



Research Article

Earthing and Health Span

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Abstract

It is increasingly being recognized that health span matters more than lifespan: how you age matters more than how long you live (Harvard Health 2026). Health span refers to years lived in good health, free from major disease or disability or other annoying wellness issues. Here we detail evidence for a simple and often-overlooked approach for extending health span that is rapidly catching on around the world: Earthing or grounding. Earthing has become a world-wide practice due in part to the global distribution of many translations of a book entitled *Earthing: the most important health discovery ever*. Continuing peer-reviewed research and unsolicited enthusiastic feedback from thousands of people from around the world confirms that, for many people, contact with the Earth is indeed having profound significance for health span. The feedback has revealed that Earthing provides dramatic relief from more than 180 different health challenges, ranging from uncomfortable or cosmetic issues to potentially fatal chronic diseases. The global incidence trends in autoimmune diseases reveal an increasing global burden, underscoring the urgent need for approaches that can address this expanding problem. Because of its simplicity, availability, and ease of application, Earthing has great potential for enhancing health span literally around the world.

Keywords: Lifespan; Health span; Earthing; Grounding; Biological wires; Telluric currents

Introduction

The 2026 CNN Original Series “Kara Swisher Wants to Live Forever” follows one woman’s exploration of some of the scientists and discoveries reshaping the pursuit of longevity [1]. Modern medical science and AI are rapidly advancing our understandings of the so-called “diseases of aging” – the uncomfortable and often difficult-to-treat conditions that diminish our health and happiness in our later years. These conditions are widely accepted as inevitable aspects of aging. But this attitude is changing. Swisher’s interviews with leading medical researchers are pointing toward improved understandings of wellness and disease that can lead to happier and healthier aging for all of us.

In some medical circles, a shift is taking place with the recognition that health span matters more than lifespan: how you age matters more than how long you live. Lifespan refers to the total years alive; Health span refers to years lived in good health, free from major disease or disability or other annoying wellness issues. Extending

health span is increasingly recognized as a more meaningful contributor to longevity than simply extending lifespan (Harvard Health 2026) [2]. Here we detail evidence for a simple and often-overlooked approach for extending health span that is rapidly catching on around the world: Earthing or grounding.

Earthing

Earthing has become a world-wide practice due in part to the global distribution of many translations of a book entitled *Earthing: the most important health discovery ever* (Figure 1) [3]. It has been estimated that 10 million people are using Earthing every day as part of their wellness routines [4]. Grounding or Earthing refers to direct skin contact of humans or animals with the Earth’s surface. This occurs through bare feet, bare hands (as in gardening), or swimming (especially in sea water), or by using grounding devices that bring the benefits of Earth contact into one’s home or office. Indoor Earthing can be accomplished in two ways: with a metal rod inserted into the Earth connected to a wire that goes through a wall or window; or by connecting to the ground terminal of an electrical outlet (Figure 2).



Figure 1: The Earthing book by Ober and colleagues has been translated into many languages.

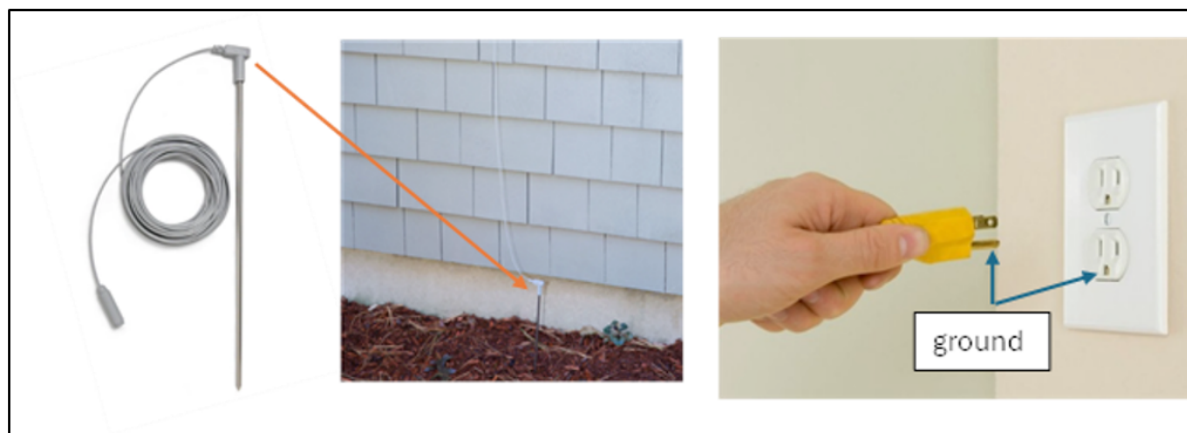


Figure 2: Indoor Earthing can be accomplished in two ways: with a metal rod inserted into the Earth connected to a wire that goes through a wall or window; or by connecting to the ground terminal of an electrical outlet.

Continuing peer-reviewed research and unsolicited enthusiastic feedback from thousands of people from around the world confirms that, for many people, contact with the Earth is indeed having profound significance for health span and longevity. The feedback has revealed that Earthing provides dramatic relief from more than 180 different health challenges, ranging from uncomfortable or cosmetic issues

to potentially fatal chronic diseases [5]. The growing list includes many of the widespread and clinically challenging auto-immune-mediated inflammatory diseases, estimated to affect roughly 5% of the population in westernized countries [6]. According to the US National Institutes of Health, up to 23.5 million Americans (more than seven percent of the population) suffer from autoimmune diseases – and the prevalence is rising. Autoimmune diseases mainly affect women and are a leading cause of disability and death [7]. The global incidence trends in autoimmune diseases reveal an increasing global burden, underscoring the urgent need for approaches that can address this expanding problem [8]. Because of its simplicity, availability, and ease of application, Earthing has great potential for enhancing health span literally around the world.

In view of the huge variety of wellness issues that appear to be prevented and/or resolved by Earthing, we explore hypotheses that can explain how Earthing affects the human body, and what this can teach us about how the human body responds to its environment.

We choose the method of multiple working hypotheses originally developed by 19th-century geologist T.C. Chamberlin [9]. This is a widely cited approach in which several plausible hypotheses are developed and tested, simultaneously, to explain a phenomenon, enhancing objectivity and reducing bias. Hence each hypothesis presented here will be described separately, recognizing that the best answer may involve more than one mechanism of action.

Marco Bischof (2023) summarized the early European investigations of Earthing [10]. Some of the early work dates to the German naturopaths and to the early pioneers of biophysics. Adolf Just (1859-1936) was convinced of the “great curative effect” of barefoot contact with the Earth [11]. Matteo Tavera (1907-1971), a French scientist, studied crops and soil and hypothesized that all life requires “natural electricity” from the surface of the Earth [12]. Experiments on plants confirming Tavera’s hypothesis on the importance of an Earth connection for plant growth have been replicated many times (e.g. Figure 3) [13,14].



Figure 3: The importance of an Earth connection for plant growth has been documented many times. The grounded sunflowers live much longer [13,14].

First Hypothesis: “All life requires “natural electricity” from the surface of the Earth. ~Matteo Tavera [12].”.

Modern research on Earthing began with a report by Ober (2000) and in 2011 by two physicians from Poland [15,16]. By 2004, Ober had invented and patented a variety of systems that can bring the benefits of Earthing into a home or office [17] (Figures 2, 4-8).

Earthing products such as pads, mats, sheets, and patches can be connected to a rod inserted in the Earth or to the ground port of an electrical outlet, allowing one to be grounded while sleeping, working, or relaxing indoors. One of the most valuable applications of

Earthing is as an aid to sleep. It takes only a few minutes to ground your sleeping surface and pillowcase. There are many benefits from improved sleep (Figures 4 and 5).



Figure 4: One of the most valuable applications of Earthing is as an aid to sleep. It takes only a few minutes to ground your sleeping surface and pillowcase. There are many benefits from sound and uninterrupted sleep.

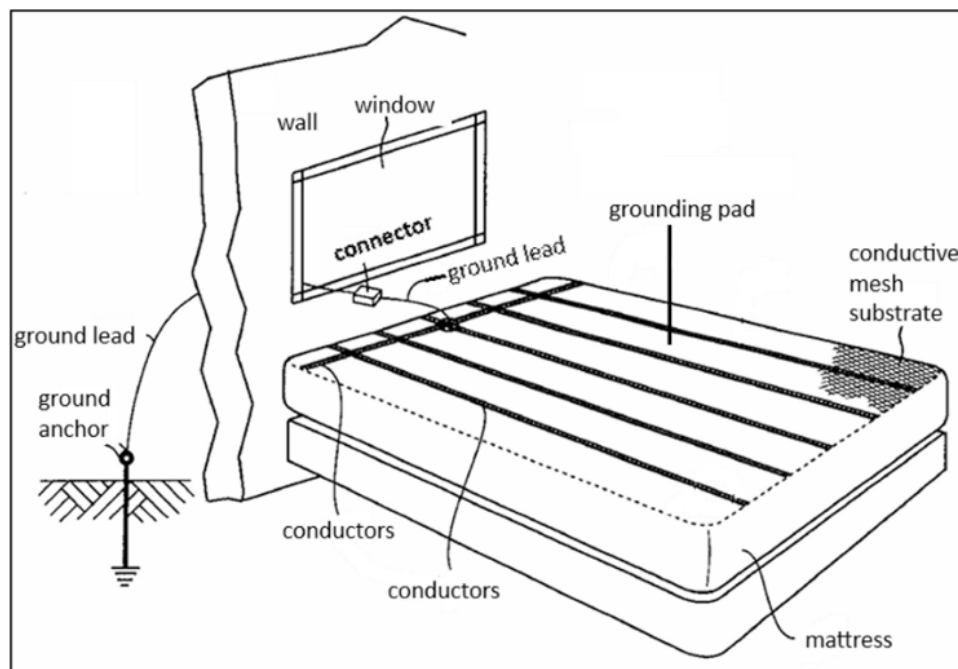


Figure 5: One of Ober's patented sleep systems uses a conductive mesh grounding pad attached to a wire that goes out a window to a ground anchor.

There are also advantages to using Earthing in the office (Figure 6). Ankle or wrist bands can bring relief of pain at various places in the body. Grounding footwear delivers the benefits of Earthing as a person walks on grass or concrete (Figure 7).

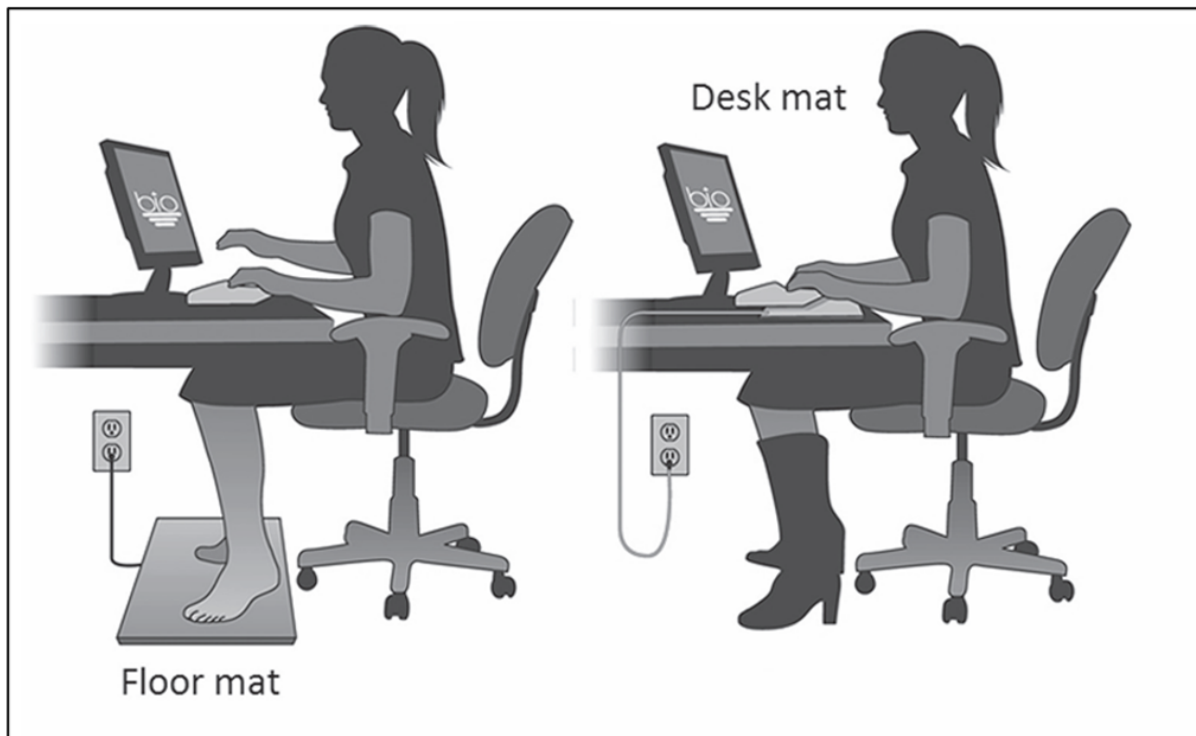


Figure 6: In the office, Earthing can be accomplished by placing bare feet on a grounded floor mat (left) or by resting the wrists on a grounded desk mat (right). These arrangements are especially valuable for those who spend a lot of time at a desk answering the phone and/or using a computer. Businesses employing many individuals in a phone bank will likely experience a reduction in workers' compensation expenses for carpal tunnel syndrome.

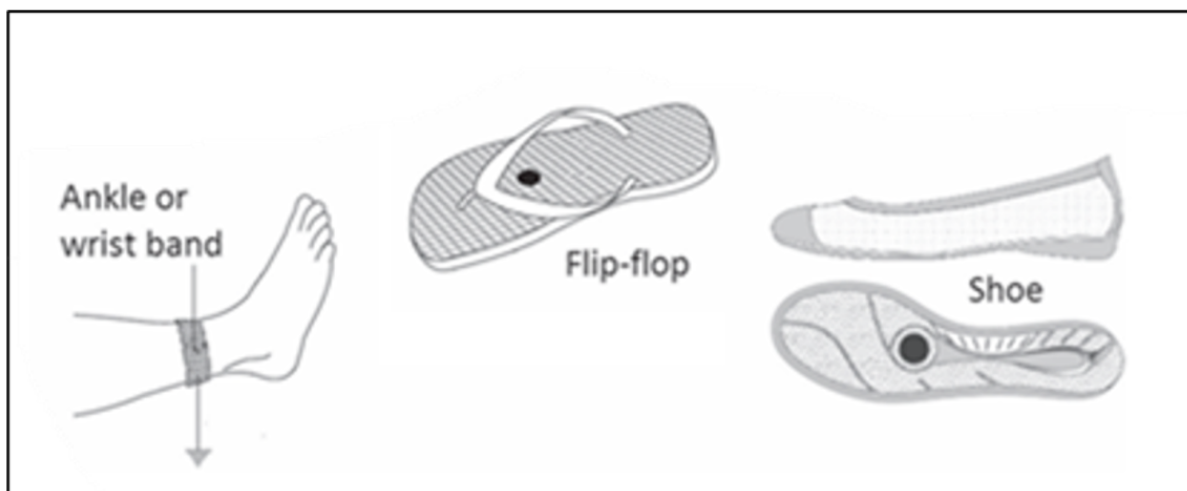


Figure 7: Ankle or wrist bands can bring relief from pain at various places in the body. Grounding footwear delivers the benefits of Earthing as one walks on grass or concrete.

Clinton Ober's first report on Earthing was published in the same year (2000) [18] that Paul Ridker MD and his colleagues at Harvard Medical School reported on a sensitive test for inflammation called hs-CRP that has enabled researchers around the world to establish relationships between chronic inflammation and virtually all chronic diseases [19]. While the discoveries of Ober and Ridker are profound, taken together they help explain both the cause and prevention of the current chronic disease crisis. Specifically, Ober and colleagues have repeatedly emphasized the health consequences of our modern lifestyle that has disconnected us from the surface of the Earth:

Down through the age's humans have sat, stood, strolled, and slept on the ground – the skin of our bodies touching the skin of the Earth. Such ordinary contact has served to transfer the Earth's natural healing energy into the body. What, exactly, is this healing energy? What, exactly, are the properties of the surface of the Earth that give rise to "healing energy"? [20]

In 2010, Ober and Oschman patented an Earthing method for treating inflammation and autoimmune diseases [20]. The discoveries of Ober and his colleagues are clearly documented in an award-winning full-length feature film[#] and in an award-winning book^{*}. The studies of Ridker and colleagues are documented in major publications in leading medical journals. In his 2004 patent, Ober noted that connecting the human body with the Earth (Ground) will create an instantaneous dissipation of any static charges on or in the body. This process is described by the branch of physics known as electrostatics, which teaches that when two conductive objects with different electrical potential touch each other, there is a virtually instantaneous transfer of charge so that the two objects equilibrate to the same electrical potential.

[#]Watch "The Earthing Movie: The Remarkable Science of Grounding," the winner of the Audience Award for Best Documentary at the Los Angeles Dances with Films Festival, the film was directed by Sundance Award-Winning filmmakers Josh and Rebecca Tickell (The Big Fix, FUEL, etc.). The film shares the Tickell family's journey with the healing power of grounding, aka Earthing, and the people they met and learned from along the way; featuring grounding pioneer Clint Ober, author Deepak Chopra M.D., actress/activist Amy Smart, author/activist Mariel Hemingway, cardiologist Dr. Stephen Sinatra, renowned healer Dr Joseph Mercola, engineer, physicist Gaetan Chevalier PhD, biophysicist James Oschman PhD., and many others.

<https://www.youtube.com/watch?v=44ddtR0XDVU&t=1s>

^{*}Earthing: The Most Important Health Discovery Ever! (Second Edition) by Ober, Sinatra and Zucker, winner of the 2011 Nautilus Award in Wellness/Prevention/Health & Healing. Nautilus Awards recognize books that promote spiritual growth, conscious living,

and positive social change, while at the same time stimulating the "imagination" and offering the reader "new possibilities" for a better life and a better world.

Second Hypothesis: Earthing instantaneously dissipates static charges on or in the body. ~Ober (2000) [18].

Biological wires

The conductivity of the human body arises because of conductor systems known as biological wires [21]. Specifically, within the body, microtubules, actin, and collagen are macromolecular structures that comprise a large percentage of the proteins in the human body. It has been proposed that these materials form biological wires that are structurally and energetically interconnected through various other proteins to form organism-wide high-speed regulatory communication networks. The theoretical basis for this concept comes from the tensegrity work of Ingber et al. [22] and Guimberteau [23] as well as the theories of Oschman (1984) [24-26], and Ho [27] who have theorized submolecular (electronic, protonic, and ionic) communication systems in the body, and the work of Nobel Laureate Albert Szent-Györgyi [28,29], concerning the idea that proteins in organisms possess semiconducting properties.

Just as the body contains conductors of electricity, the surface of the Earth is also conductive [30]. The currents flowing in the Earth are called telluric currents or Earth currents; they are natural, low-frequency electric currents flowing through the Earth, generated mainly by solar and geomagnetic interactions. Chevalier has summarized the nature and origins of these currents, which are the accumulated effect of thousands of thunderstorms. These storms deliver a continuous current from the surface of the earth up to the ionosphere. The current spreads around the ionosphere and returns to the Earth via lightning strikes. The whole circuit is called the global electrical circuit. The current in this circuit is tiny but may be involved in the physiological effects of Earthing.

In his 2004 patent, Ober described the significance of discharging electrostatic fields to the Earth ground. Scientists in the field of electromagnetic radiation and bio-electromagnetics have carefully documented how exogenous electrical fields, such as those produced by household electric wiring and overhead power lines, can interfere with the regulatory fields within the body and produce adverse physiological effects [31,32].

Ober also sponsored research documenting many physiological effects of Earthing. There is much to be learned from looking closely at the mechanisms by which new and successful methods such as Earthing deliver favorable outcomes. Along with dozens of collaborators, the first author of this report has investigated the scientific basis of Earthing for some 25 years and has authored

and co-authored dozens of articles and book chapters on the topic [33]. Since the year 2000, more than 40 Earthing studies have been published in peer reviewed journals (listed on the Earthing Institute web page). Some of this research has been done by independent researchers from 10 countries, and at major universities in California, Oregon, Pennsylvania, and California. A 2019 study from the prestigious Olympic Training Center in Rif-Hallen, Austria, published in *Frontiers in Physiology* [34] showed that athletes who slept on grounding mattress pads recovered faster from strenuous downhill running than those who used ungrounded pads. The earthed group had better performance levels and smaller increases in markers of muscle damage. These results, along with the discovery that Earthing increases the mitochondrial output of the energy compound, Adenosine Triphosphate (ATP) [35] explain why many athletes, challenged to reach their full potential, find Earthing to be invaluable in preparing for and recovering from strenuous or bruising competitions.

Third Hypothesis: “All life requires “natural electricity” from the surface of the Earth. ~Mattheo Tavera [12].”.

The technologies developed by Ober include conductive grounding sheets for a bed; grounding pads for under the feet or wrists when working at a computer; bracelets that can be worn around the wrist or ankles or chest; and flip-flops and comfortable shoes that connect people with the earth as they are walking on grass or concrete. The shoes and flip-flops have conductive plugs positioned at acupoint Kidney 1 on the bottoms of the feet to allow continuity between the surface of the Earth and the meridian system that extends throughout the body.

Earthing patches on the chest have been recommended for the prevention of the cytokine storm that can lead to deadly pneumonia caused by Covid 19 and other respiratory conditions (Figure 8).

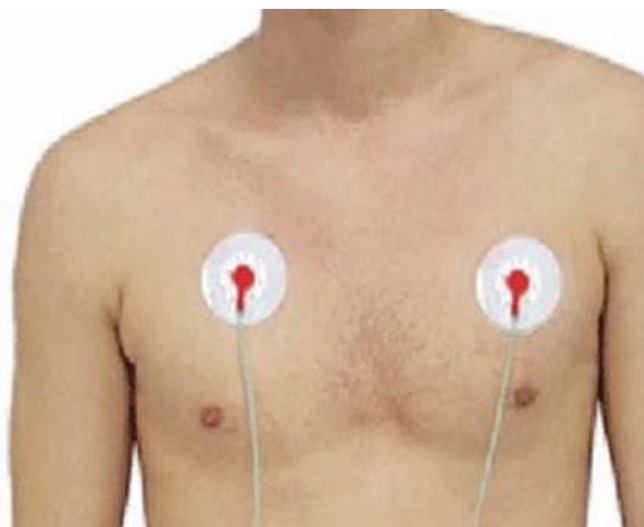


Figure 8: Earthing patches placed over lung areas can provide quick relief from respiratory conditions caused by severe asthma, allergies, COPD or flu. Wires plug into ground port of the electrical system. This approach is especially valuable in preventing the dangerous cytokine storm caused by Covid infections, which can lead to pneumonia. For example, feedback from a lawyer whose wife developed coronavirus symptoms: “A grounding patch on her chest has helped her immensely.”

Conductivity of the Earth

Just as the human body contains a body-wide system of biological wires, the surface of the Earth is electrically conductive and piezoelectric. The piezoelectric effect is important because any mechanical vibrations on or in the fabric of the Earth will be converted into electrical oscillations that can be conducted along

or through the surface of the Earth and absorbed by a person in contact with the ground. Quartz is a classic piezoelectric material and constitutes about 12-20% of the Earth's crust by volume, making it the second most abundant mineral in the surface of the Earth after feldspar [36].

The critical reader will ask if Earthing can be recommended in the absence of the “gold standard” randomized clinical trials and FDA certifications. The reason is simple: extensive study and

feedback from those who use Earthing have revealed that Earthing makes a dramatic difference in situations of respiratory distress, including those caused by severe asthma, allergies, COPD and flu. For example, feedback from a lawyer whose wife developed coronavirus symptoms: “A grounding patch on her chest has helped her immensely” (Figure 8). Read the feedback statements listed on the Earthing Institute web page.

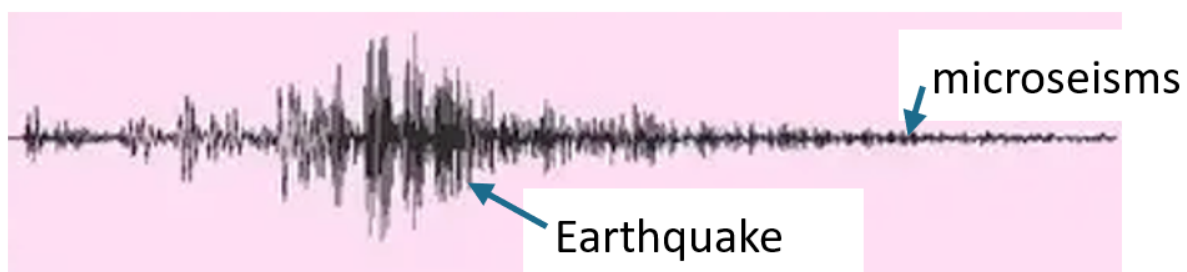


Figure 9: Seismograph shows normal background vibrations (called microseisms) interrupted by a large signal from an earthquake. Earthquakes can range in intensity, from those so weak they cannot be felt, to those violent enough to propel objects into the air, damage critical infrastructure, and wreak destruction across entire cities.

Conclusions

If more widely utilized, Earthing can deliver immediate and consequential advances to health span for people world-wide. A beginning toward widespread delivery of this promise has been made because of the growing appreciation of the benefits of Earthing and the many translations of the Earthing book.

Several studies have shown that people can begin to experience the benefits of Earthing after about 30 minutes of Earth contact. Studies have documented that sleeping on a conductive sheet or pad or pillow connected to the surface of the Earth can significantly improve sleep and thereby have a variety of healthful outcomes [37]. There are profound economic consequences as well:

- Sleep deprivation costs add up to \$280-\$411 billion annually from the U.S. economy—more than most nations' entire GDP. You're paying this hidden tax through higher healthcare costs, reduced wages, dangerous accidents, and productivity losses that ripple through every corner of American business; Income follows sleep patterns – those sleeping 7 hours earn \$68,000-\$78,000 annually vs. \$42,000-\$48,000 for 4-hour sleepers [38].

Earthing research is providing us with new insights into how our physiology depends on appropriate relationships with our immediate environment; specifically, with the surface of the earth.

The focus of the research continues to be to explain how such a simple and virtually effortless method (contacting the surface of our planet) can prevent and/or relieve such a wide variety of wellness issues.

One purpose of this article is to summarize the explanations that can account for the benefits of earth contact. We also consider the nature of the “natural electricity” postulated by Matteo Tavera. Specifically, precisely what are the properties of the surface of the Earth and of the human body that contribute to the wellness of those who touch the surface of our planet?

On the basis of preliminary observations, a logical explanation emerged from the following considerations:

Infrared thermography (IRT), also known as thermal imaging, is a measurement and imaging technique in which a thermal camera detects infrared radiation originating from the surfaces of objects. The result is a visible image called a thermogram. One characteristic of inflammation is heat, which shows up in thermograms. Research with this method [39] showed rapid resolution of inflammation that might be accounted for by a flow of antioxidant electrons from the Earth to the body. For some years, this was the main working hypothesis for the wellness effects of Earthing. In terms of Chamberlin's method of multiple working hypotheses, this was a classic example of a situation in which the facts, as they

were discovered, seemed to fit in with and support the electronic hypothesis for the effects of Earthing. However, when we look at all of the hypotheses that have emerged, and recent unpublished data, we are required to look more deeply at the electrons and consider other properties besides charge that may be important for their wellness effects. One of these properties is frequency.

Due to the electrical conductivity and piezoelectric properties of the surface of the Earth, it is possible that Earth vibrations of various kinds can modulate or accompany the fields of the electrons flowing in the telluric circuits within the Earth and into the Earthed body. Various kinds of vibrations within the Earth's crust result in seismic activities which range from those that are too small to be felt (microseisms) to huge destructive earthquakes (Figure 9). The surface of the Earth conducts sound vibrations and converts them to electrical signals because of the piezoelectric properties of quartz, which is abundant in the surface layers. There is a continuous background of microseisms of various frequencies, caused by both human activities (e.g. fracking, weapons testing, machinery, etc.) and natural sources (rotation of the Earth's core, ocean waves arriving at shores, etc.). Some of these microseisms are highly regular and mysterious (the Earth is pulsating every 26 seconds, and seismologists don't agree why) [40].

A new study from MIT has shown that the germination of seeds is accelerated by the sounds of rain drops impacting the soil surface [41]. The impact of rain drops has spectral components in the low frequency range between 10 and 100 Hz. Plant seeds can sense this kind of stimulation by movement of statoliths in statocyte cells, an effect that triggers a gravitropic response. The possible operation of this mechanism gives us the possibility of something similar that might be taking place with the vibration sensors in the human body. This sensing could be accomplished by semiconducting elements in the biological wires described above, or in the vibration detectors in the inner ear.

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