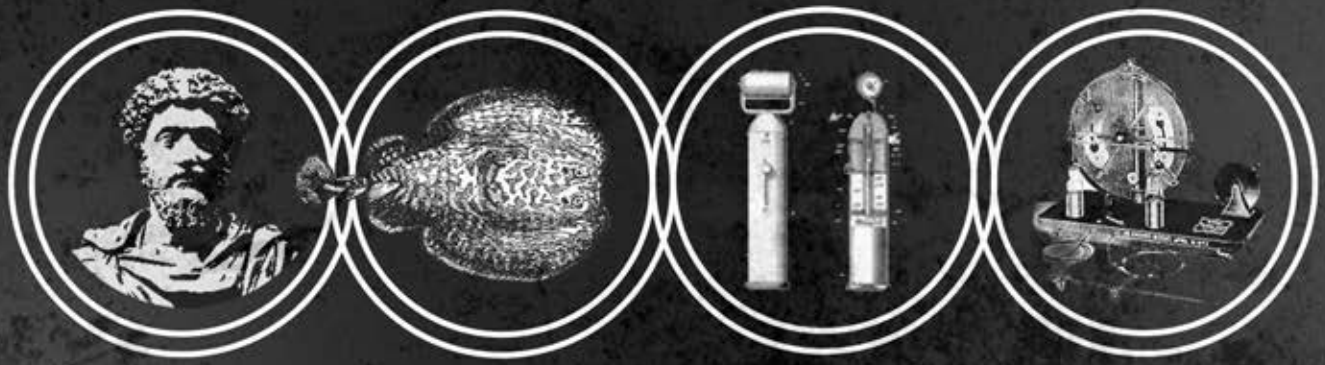
Free Ebook

The History of ELECTROTHERAPY



- Ancient Egyptians: The First Early Adopters
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SYNOPSIS

Electric fish, Benjamin Franklin, attacks by the FDA...there's more to the rich history of electrotherapy than meets the eye. From humble beginnings in ancient Egypt to low-key studies in the 20th century, electrotherapy has never been without its proponents. Thanks to those curious and consistent supporters, today's World has access to the benefits of multiple types of therapy. The modern TENS Unit gives way to drug-free pain relief. The EMS Unit provides remedies to atrophy, assistance to muscle recovery and growth, and so much more. Learn how this safe, non-invasive treatment went from groundbreaking to pseudoscience to life-changing once more.

Early Development of Man-Made Devices

It wasn't until the 18th century—1744 to be exact—that electrotherapy was really explored for its therapeutic application. Christian Kratzenstein was the first to apply it medically in the form of static electrical currents, known as Franklinism. These were produced by a friction generator. Kratzenstein first tried electrotherapy on a woman whose finger was paralyzed, and found that after a few minutes of treatment she could move it again. In 1752, he was invited to the University of Copenhagen to continue his studies on electricity's therapeutic options.

Benjamin Franklin followed closely behind Kratzenstein in medical experiments with electrotherapy treatment. In fact, it's often Franklin who gets the credit for creating the original electric condenser. As with anything, electrotherapy wasn't perfect on the first attempt. The man-made devices developed through several phases, and Franklinism was just the first. The next phase was called Galvanism, named after the scientist Luigi Galvani. The Galvanism method used chemical reactions to apply electrical currents directly to the skin. Following Galvanism was Faradism, which delivered pulsing, alternating electrical currents. The fourth stage, called Arsonvalisation, used high frequency currents.

As experimentation with man-made devices went through these different developmental phases into the 19th century, electrotherapy rose in popularity. The 19th century was filled with patients seeking electrotherapy treatment for anything from dental pain to neurological issues. It was applauded as a groundbreaking treatment for many diagnoses.

The 20th Century

As the 1900s began, the interest in electrotherapy dwindled. People turned their interest towards the development of analgesic drugs—today's over-the-counter and prescription painkillers. Suddenly, folks weren't so sure that there was enough scientific evidence to prove the effectiveness of electrotherapy. The general population began to associate it with kooks and started to see it as a sort of pseudoscience.

And yet, the development of electrotherapy continued. In 1919, naturalist Dr. C.W. Kent developed and patented a marketable device called the Electreat. This handheld, battery-operated device could be used to apply a strong tingling sensation to different parts of the body. However, the Electreat was heavily attacked by the FDA. Additionally, many professionals from the medical field saw no validity in the machine.

Nevertheless, patients who still stood behind electrotherapy used this treatment successfully for years to come, even after it was taken off the market. Its main fault, like the machine used by Kratzenstein, was that it was unwieldy and therefore inconvenient to use.

Dr. Kent wasn't the only person to go against the grain and keep up with his studies on electrotherapy throughout the 20th century. Others continued to perform clinical studies and even experiment on animals. Whether it was out of curiosity or determination, the studies ultimately paid off when they made it possible to understand how electrotherapy worked and was effective as a method of pain relief.

Two mechanisms could explain this. The first evidence was that the application of electrotherapy inhibited pain signals from reaching the brain. This concept is now referred to as the gate control theory. The non-painful signals from electrotherapy "close the gate" and prevent the pain signals from going to the brain. Imagine that these signals are two trains on separate tracks. Each of these two tracks converge into one single track that goes to the brain. The train on the right is the pain signal, and it's headed for that single track to the brain. But, when the non-painful signal is stimulated—the train on the left—it heads for that same track to the brain, taking over the tracks and preventing the pain signal from getting through.

The other explanation for the effectiveness of electrotherapy as a pain reliever was the observation that the electrotherapy treatment released endorphins, which are the body's natural opiate-like painkiller. Thanks to these two validating discoveries, electrotherapy experienced a sort of revival in the second half of the 20th century. It was well on its way to becoming respected widely used once more.

Later in the 20th century, a more portable solution was invented when Dr. Norman Shealy developed the Dorsal Column Stimulator, which releases electrical currents along the spinal cord. Dr. Shealy's invention has been a great success and became the missing solution to many cases of chronic back pain. However, while more portable than Kent's clumsy Electreat, the Dorsal Column Stimulator had to be implanted in the back with surgery. The world of electrotherapy still needed an external, portable machine that could have the same effect as its predecessors.

Enter Norman Hagfors and Stanley McDonald. In 1970, these two inventors began working on a way to take Shealy's work to the next level. Their goal was to build a machine that could provide the same results without needing to be surgically implanted. After hours of brainstorming, research, and a trip to the hardware store later, Hagfors and McDonald had build the first TENS machine small enough to hold in one's lap.

A year later, a man named Clayton Jensen joined their team and the trio formed their company, Stimulation Technology, or Stimtech. Stimtech continued to work on developing the perfect, portable, and user-friendly TENS machine. They were eager to spread the word about an alternative solution to pain, particularly in the 1970s as painkiller addiction and dependency were on the rise. When one of the company's stock owners, Johnson and Johnson—makers of Tylenol and other pharmaceuticals—offered to buy the company and support their growth, Stimtech couldn't resist. Johnson and Johnson promised to finance research and to use their established name as a means to back the TENS Unit and help spread the word. It seemed too good to be true. And it was. Johnson and Johnson, threatened by a potentially successful alternative to their top products, never put any effort into the TENS machine.

Stimtech lost the ownership to their company with no opportunity to buy it back. Justice would have it that a lawsuit years later would rule Johnson and Johnson to pay Stimtech $170.4 million. Still, Stimtech's research momentum was killed.

But yet again, another proponent of electrotherapy picked up where Stimtech left off and development continued. In 1974, the first patient-wearable TENS Unit was patented in the USA. At first, it was treated largely like a trial run, testing patients' tolerance to electrical impulses. However, the TENS Unit ended up being revolutionary. Most patients described feeling immediate relief from their acute or chronic pain. The TENS Unit was also used to treat conditions like Parkinson's and epilepsy. So successful was this first patent that many other companies began manufacturing their own TENS Unit, a science that was scoffed at just decades earlier.

In Recent History

At this point, the evolution of electrotherapy treatment began moving much more quickly than its early stages. In 1993, Medicare acknowledged TENS and EMS Units as a valid medical treatment and began reimbursing for their prescriptions. This was a huge step for electrotherapy, but unfortunately one that did not last very long. When a 2010 report from the Therapeutic and Technology Assessment Subcommittee of the American Academy of Neurology declared that TENS was an ineffective treatment for chronic back pain, it led Medicaid to drop TENS coverage two years later. Proponents of electrotherapy were shocked and downtrodden by the news. It came at a particularly bad time for the 80% of Americans who suffer from lower back pain at some point in their lives, many of who had found relief in TENS. While Medicare quit reimbursing for TENS, America's dependency on pharmaceuticals was skyrocketing.

But another victory for electrotherapy was just around the corner when, in 2014, the FDA approved TENS Units for over-the-counter sales. Both TENS and EMS electrotherapy could be obtained without a prescription to use at home safely for instant pain relief at any time. Many of these units were becoming much more affordable as well, which meant patients were gaining easier access to treatment.

The Brief History of ELECTROTHERAPY

01
BC

The Ancient Egyptians,
Greeks, and Romans used electrical fish to generate electric shocks for relief of pain.

02
46 A.D

Scribonius Largus
applied electric torpedo fish to his patients as a therapy for headaches, gout, or hemorrhoids.

03
1744

Considered the pioneer of Electrotherapy,
Christian A. Kratzenstein first used electricity therapeutically.

04
1919

Dr. C.W. Kent
developed a device called the Electreat, a non-portable electrostimulation device.

05
1967

Dr. Norman Shealy
implanted the first Dorsal Column Stimulator

06
1974

The first modern
patient-wearable
TENS Unit was patented in the USA

Medicare
reimburses for TENS & EMS
Units upon RX

07
1993

08
2013

TENS
Units became available without
physician prescription. Average costs
dropped by up to **95%**

iReliev
introduces the market's first family of
retail electrotherapy products

09
2014

10

iReliev
introduces
portable OTC TENS Unit

iReliev
is available among
National Retailers

11
2015

12

iReliev
introduces portable OTC TENS + EMS
Combination Device

In 2014, the same year the FDA approved the marketing of TENS Units for headaches and similar pains, iReliev joined in on the mission, introducing a family of electrotherapy machines to the market, including a portable, over-the-counter TENS machine. Since then, iReliev has developed a portable, over-the-counter TENS and EMS two-in-one device that can be used for relief and for recovery. And, unlike a torpedo fish, you don't have to go walking along the beach to find one. You can buy them in Sam's Club or on the website. It took a few hundred years, but thanks to the undeniable benefits of electrotherapy and the perseverance of those who valued it, it has become an efficient, available, and natural choice for pain relief.

The Fight Continues ...

From fish to public mockery to revolutionary pain relief to approval from the National Institute for Health and Care Excellence in 2014, electrotherapy has undergone a colorful history of ups and downs. Even as it settles into a valued position in the toolbox of medical treatment, it still has its struggles. For now, most of these exist in the form of dishonest and illegal sales on the internet. Many eCommerce sites or misinformed blogs will tell you that there's no difference between the TENS and EMS treatment. That's not the case and they're not interchangeable. In short, TENS is intended for pain relief and EMS is intended for muscle stimulation. Similarly, these same websites will lead you to believe that there's no difference between a prescription electrotherapy device and a nonprescription device. Lots of eCommerce sites sell prescription devices as if they're over-the-counter approved, which is dangerous and, quite frankly, illegal. When the FDA approved TENS devices for over-the-counter sales, they weren't approving every device ever made. On the contrary, each TENS manufacturer needs to submit their devices to the FDA to receive a Class II OTC product stamp of approval. This indicates that the FDA has tested the device and determined that it includes regulatory controls that provide as much assurance of safety as possible.

As reputable sellers like iReliev work with the FDA to rid the market of these dangerous and deceptive eCommerce sites, it's important for users of electrotherapy to know the difference between over-the-counter and prescription devices.

If you don't see any indication that a device has been FDA approved, then you should not trust it. Over-the-counter devices are designed specifically to be safe and usable by anyone, anywhere. Prescription devices, on the other hand, require professional supervision. They are not safe nor effective for home use. Fortunately for you, as an iReliev customer and a reader of this eBook, you've chosen an FDA-approved, safe and effective device. As a proponent of TENS and EMS, you can become a part of the ever-evolving history of electrotherapy and act as a crucial cog in the wheel towards shutting down illegal sales. Report these unlawful sellers at:

http://www.fda.gov/Safety/ReportaProblem/ucm059315.htm

In the end, electrotherapy always comes out on top and it's those who believe in its benefits that fight to keep it as an accessible, safe treatment for chronic and acute pain.

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