

Grounding and the Gut-Brain Axis: A Review of Emerging Mechanisms and Health Implications

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ABSTRACT

The gut-brain axis is a complex bidirectional communication system linking the enteric and central nervous systems through neural, immune, endocrine, and microbial pathways. Disruption of this axis has been implicated in a wide range of health conditions, including gastrointestinal disorders, mental health disturbances, and metabolic dysregulation. Natural strategies such as psychobiotics, exercise, sleep hygiene, and stress reduction have been explored as methods to enhance this axis. However, an important holistic intervention—grounding, or earthing—has been largely overlooked. Grounding refers to direct physical contact with the Earth's surface electrons, which immediately influences vagal tone, reduces inflammation, regulates circadian rhythms, and improves mood and digestive function. Because grounding simultaneously targets brain, autonomic, and digestive pathways, it may be uniquely suited to support and heal the gut-brain axis. This review synthesizes the growing medical evidence on how grounding affects vagal regulation, inflammation, emotional health, microbiome signaling, and digestive motility, and makes a case for grounding as a powerful, under-recognized tool in gut-brain axis restoration.

Keywords

Grounding, Earthing, Gut-brain axis, Vagal tone, Inflammation, Circadian rhythm, Microbiome, Heart rate variability, Parasympathetic nervous system, Autonomic nervous system, Psychobiotics.

Introduction

The gut-brain axis represents a complex, bidirectional network integrating the central nervous system (CNS), enteric nervous system (ENS), vagus nerve, immune system, and microbiome. A healthy gut-brain connection is critical for optimal digestion, immune function, cognition, and emotional regulation. Factors such as chronic inflammation, dysregulated cortisol rhythms, vagal dysfunction, and psychological stress can disrupt this system and contribute to disorders like irritable bowel syndrome (IBS), anxiety, and depression. Much scientific and clinical focus has been placed on interventions such as probiotics (“psychobiotics”), sleep, exercise, and stress management to support this axis [1,2]. While these approaches are valuable, a profoundly holistic and

immediately effective intervention remains under-recognized: grounding.

Grounding—direct physical contact between the conductive human body and the Earth's global electric grid—has been shown to exert regulatory effects on many of these same physiological systems. Grounding has been shown in emerging medical research to rapidly enhance vagal tone, reduce inflammation, regulate cortisol and circadian rhythm, and improve psychological resilience [3-6]. Because these same systems are central to the gut-brain axis, grounding is likely a potent, multifactorial intervention that naturally enhances gut-brain communication. This review explores how grounding interfaces with key components of the gut-brain axis and outlines mechanisms by which grounding may restore and optimize digestive and emotional health.

Grounding Enhances Vagal Tone and Autonomic Regulation

The vagus nerve is the principal neural conduit linking the gut and brain. Vagal tone, reflected in heart rate variability (HRV), is a key

indicator of parasympathetic nervous system activity and gut-brain axis functionality. High vagal tone improves intestinal motility, reduces visceral sensitivity, reduced gastrointestinal inflammation, increased secretion of digestive enzymes, and enhances the brain's ability to regulate stress and mood [7-9].

In a double-blind crossover study, grounded individuals demonstrated significantly increased HRV compared to sham-grounded controls, indicating enhanced parasympathetic (rest-and-digest) activity within minutes of grounding [10]. These changes persisted with continued exposure, suggesting that grounding may be a sustainable autonomic regulatory therapy that enhances parasympathetic nervous system dominance long term. Vagal stimulation has been shown to enhance intestinal motility and decrease visceral hypersensitivity, central features of IBS and other functional GI disorders [11]. Grounding may enhance gut-brain communication by activating vagal pathways that coordinate digestive reflexes, stress response, emotional regulation and gut-brain communication.

Grounding Reduces Systemic Inflammation

Chronic low-grade inflammation is a hallmark of gut-brain axis dysfunction. Inflammation disrupts gut epithelial integrity and contributes to intestinal permeability ("leaky gut"), altered microbiota, disrupts immune tolerance, and interferes with neuronal signaling and mood dysregulation [12]. Grounding has been shown to reduce pro-inflammatory cytokines such as tumor necrosis factor-alpha (TNF- α) and interleukin-6 (IL-6) [13-15] the exact same cytokines that cross the blood brain barrier and affect mood [16-19]. Chevalier and colleagues demonstrated reduced inflammatory markers and increased neutrophil response following delayed-onset muscle soreness in grounded subjects [20]. These effects suggest a downregulation of inflammatory pathways that are known to interfere with gut-brain signaling. By reducing systemic and gut-specific inflammation, grounding may support intestinal barrier integrity, reduce neuroinflammation, and promote microbial and neuronal homeostasis.

Grounding Improves Cortisol Rhythms and Circadian Alignment

Circadian rhythms govern not only sleep-wake cycles but also digestion, hormone release, microbiome cycling, and brain neurotransmitter activity. The gut microbiome and digestive function are deeply intertwined with circadian rhythms. Disruptions in sleep or cortisol secretion can alter microbial composition, increase gut permeability, and impair neurotransmitter synthesis and have been linked to gut disorders, mood disorders, and metabolic dysfunction. [21,22].

In a study evaluating diurnal cortisol secretion, grounded subjects exhibited normalized cortisol rhythms and improved sleep parameters by Ghaly and Teplitz found that grounding during sleep normalized diurnal cortisol rhythms in just eight weeks, improving subjective sleep quality and decreasing stress perception [23]. Further research has further confirmed that grounding improves

sleep quality and time spent in restorative sleep phases [24]. Grounding may function as a non-photic zeitgeber (environmental time cue), helping resynchronize internal clocks with natural diurnal patterns. Grounding may restore circadian-driven digestion and microbiome rhythms, which are key to gut-brain health, so hopefully future studies will elaborate on grounding's potential role to enhance gut-brain synchronicity, improve gut microbiota cycling, and boost neurohormonal signaling.

Grounding Supports Mental Health and Reduces Psychological Stress

Mood disorders such as anxiety and depression are closely associated with gut dysbiosis and poor digestive function. Psychological stress directly affects gut motility, secretory function, and microbial composition through both neural and hormonal pathways. Grounding has demonstrated significant reductions in perceived stress, anxiety, depression, and mood disturbance as shown in multiple clinical trials evaluating mood, stress, and energy levels [25-27]. Grounding significantly reduces depression and anxiety scores, improves energy and mood, and has also been shown to help protect brain function by decreasing markers of brain stress and improving cognitive performance [28,29]. By mitigating stress, grounding may enhance mental health by reducing HPA axis overactivation and improving gut-derived neurotransmitter production (e.g., serotonin, GABA).

Grounding May Stimulate Digestive Reflexes and Motility

Although not yet widely studied in GI-focused clinical trials, there is strong physiological rationale—and emerging clinical observation—suggesting that grounding enhances peristalsis, salivary flow, and enzymatic digestion. These effects are likely mediated by vagal stimulation and improved parasympathetic tone. Grounding has been shown in multiple double blinded medical studies to help boost vagal tone, as documented by its powerful and consistent ability to improve heart rate variability [30-33] a key marker of vagal nerve function.

Patients have reported increased digestive comfort, bowel regularity, and reduced symptoms of bloating and constipation with routine grounding. Such observations are consistent with the neuroenteric reflex pathways governed by the vagus nerve [34]. Considering the large portion of the digestive tract that is directly innervated by the vagus nerve—from the esophagus to the colon—it's reasonable to suggest that grounding may improve autonomic gut functions and hopefully future studies will investigate further how grounding may stimulate the cephalic phase of digestion and improve vagal-mediated gastrointestinal reflexes. Grounding could be a supportive therapy for functional GI symptoms such as constipation, bloating, and delayed gastric emptying, motility dysfunction and dyspepsia.

Discussion: Grounding as a Holistic Gut-Brain Intervention

Although widely discussed interventions for gut-brain health include psychobiotics, exercise, and meditation, grounding offers a novel yet underappreciated holistic method that immediately

influences many of the major channels of gut-brain interaction—neurological, endocrine, and immune. Because grounding supports vagal tone, reduces inflammation, normalizes cortisol rhythms, and improves emotional health, it simultaneously affects the brain, the gut, and the interface between the two. The biological plausibility of grounding's influence on the gut-brain axis is high, and its therapeutic potential merits targeted research, particularly in conditions like IBS, anxiety, and depression. Given enough investigating into this novel healing modality, grounding may soon take its place alongside diet, sleep, and probiotics as an essential part of integrative digestive health care.

Conclusion

Grounding presents a free, highly accessible holistic healing modality that may positively influence multiple pathways within the gut-brain axis, including vagal regulation, decreasing inflammation, improving circadian rhythm, and boosting emotional resilience. Grounding is an accessible, low-cost intervention that simultaneously targets vagal regulation, inflammation, circadian alignment, and emotional well-being—all of which are core components of the gut-brain axis. Though more clinical trials are needed to confirm its specific effects on gastrointestinal and neuropsychiatric disorders, the current evidence base supports grounding as a compelling, natural tool to restore and maintain gut-brain harmony.

References

1. Cryan JF, Dinan TG. Mind-altering microorganisms the impact of the gut microbiota on brain and behaviour. *Nat Rev Neurosci*. 2012; 13: 701-712.
2. Carabotti M, Scirocco A, Maselli MA, et al. The gut-brain axis interactions between enteric microbiota central and enteric nervous systems. *Ann Gastroenterol*. 2015; 28: 203-209.
3. Chevalier G, Sinatra ST, Oschman JL, et al. Earthing health implications of reconnecting the human body to the Earth's surface electrons. *J Environ Public Health*. 2012; 2012: 291541.
4. Oschman JL, Chevalier G, Brown R. The effects of grounding earthing on inflammation the immune response wound healing and prevention and treatment of chronic inflammatory and autoimmune diseases. *J Inflamm Res*. 2015; 8: 83-96.
5. Ghaly M, Teplitz D. The biologic effects of grounding the human body during sleep as measured by cortisol levels and subjective reporting of sleep pain and stress. *J Altern Complement Med*. 2004; 10: 767-776.
6. Chevalier, Gaetan, Sinatra ST. Emotional stress, heart rate variability grounding and improved autonomic tone: clinical applications. 2011; 10: 16-21.
7. Breit S, Kupferberg A, Rogler G, et al. Vagus nerve as modulator of the brain-gut axis in psychiatric and inflammatory disorders. *Front Psychiatry*. 2018; 9: 44.
8. Kaczmarek BK, Kaczmarek LD, Behnke M. Grounding as a self-calming technique a randomized controlled trial on emotional and physiological regulation. *Complement Ther Clin Pract*. 2020; 39: 101146.
9. Bonaz B, Bazin T, Pellissier S. The Vagus Nerve at the Interface of the Microbiota-Gut-Brain Axis. *Front Neurosci*. 2018;12: 49.
10. Chevalier G, Mori K. The effect of earthing on human physiology. *Eur Biol Bioelectromagn*. 2009; 1: 23-40.
11. Carabotti M, Scirocco A, Maselli MA, et al. The gut-brain axis interactions between enteric microbiota central and enteric nervous systems. *Ann Gastroenterol*. 2015; 28: 203-209.
12. Kelly JR, Kennedy PJ, Cryan JF, et al. Breaking down the barriers the gut microbiome intestinal permeability and stress-related psychiatric disorders. *Front Cell Neurosci*. 2015; 9: 392.
13. Brown D, Chevalier G, Hill M. Pilot study on the effect of grounding on delayed onset muscle soreness. *J Altern Complement Med*. 2010; 16: 265-273.
14. Müller E, Pröller P, Ferreira-Briza F, et al. Effectiveness of grounded sleeping on recovery after intensive eccentric muscle loading. *Front Physiol*. 2019; 10: 1443.
15. Oschman JL, Chevalier G, Brown R. The effects of grounding earthing on inflammation the immune response wound healing, and prevention and treatment of chronic inflammatory and autoimmune diseases. *J Inflamm Res*. 2015; 8: 83-96.
16. Treadway MT, Cooper JA, Miller AH. Can't or Won't Immunometabolic Constraints on Dopaminergic Drive. *Trends Cogn Sci*. 2019; 23: 435-448.
17. Santoft F, Hedman-Lagerlöf E, Salomonsson S, et al. Inflammatory cytokines in patients with common mental disorders treated with cognitive behavior therapy. *Brain Behav Immun Health*. 2020; 3: 100045.
18. Felger JC, Lotrich FE. Inflammatory cytokines in depression neurobiological mechanisms and therapeutic implications. *Neuroscience*. 2013; 246: 199-229.
19. Mucci F, Marazziti D, Della Vecchia A, et al. State-of-the-Art Inflammatory and Metabolic Markers in Mood Disorders. *Life Basel*. 2020; 10: 82.
20. Chevalier G, Sinatra ST, Oschman JL, et al. Earthing health implications of reconnecting the human body to the Earth's surface electrons. *J Environ Public Health*. 2012; 2012: 291541.
21. Leone V, Gibbons SM, Martinez K, et al. Effects of diurnal variation of gut microbes and high-fat feeding on host circadian clock function and metabolism. *Cell Host Microbe*. 2015; 17: 681-689.
22. Voigt RM, Forsyth CB, Green SJ, et al. Circadian disorganization alters intestinal microbiota. *PLoS One*. 2014; 9: e97500.
23. Ghaly M, Teplitz D. The biologic effects of grounding the human body during sleep as measured by cortisol levels and subjective reporting of sleep pain and stress. *J Altern Complement Med*. 2004; 10: 767-776.
24. Lin CH, Tseng ST, Chuang YC, et al. Grounding the body improves sleep quality in patients with mild Alzheimer's disease A pilot study. *Healthcare*. 2022; 10: 581.

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25. Kaczmarek BK, Kaczmarek LD, Behnke M. Grounding as a self-calming technique a randomized controlled trial on emotional and physiological regulation. *Complement Ther Clin Pract.* 2020; 39: 101146.
 26. Koniver Laura. Grounding to Treat Anxiety. *Medical Research Archives.* 2024; 12: 12.
 27. Brown D, Chevalier G, Hill M. Pilot Study on the Effect of Grounding on Mood. *Psychol Rep.* 2010; 106: 147-156.
 28. Koniver L. Neurological Pathways Supported by Grounding. *Open J Neurol Neurosci.* 2023; 1: 1002.
 29. Koniver L. Could Grounding Improve Cognition. *Curr Res Cmpl Alt Med.* 2024; 8: 252.
 30. Osch GL, Chevalier G, Sokal K, et al. Grounding the Human Body Influences Physiologic Processes. *J Altern Complement Med.* 2015; 21: 144-153.
 31. Chevalier G. Changes in Pulse Rate Respiratory Rate Blood Oxygenation Perfusion Index Skin Conductance and Their Variability Induced During and After Grounding. *J Altern Complement Med.* 2010; 16: 81-87.
 32. Rohit Passi, Kim K. Doheny, Yuri Gordin, et al. Electrical Grounding Improves Vagal Tone in Preterm Infants. *Neonatology.* 2017; 112: 187-192.
 33. Chevalier Gaetan, Sinatra ST. Emotional stress heart rate variability grounding and improved autonomic tone clinical applications. 2011; 10: 16-21.
 34. Mayer EA. Gut feelings the emerging biology of gut-brain communication. *Nat Rev Neurosci.* 2011; 12: 453-466.