood in the human body in 1628. In fact, Chinese physicians have known about this for thousands of years. Traditional Chinese Medicine practitioners were not only aware of the circulation of blood, but they were also knowledgeable about the intricacies of human electrical circuitry; this is the Chinese meridian system. Traditional Chinese Medicine views the Heart as the "Emperor Organ." It is considered to rule the entire "empire" (body) by controlling the circulation of blood. *The Yellow Emperor's Classic of Internal Medicine* (475-221 BCE) states that *Qi* commands blood: "Where *Qi* moves, blood follows."

In Western science, the heart is known to be the greatest electrical energy generator of the body, and a continuous electromagnetic field (called the cardiac electrical field) can be measured throughout the body and in fact well beyond the skin.[38] It's the heart's electrical system that is responsible for generating and conducting the signals that trigger the heart to beat. The electrical signals start in a group of cells at the top of your heart called the sinoatrial (SA) node. Because the blood is a conductor of electricity, the entire circulatory system pulses with electricity each time the heart beats.[39] The electromagnetic field (EF) of the heart controls this flow of blood, nourishing and sustaining the whole body.[40] The heart and its electromagnetic field also function together as a generator of bio-information. There is a multidimensional role for the heart in physiolo-

[37] http://www.biblio.nhat-nam.ru/Huang_Di_Nei_Jing_Su_Wen-Unschuld-Tessenow-1-2.pdf
[38] https://www.ncbi.nlm.nih.gov/pubmed/15823696
[39] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2914348/
[40] https://www.ncbi.nlm.nih.gov/pubmed/18632504

gy, biopsychosocial dynamics, and psychosomatic medicine.[41, 42] Likewise, Eastern cultures believe the Heart is the portal of all emotions in the body and is vital for maintaining mental and emotional as well as physical wellness.[43]

I hypothesize that the SA node of the Heart (Emperor and Commander) acts like an electrical transformer, generating the *Qi* or microcurrent in the Heart meridian and throughout the system of meridians in the body. EFs require the presence of a voltage source (battery) and a conductive pathway. As Dr. Robert O. Becker says: "To have a current flow you need a circuit; the current has to be made at one spot, pass through a conductor, and eventually get back to the generator." [44] In Chinese medicine, health is based on the free and efficient movement of *Qi* (energy) throughout the system of meridians, in one direction, from one meridian to the next, and to the next, returning to the original meridian to complete the circuit.

A disturbance in electrical currents, or *Qi*, can lead to illness or pain. Disorders of *Qi* can manifest in various ways. *Qi* can be weak ("deficient," e.g., Chronic Fatigue, heart palpitations, poor circulation). It can be blocked ("stasis," e.g., acute pain). It can be slowed down ("stagnant," e.g., depression, impotence, fragile emotions). It can behave erratically, or even reverse directions ("rebellious," e.g., nausea, vomiting). Or it can short-circuit altogether (heart failure).

By placing electrodes on the appropriate acupuncture points, we can regulate and direct this microcurrent stimulation to strengthen and improve the flow of blood, and *Qi*, throughout the body[45] or to a specific part of the body. In Chinese medicine meridian. theory, the *Qi* flows in a precise manner through the twelve regular meridians. If a person's blood and *Qi* are flowing freely and efficiently, s/he will be pain-free, and healing will take place.

Bio-electrode Therapy is able to correct any disruption in the flow of this electrical current, balancing electrolytes, restoring cell voltage potential and thereby relieving symptoms. The Chinese Medicine theory of the meridians is one of the most important elements in Chinese clinical practice.

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[41] https://www.karger.com/Article/Pdf/12393
[42] https://thriveglobal.com(s)tories/heart-over-brain/
[43] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5585554/
[44] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2114002/pdf/jc10162023.pdf
[45] https://www.graduate.umaryland.edu/gsa/gazette/February-2016/How-the-human-body-uses-electricity/

KEY POINT: The objective of electrode placement is to create a healing polarity; this is the crucial mechanism for therapeutic effect.[46] *The electrode placement controls the directional flow of current and electrons and creates the electrical field.*

Directing the flow of *Qi* using Jing-Well Points

Administering Bio-electrode Therapy is relatively simple. Identify where the pain or disease is located in the body, and which meridian(s) are passing through or near the site of the pain. When the affected meridian(s) are identified, follow them down to their *starting and ending points* on the hands and feet, referred to as Jing-Well points (see Fig. 3.1). Place the appropriate electrodes on the Jing-Well points. For example, if the pain is affecting the right hip, you will notice that the Gall Bladder meridian passes through the lateral side of the hip (see Fig. 1.5). Follow that meridian down to the Jing-Well point on the toe, which is Gall Bladder 44, and place an electrode on that point. The connecting meridian on the opposite side hand-finger being Triple Warmer 1, you would then place another electrode there. (This treatment strategy is referred to throughout this book as the "Opposite Side Foot/Hand Meridian Pairs Method.")

When using the *gold and silver pellets*, the Jing-Well points numbered 1 will require a gold electrode, while any higher-numbered Jing-Well Points will require a silver. For example, Triple Warmer 1 will require a gold pellet and Gall Bladder 44 will receive a silver one.

When using the copper and silver ink electrodes, or the homemade copper and aluminum discs, the placement will not be the same as that of the gold and silver pellets. The difference is based on the Galvanic Voltage Scale, which explains how the various metals react to each other and creates the directional flow of current. KEY POINT: Placement is dependent on which metal is the anode and which is the cathode. The protocols in this book are based on this relationship between the metal pairs and saves you from having to search and understand the complexities of bioelectricity.

[46] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2114002/pdf/jc10162023.pdf

Theory Summary

Using metals as healing stimuli has been practiced for thousands of years by healers and alchemists in their attempts to find a universal elixir. By combining the modern science of bioelectricity with the ancient wisdom of Chinese medicine theory of meridians and *Qi* (energy) flow, we may have solved this healing enigma.

With the strategic placement of electrodes, i.e., gold and silver, on acupuncture points, a spontaneous flow of electrons (called a "Redox Reaction") is generated from the negatively charged silver anode to the positively charged gold cathode. A positively charged current flows in the opposite direction to the electrons, creating the electrical field. The electrical fields (EFs) are the result of polarized ion transport and current flow through electrically conductive pathways. An electric field is an electrical potential difference between the two electrodes. This potential difference strengthens the endogenous polarized ion transport through conductive pathways (or meridians). It is this stimulus of the endogenous electrical fields (or the *Qi*), overcoming resistance and increases the rate of the healing in cells and tissues, and almost immediately relieves pain. The correct placement of particular metal electrodes according to the Galvanic Voltage Table, and ancient established Chinese medicine protocols, is necessary. It is the unidirectional flow of current and the resulting field that enhances the *Qi* and completes the circuit in the meridians.

In Chinese medicine terminology, Bioelectrode Therapy treats not only excessive syndromes. It can also be applied to the treatment of complicated syndrome of excess and deficiency as well as deficiency syndromes.

Formal research is warranted to validate the efficacy of this approach.