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## Editorial Note

## Is a return to nature a piece of the health puzzle?

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In 1896, a German bookseller and self-educated man named Adolf Just founded the Jungborn sanatorium to promote a natural healing approach based on the effects of sunlight, food, water, air, plants, and the earth. In this outpost of civilization, people from all walks of life would make a “return to nature” to recover health, getting as much sunlight as possible, eating fresh and unprocessed food, walking barefooted on wet lawns, and sleeping on the bare ground in light-frame dwellings [1]. According to Just, humans had developed chronic diseases because they had been out of touch with nature for too long, living in cities and houses and using technologies that had not been designed for the human body. Words of reported health benefits spread fast and even Franz Kafka spent several weeks at Jungborn for a much needed break [2].

While it is hard to evaluate health claims promoted at Jungborn back then, everybody can attest to the beneficial

effects of a day at the beach. This will be quickly attributed to reduced stress, being away from the office, or a boost of vitamin D. However, it is reasonable to ask the question: could being in direct contact with the ground and far away from electromagnetic pollution also contribute to this wonderful feeling we all have at the beach? Some studies indicate that getting in direct contact with the ground, after removing shoes and avoiding non-conductive materials such as asphalt, rubber, and plastic, can produce some health benefits, especially reducing inflammation [3,4] (Fig. 1).

We dedicate this special issue to the memory of Dr. Stephen T. Sinatra who passed away in June 2022, while this special issue was being prepared. Dr. Sinatra was a board-certified cardiologist who pioneered the use of coenzyme Q<sub>10</sub> to prevent and treat cardiovascular disease. Like Adolf Just and many other holistic physicians, Dr. Sinatra considered that cardiovascular disease should be viewed from a comprehensive perspective that comprises an anti-inflammatory diet, dietary supplements, regular exercise, detoxification, stress management, and grounding. He will be greatly missed.

In the first article of this special issue on grounding, Sinatra and colleagues describe that the global electrical circuit produces positive charges in the ionosphere and free electrons that reach the earth's surface in large numbers via lightnings [5]. These electrons may enter the human body and act as antioxidants by neutralizing free radicals. Similarly, electromagnetic waves called Schumann resonances continually bounce back and forth between the ionosphere and the surface of the earth, and provide an important signal for life on earth [5]. Both electromagnetic phenomena can be blocked or attenuated when the human body is not in direct contact with

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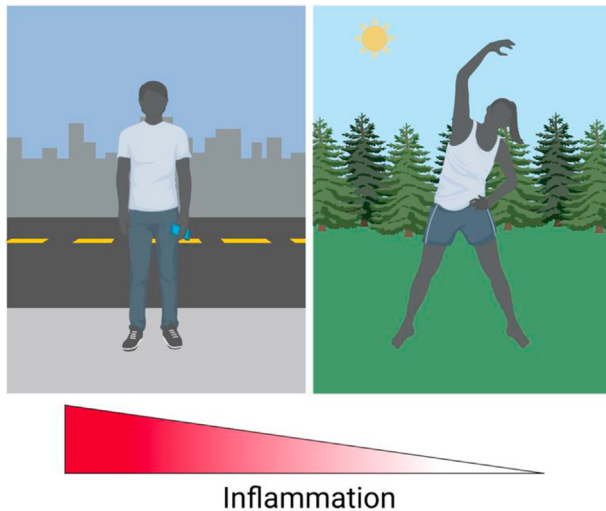


Fig. 1 Grounding can reduce inflammation in the human body.

the earth, thus potentially explaining some of the benefits of grounding or “earthing.”

Described as “vitamin G” or “electronic nutrition” by Sinatra and colleagues, grounding has been shown to reduce signs of inflammation, which, as these authors remind us, is the root cause of many chronic diseases. Their review describes studies which indicate that grounding produces health benefits against hypertension, type 2 diabetes, high blood viscosity, tissue injuries, and even Covid-19 [5]. This group concludes that grounding may represent a therapy of choice since it is free, easy to use, and backed by an increasing number of scientific studies [5].

Dr. James L. Oschman, author of two insightful textbooks on energy medicine and bioelectromagnetism [6,7], notes that some of the cardinal signs of inflammation—redness, swelling, heat, pain, and loss of function—are more obvious in the non-grounded state [8]. Dr. Oschman describes the possibility that electrons from the ground may circulate inside the body along semi-conducting proteins that act as “biological wires” and form “the living matrix,” delivering electrons to every organ and cell via fascias, connective tissues, trans-cellular integrins, and the cytoskeleton [8]. Acupuncture comes to mind here since metal needles are inserted on low resistivity points which may provide time-of-the-day information from the global electric circuit, or in other words, electrons in the air. Dr. Oschman notes that these antioxidant electrons may reach mitochondria, offering protection against reactive oxygen species (ROS) but possibly inducing ATP production as well, a hypothesis that remains to be tested. The author concludes that some people living in developed countries may be suffering from electron deficiency, leading to inflammation, pain, stress, fatigue, and sleep disorders [8]. This could be alleviated by grounding on a regular basis.

Dr. Isaac A. Jamieson brings another dose of insights into the practice of grounding [9]. Dr. Jamieson develops the concept of “electromagnetic hygiene” as practices that favor health and well-being by optimizing the bio-friendliness of electromagnetic environments. In other words, grounding in an indoor electromagnetically-polluted environment—in which the body is near electrical apparatuses and wireless devices—may still result in a build-up of excess charge on the body and interfere with physiological functions. Furthermore, grounding the body may increase the absorption of radiofrequencies from wireless devices, further supporting the importance of electromagnetic hygiene and grounding in nature [9].

Dr. Jamieson cites numerous research studies indicating that modern building materials such as reinforced concrete with embedded steel bars may produce Faraday cage-like conditions that partially block the earth's geomagnetic field and Schumann resonances [9]. No wonder that sleeping in a tent while camping in the wild feels so refreshing! Dr. Jamieson identifies other factors that might affect grounding efficacy including moisture of the skin which is needed to favor conductivity as well as seasonal changes in soil conductivity, with optimal results observed in spring and autumn [9].

Dr. Laura Koniver's account of grounding is pertinent and noteworthy as she is a physician who experienced first-hand the health benefits of this practice [10]. Dr. Koniver cites research indicating that human subjects who were isolated from the earth's electromagnetic fields in bunker dwellings showed impaired circadian rhythms, which could be at least partially restored by a 10-Hz electrical field similar to the main Schumann resonance. Research is cited suggesting that having contact with this global electrical circuit reduces pain and stress and improves blood flow, heart rate variability (HRV) and immune functions. Dr. Koniver recommends taking at least one meal a day while grounded outside, which she proposes may improve digestion and nutrient absorption via activation of the vagus nerve [10]. Other excellent suggestions are to exercise, meditate or practice yoga while grounded in nature to obtain a full dose of sunlight and vitamin G [10].

In our own article, we describe a series of studies indicating that grounding may work by enhancing the effects of the earth's electromagnetic fields on the circadian rhythm [11]. The earth's electromagnetic fields can influence and entrain the circadian rhythm which controls our hormones, metabolism, nervous system, and immune system. Given that the earth's electromagnetic fields vary with the number of sunspots, solar storms, and seasonal variations, we describe how these variations may affect human health, resulting in cyclic and spontaneous peaks of morbidity and mortality worldwide. For instance, Covid-19 and most chronic diseases increase during seasonal weakening of the geomagnetic field (i.e., during winter in the Northern and Southern hemispheres), consistent with a spontaneous rise of inflammatory markers in people living in these areas. Clearly, these health effects are also associated with reduced

vitamin D production and cold weather in the winter, but we believe that the earth's electromagnetic fields should also be taken into consideration.

Given that sunlight is the main stimulus for the production of electrons in the global electrical circuit, reduced sunlight and geomagnetic field intensity as well as a high level of electromagnetic pollution may affect human health by disrupting the circadian rhythm, possibly by reducing the number of electrons that migrate on geomagnetic field lines, although a series of apparently redundant mechanisms involving resonance, retina cryptochromes, magnetite nanoparticles and formation of exclusion zone (EZ) water may also be involved [11]. Grounding in nature may thus be beneficial by enhancing the effects of the earth's natural electromagnetic fields which can be partially blocked by non-conductive materials and electromagnetic pollution [11].

Dr. Haider Abdul-Lateef Mousa performed an observational study to examine the effects of grounding on 71 Covid-19 subjects [12]. Grounding was done either in nature or via a device that connects to the ground via an electric outlet. Sixty-nine of these subjects improved following grounding for 15 min to 6 h per day, while 2 people did not survive. Improvements included a reduction of dyspnea and fever and improved blood oxygen levels, among others [12]. This preliminary study supports previous reports suggesting that grounding, possibly via its anti-inflammatory effect and increased pH in the respiratory tract, may be beneficial against Covid-19 [13,14].

The articles published here suggest that grounding may provide numerous health benefits, notably against inflammatory conditions. With a better understanding of the benefits and limitations of grounding, we believe that this practice can be safely integrated within a healthy lifestyle involving regular physical exercise, a healthy diet, abundant sunlight, exposure to forests and other green spaces, proper sleep, intermittent fasting, and reduced electromagnetic pollution. The late Adolf Just may have been right after all. Going back to nature is a piece of the health puzzle that many people have overlooked. Maybe we should plan more days at the beach!

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