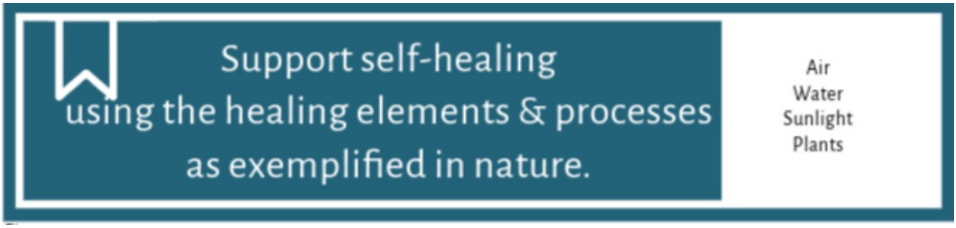
SECTION V

Support self-healing using Nature's non-suppressive properties & processes.



TOPIC 1: Minute-dose Medicines	Don Warren, ND, DHANP
TOPIC 2: Botanical Medicine	Lesley Braun,PhD, Pharm; Matthew Wood, MS, AHG; Sue Evans, PhD, FNHAA; Mary Bove, ND; Jill Stansbury, ND; Bill Mitchell, Jr., ND; Dawn Whitten, ND, BNat(Hons), IBCLC, FNHAA; Greg Whitten; Stephen P Myers, ND, BMed, PhD; Letitia Dick-Kronenberg, ND, FNMI
TOPIC 3: Physical Medicine	Nick Buratovich, NMD; Paul Orrock, ND, DO; Michael J. Cronin, ND, DAAPM; Doug Lewis, ND; Rick Marinelli, ND, LAc
TOPIC 4: The Ductless Glands and Neurasthenia: An historical account	Sussanna C. Czeranko, ND
TOPIC 5: *Tolle totum* — Evolution of the 'Whole Patient' in Nature Cure: Then and now	AmyN.McBride,MS, MAP
TOPIC 6: The Effects of Light and Color on Health and Wellbeing	Cheryl Deroin, NMD
TOPIC 7: Contact with Nature: An essential component for optimal health	Kurt Beil, ND, LAc, MPH

Section V Overview

Support self-healing using the healing elements & processes as exemplified in nature

YOU MAY WONDER about the common thread that ties together what appears to be a diverse collection of topics in this section. That common thread is the use of nature's non-suppressive properties to support the body's self-healing functions. In some cases, this may simultaneously include detoxification – ridding the body of impurities that impede its progress toward health.

At times, the body may require preparatory measures, such as homeopathic and botanic 'drainage' remedies to support effective detoxification or for treatment of chronic or acute conditions. Early nature doctors also realized the importance of physical medicine to help stimulate movement of blood and lymph through the body to assist with detoxification efforts. And, in adherence to a holistic philosophy of practice, nature cure doctors also turned to nature to address the psychoemotional health of patients. Various approaches not only provided relief from anxiety or daily stress, but importantly also included expressive therapies to detoxify one's emotional state (known today also to affect a patient's physiologic state).

In addition to water, Nature's other resources, such as light and plants also are widely used and increasingly well-researched. Sunlight, for example, is widely recognized for stimulating the manufacture of vitamin D, and different colors (wavelengths) of the light spectrum are known to directly affect cellular physiology, and may bring relief

when applied to the body through color filters or through direct exposure.

Collectively, the therapeutic power of environmental resources has long been recognized in nature cure and, today, spending time outdoors in nature is known to be highly therapeutic.

Roger Newman Turner, ND, DO, BAc

TOPIC 1

Minute-dose Medicines

Don Warren, ND, DHANP

From the time it was introduced to American society in 1825 until the turn of the 20th century, homeopathy enjoyed increasing popularity as an alternative to the orthodox practice of medicine.[1] By 1892, there were 22 homeopathic medical schools, 110 homeopathic hospitals, and more than 1000 homeopathic pharmacies.[2] During the late 19th and early 20th century, homeopathic physicians were remarkably successful in treating patients affected during epidemics such as the Spanish flu of 1918.[3,4,5,6] The 1918 influenza pandemic was the most severe in recent history,[7] and was recognized as the greatest failure of orthodox medical science in the twentieth century.[8] However, apart from the successes of the homeopathic physicians, the concepts within Hahnemann's tenets of homeopathic practice were at odds with the increasingly technical and biomedical focus of orthodox medicine, which included the use of surgery and therapeutic drugs. With the increasing influence and political power of the American Medical Association and the rise of what was considered 'scientific' medicine, there was a concerted effort to discredit and marginalize the homeopathic profession.[2] This led to a rapid decline in homeopathy as a separate and distinct form of medical practice.

Homeopathy as a therapeutic modality in naturopathic medicine

As the new profession of naturopathic medicine was evolving, Benedict Lust (1872-1945) included homeopathy as one of the natural, 'drugless' forms of healing within the eclectic, diverse natural healing modalities included in naturopathic practice. Lust's vision of drugless healing was consistent with Germanic 19th-century 'nature cure'[10] and he believed homeopathy fit well within the overall nature cure philosophy of working with the body's healing capacity to bring about a restoration of health.

Henry Lindlar's[i] book, *Nature Cure* (1913), is cited by Zeff[10] as one of the most comprehensive iterations of naturopathic philosophy ever published. Lindlar believed homeopathy was congruent with the ideals of nature cure, noting it as, "… the combination of all the different healing factors which constitute the perfect system of treatment."[11, p. 220] Lindlahr used homeopathy in his own practice, and observed, "Having proved the accuracy of Hahnemann's law of '*similia similibus curantur*' and having occasion daily to observe practical results in the treatment of acute and chronic disease, we should not be justified in omitting homeopathy from our system of treatment."[11, p. 219] In *Basic Naturopathy*, Harry Spitler (1948) also noted the philosophical similarities between homeopathy and the guiding principles of naturopathic medicine.[12]

[i] Henry Lindlahr, ND, (1862-1924)

Homeopathic drainage remedies initiate specific functional stimulation of the organism or target organs through remedies selected via local-regional signs and symptoms or by known physiologic action.
Myers, et al. 2024

Philosophical congruence between homeopathy and naturopathy

Although naturopathy developed 100 years after homeopathy, their underlying philosophies have considerable overlap. For example, Hahnemann's first two principles, as found in a recent translation from the German in the *Organon of Medicine* 6th ed. (1996*)* states:

- The physician's highest and only calling is to make the sick healthy, to cure as it is called.
- The highest ideal of cure is the rapid, gentle and permanent restoration of health; that is the lifting and annihilation of the disease its entire extent in the shortest, most reliable, and least disadvantageous way according to clearly realizable principles.[13, p. 60]

Later in this work, Hahnemann lists what we currently would refer to as 'determinants of health:' "These kinds of ill-health that people bring upon themselves disappear spontaneously under an improved lifestyle."[13, p.123] This addresses the first principle of the naturopathic Therapeutic Order™, 'Establish the foundation for optimum health.'[14]Understandably, Lust also believed homeopathy belonged in naturopathic medical practice and, 100 years after Hahnemann's death, wrote:

> Naturopathy stands for the reconciling, harmonizing and unifying of nature, humanity, and God. [It is] fundamentally therapeutic because men need healing; elementally educational because men need teaching; ultimately inspirational because men need empowering, it encompasses the realm of human progress and destiny.[15, p. 69]

Homeopathy in contemporary naturopathic practice

Although not all naturopathic doctors devote a significant portion of their professional lives to the study and practice of homeopathic medicine, those who do see positive outcomes in their patients and believe strongly (like Lindlahr) that homeopathy has a primary role in naturopathic medicine and should continue to be taught in accredited naturopathic medical schools. Since the time of Lust and Lindlahr, numerous naturopathic doctors have demonstrated significant expertise in homeopathic medicine. John Bastyr, ND, (1912-1995), for instance, whose teaching and influence on the next generation of naturopathic doctors was far-reaching, had a very eclectic practice and included homeopathy in almost every patient's treatment plan. Andre Saine, ND, one of Dr. Bastyr's students, wrote extensively about Dr. Bastyr's influence on training a new generation of naturopathic doctors and stimulating renewed interest in homeopathic medicine within the profession.[16] Robin Murphy, ND, (1950-2021) also made a lasting contribution to the advancement of homeopathic medicine through his teaching and writing within and outside the naturopathic profession.

Homeopathy is considered a common means to stimulate the vital force in contemporary naturopathic practice (Level II of the Naturopathic Therapeutic Order™). **Pamela Snider, ND, 2022**

Conflicts within homeopathic clinical theory

Throughout its history, homeopathy frequently came into conflict with orthodox medicine. Over time, the following conflicts within the homeopathic profession also emerged.

- Potency (degree of dilution): Some practitioners believed true homeopathic prescribing included only the use of low potencies (less dilute), while other practitioners (who were considered more progressive), used the remedies in newer, high potencies (more dilute).[17]
- Prescribing practice: some homeopathic doctors prescribe based on pathology, while other prescribe according to constitution (the picture of the whole person). Those whose practice following the tenets of Hahnemann as written in the *Organon* would be considered classical homeopaths. Even within the general framework of classical homeopathy there are differing approaches to case taking and prescribing. Another approach to the practice of homeopathy would be referred to as 'clinical homeopathy' — the remedy or complex remedies are prescribed on the basis of the assessed clinical pathology of the patient.
- Complex remedies: In Europe, the use of complex remedies (homeopathic remedies that appeared to be synergistic when combined) developed, which was not an accepted practice by many who considered themselves to be true, classical homeopaths. Yet, these complex remedies often are used as drainage remedies (promoting detoxification) in contemporary naturopathic practice.

In his comprehensive history of homeopathic medicine, Haller (2005) observed, “A medical system more diverse than modern homeopathy is almost unimaginable. The multiplicity of its beliefs makes it difficult to decide whether it is a single healing system or a plural system supporting multiple practices.”[18, pp. 1-4] It has been said that the increasing divisions in the homeopathic profession also contributed to its decline.[19]

During the late 20th century, several international homeopathic doctors, Dr. George Vithoulkas from Greece, Dr. Francisco Eizayaga from Argentina, and Dr. Rajan Sankaran from India, stimulated renewed interest in homeopathy within the naturopathic profession. These, and other international teachers provided post-graduate training, spurred growth across the homeopathic profession, and enhanced homeopathy instruction at accredited naturopathic medical schools. The Homeopathic Academy of Naturopathic Physicians (HANP), a specialty organization for naturopathic doctors, was formed “...to promote excellence in the practice of homeopathy among naturopathic physicians.... ; to establish and uphold specialist standards, provide education and mentorship;” and “.....to protect and preserve homeopathy as a core therapeutic modality within the naturopathic profession.”[20]

Homeopathy and the burden of scientific[ii] proof

Just as there have been currents that moved the naturopathic profession toward a greater emphasis on homeopathic education within its colleges, there has been an opposing current based on the view within mainstream medicine that homeopathy is a pseudoscience and has no place in medical education.[21] With the increasing epistemic drift toward research relying only on the accepted scientific method within naturopathic medical schools, both in research and academia, and with more students coming from conventional science undergraduate programs, some challenge the teaching and practice of homeopathy. For those of us who have both personally experienced radical changes in health resulting from homeopathic treatment and have seen in practice such a broad range of difficult cases resolve with correct homeopathic prescribing, it is disappointing that a graduate of a naturopathic medical school would advocate such changes in naturopathic education.[22] Nevertheless, there seems to be a subset of naturopaths that have a deep interest in homeopathy and continue further postgraduate study to become very skilled practitioners of homeopathy. Often, this interest is piqued due either to personal experience or to seeing positive results in their practice or in colleagues' practices. It could be that changes need to be made in the homeopathic curriculum and more time spent on the current homeopathic research. Although 100 hours of instruction in homeopathy cannot produce experienced and highly

[ii] 'Scientific' in this instance, referring to evidence gained from data analysis using the Scientific Method.

effective homeopathic prescribers, it can introduce naturopathic students to a system that has a history of being safe and effective and is experiencing increased use by populations worldwide.

Criticism of homeopathy also has continued to be reflected in the medical literature. In 2005, the Lancet published a meta-analysis from Shang et al., comparing outcomes from placebo-controlled clinical studies in both homeopathic and conventional medicine. After the authors reduced the comparative search to what they considered higher-quality studies, they found only weak evidence for a specific effect of homeopathic remedies, but **strong evidence for a specific effect** for conventional interventions[23] and concluded the clinical effects of homeopathy had to be simply placebo. An editorial in the same issue, titled "The end of homeopathy" stated, "Now doctors need to be bold and honest with their patients about homeopathy's lack of benefit… ." [24, p. 366] Shang's paper created a stir in the media and within the homeopathic and naturopathic communities. Peter Fisher, MD, FRCP, then director of research at the Royal London Homeopathic Hospital, responded with a detailed analysis of the weak methodology used in the study and its lack of transparency.[25] Iris Bell, MD, PhD, of the University of Arizona, also criticized the meta-analysis as being methodologically flawed, even within an allopathic framework, observing, "… the evidence indicates the subject selection procedures of allopathically designed RCTs of homeopathy are a potentially inaccurate reflection of the real-world clinical population of persons who end up

with homeopathic treatment."[26, p.763] Although meta-analysis has been thought to improve statistical precision, many researchers, such as Finckh *et al.*, maintain it also includes a risk for researcher bias: "The validity of meta-analysis depends on the methodological quality of the included studies, the eligibility criteria used for the meta-analysis, and the various reporting biases."[27] In 2019, Nelson *et al*., echoed Strang in the *Journal of Evidence-based Integrative Medicine*: "In short, the theory of homeopathy is not biologically plausible (i.e., does not follow the known laws of chemistry and physics)."[22] Yet, a majority of Nelson's paper focuses on the placebo effect and its conclusion reflects the claim that homeopathy has survived 200 years due only to the placebo effect.

Several naturopathic physicians have responded to this challenge. Paul Theriault, ND, documented extensive research evidence for the biological activity of potentized ultramolecular preparations and observed that authors of previous critiques misunderstood, "…the history and theoretical basis of homeopathy that is truly remarkable for naturopathic doctors, [who are] theoretically educated in the subject."[28] Oskiin and Udell, cited various weaknesses in Nelson's article, including the inherent bias of researchers reporting homeopathic clinical trials. Challenging the implausibility argument, Oskiin and Udell maintained, "Basic science research into the physical and chemical properties of homeopathic medicines is emerging from independent laboratories around the globe … [showing] that homeopathic medicines contain various nanostructures including source materials, silica and gas

nanobubbles, heterogeneously dispersed as a colloidal solution."[29] In a separate article, these authors also observe that authors of the critiques do not, "… appear to have any specific expertise in homeopathy," and the last author, a medical doctor in his conflict of interest statement indicated that he has, "been on the dole of just about every major pharmaceutical company on the planet."[29] Perhaps the diverse views expressed about homeopathic medicine can be best explained in words commonly attributed to Emmanuel Kant, 'we see the world and things not as they are, but as we are.'

Increasing global use of homeopathy

In a recent World Health Organization report on the use of complementary medicines in member countries, 100 of the 133 countries surveyed reported that homeopathy was recognized, both permitted and used by their population.[30] Shortly after publishing Shang's negative article, the *Lancet* published an editorial describing the growth of homeopathy in India, observing that it, " … has become deeply rooted in India's public provision…" and "…has the third-largest government-supported infrastructure after Ayurvedic and modern medicine."[31] There are nearly 250,000 registered homeopathic doctors, 75% who have been trained in the same three years of state-sponsored medical training as those going on to practice conventional medicine. The Indian government has given homeopathy the status of a national medical system and provides 11,000 homeopathic hospital beds.

Hahnemann clearly explained the rational basis for using homeopathy to heal the sick:

> To be a genuine practitioner of the medical art, a physician must: 1. clearly realize what is to be cured in diseases; 2. clearly realize what is curative in medicines, that is in each particular medicine; 3. be aware of how to adapt what is curative in medicines to what he has discerned to be undoubtedly diseased in the patient, according to clear principles.[13, p. 60]

These principles applied both in homeopathic prescribing, as well as in the full range of modalities offered in the natural therapeutics of naturopathic medicine, will produce positive clinical changes in patients' health. Although homeopathy has had its critics since Hahnemann's time to the most recent critiques, for naturopathic physicians who have taken the arduous path of the in-depth study of homeopathy, and for the thousands of homeopathic practitioners worldwide, a slight adaptation of Mark Twain's famous quip is applicable: " The reports of homeopathic medicine's demise have been greatly exaggerated." Perhaps the teaching of homeopathic medicine in naturopathic medical schools needs to change — but this change should involve building a stronger, more comprehensive base of knowledge about the history, the underlying principles, the breadth of research, and an acknowledgement that there will always be a need for postgraduate training for those who want to specialize and develop expertise in its practice.

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TOPIC 2

Botanical Medicine[i]

Lesley Braun,PhD, Pharm; Matthew Wood, MS, AHG; Sue Evans, PhD, FNHAA; Mary Bove, ND; Jill Stansbury, ND; Bill Mitchell, Jr., ND;* Dawn Whitten, ND, BNat(Hons), IBCLC, FNHAA; Greg Whitten; Stephen P Myers, ND, BMed, PhD*; Letitia Dick-Kronenberg, ND

Botanical medicine, also known as phytotherapy or as herbal medicine, is the study, investigation, growing, manufacturing, and therapeutic application of plant-based treatments to treat or cure disease, address discomfort,[1] facilitate healing, promote wellness, and to prevent future disease. 'Western botanical medicine' is a term used to refer to the use of plant medicines indigenous to Europe, North America, northern Africa, and western Asia. It does not refer to other traditional medical systems, such as Ayurveda, Tibetan, Unani, or Chinese herbal medicine (although these coexist in many areas of the world). The Western herbal tradition is influenced by the early Egyptian, Greek, and Roman cultures, and by the historical lineage of herbal knowledge transferred through these cultures.

Although botanical medicine is a standalone practice in many countries, it also is incorporated as a modality in other medical systems, such as naturopathy. Because the nature cure physician's approach is to treat illness in a way that *supports* the body (i.e., using non-suppressive

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[i] Adapted with permission from: "Botanical Medicine" in *The Foundations of Naturopathic Medicine* – (unpublished)

* *in memoriam*

methods that stimulate self-healing processes), botanical medicine is a modality often employed. Some botanical medicines, in particular, enhance the removal of toxins,[2,3] a fundamental step in the healing process.

"To help patients create the conditions for health to exist within them and around them, a fundamental step in nature cure is to evaluate the functional status of various systems and organs, and, if necessary, support their specific recovery. This is the area in which botanicals may be most widely used. There are botanical medicines that will improve function in most systems of the body, and many can be selected in various combinations to effect specific changes in body systems."

Jared Zeff, ND, 2024 (Section II, Topic 2)

Use of Botanical Medicine in Naturopathic Practice

Use of botanical medicine in nature cure is based on a vitalist tradition that recognizes the presence of the *vis medicatrix naturae,* the innate vital force fundamental to living organisms and essential for the maintenance of wellbeing. Botantical medicine also employs knowledge from many cultures and several different schools of thought, and is informed by careful practitioner observation. Although it is steeped in longstanding traditions, it also continues to be shaped by a continuously evolving body of experiential and experimental knowledge.[4]

The Thomsonian movement preceded the significant herbal tradition(s), physiomedicalism and eclecticism.[5] Physiomedicalists, in particular, analyzed and described herbs in terms of their activity on specific organs and tissues, and emphasized the importance of the condition of tissues and organs over names of diseases. Practitioners of both systems were supported by a vibrant herbal industry,[6] and important authors of this period include Cook, Thurston, Lloyd, and King.

In essence, contemporary naturopathic botanical medicine recognizes and integrates the clinical art, traditional knowledge, and modern science of herbal medicine by applying it to individual patients within the holistic context of broader naturopathic clinical practice. Historically, there is a strong differentiation between naturopaths and medical herbalists, and herbal medicine is not taught as a central component of naturopathic education. In the UK, medical herbalism is a distinct profession that maintains its autonomy in education and in legislation (however, in the UK, many NDs hold dual qualifications and make extensive use of herbal medicines). Throughout the rest of the world, botanical medicine is considered one of the main modalities of naturopathic medicine. However, it is considered an underutilized modality across the therapeutic hierarchy that can promote an individual's self-healing process, remove obstacles to healing, provide nourishment, improve organ function, aid recovery from underlying disease, and treat specific symptoms and conditions. According to the vitalist tradition and many ancient medical systems, plant medicines contain unique healing vitality — or life force — that can be utilized to promote health.

In practice, botanical medicine is used to treat chronic and acute disease, to enhance repair and recovery, and to facilitate preventive health and wellness strategies. To be an effective clinician, it is important to understand the botanical medicines themselves, their actions, appropriate doses and safety issues, and also how and when to use them within a clinical context. Today, the understanding and application of botanical medicine continues to expand, but is changing rapidly, due to a variety of new factors:

- Improved global communication and an openness to share ideas between different cultures have meant greater recognition of different schools of thought and the healing potential of botanical medicine.
- Large-scale commercial manufacturing, which has expanded treatment possibilities that once were limited to using locally-grown herbs. Physicians now have access to herbal medicines from distinct regions throughout the world that might otherwise have been inaccessible or difficult to source. As such, the *materia medica* for naturopathic physicians is rooted in therapeutics, rather than the traditional herbal aspect of a classic *materia medica*, making it similar to a pharmacopeia.

Botanical medicines are used in the treatment of chronic and acute disease, in preventive health and wellness strategies, and to enhance repair and recovery. For example, herbs with adaptogenic properties may enhance a person's quality of life and better enable them to respond to their environment, while those with detoxification

properties may address the gradual accumulation of poorly functioning processes (e.g., the emunctories). Herbs having immunomodulatory properties may reduce the incidence of common infections and herbs rich in nutrients can promote general health. However, prescribing herbal medicines without diet, lifestyle, and counseling advice, does not provide patients with the best possible care or chance to achieve an effective therapeutic response.

Liver cleansing or flushing protocols abound and are practiced worldwide. Many 'spring tonic' formulas are heavily permeated by liver-stimulating herbs designed to eliminate toxins and to re-regulate liver function. **Myers, S. et al 2024**

The Thomsonian System:
The beginning of modern classical naturopathy

Naturopathic doctors of the 1920s-1950s in the United States studied a philosophy and medicine known as 'physiomedicalism,' also known as Thomsonian Medicine. However, Samuel Thomson (1769-1843), from Alstead, New Hampshire is seldom discussed in the history of naturopathy. He is noted mostly for his writings about botanical medicine[7] and his ideas were developed, throughout the 19th century by W.H. Cook, T.J. Lyle, and others, culminating in the publication of J.M. Thurston's *The Philosophy of Physiomedicalism* (1900).[8]

Alva Curtis (1797-1881), founder of the first physiomedical college, stated "There is a true science and practice called the 'Physio-Medical,' the character of which is indicated by its title. Its leaders are not men, but the immutable laws of Nature."[9] It is these 'laws of Nature' — and the principles of healing attributed to them — that have contributed to the foundation of modern naturopathy. These laws are the basis for Henry Lindlahr's *Nature Cure* and for current classical naturopathic

methods of addressing disease, eliminating obstacles to cure, and supporting the *Vis medicatrix naturae* in healing.

Six doctrines are associated with the Thomsonian system:

1. The human body is formed and controlled, preserved and defended, and, when injured, restored by the action of an invisible agent called the vital force.

2. The inability of any organ to perform its healthy function denotes disease.

3. This ‘teaches the duty of aiding the vital forces in its exciting, irritating and inflammatory efforts to remove the obstacles to healthy action…to heal the breach.'

4. It “makes use of those articles ...which, in their nature, harmonize with the organic tissues and the vital forces; and, in the measure and mode of application required… (to) directly aid that force in restoring its equilibrium, by judiciously removing or helping it to remove all the obstacles to its free and universal action.”

5. It regards as poison ‘anything and everything… to have directly destroyed human life or is, in its nature, calculated to deprive the organs of the power to respond to the action of the vital force… .'

6. It adopts as remedial means and measures ‘only those agents whose inherent tendency… harmonizes with the organic and conservative force of the system.'

In *Medicines of Nature: The Thomsonian system*, R. Swineburn Clymer, MD,[10] explained the philosophy underlying its 36 principles, summarized here:

- The stomach is the 'seat’ or ‘throne’ of the vital powers and, in almost every instance, is the seat of disease.

- “Fever… does not constitute a disease, but is always an evidence of the existence of an offending cause in the system, and an indication that nature is struggling to remove such cause.” (Principle # 25)

- The first symptoms in disease prove a weakened condition of vital activity. … The constitution, with all its constructive agents, struggles against disease and occasions the fever, and it is by this power of reaction that disease is overcome.' (Principle #28) *This may be the first clear description of the 'healing reaction', or 'healing crisis' in classical naturopathy.*

- The purpose of fever is to restore the lost heat and vitality, and to remove all morbific or deleterious agents and their effects from the system. (Principle # 29)

Samuel Thomson and his followers provided a legacy that has guided additional developments in naturopathy. His contributions included not only knowledge of botanical medicine, but also specific contributions to naturopathic clinical theory, such as the current Principles of Naturopathic Medicine.

Letitia Dick-Kronenberg, ND, FNMI

Preparation and application of botanical medicines

Botanical medicines are derived from whole, fragmented or cut plants; parts of plants (roots, leaves, stems, flowers, or bark); algae, fungi, lichen (usually the dried form, but sometimes the fresh). They are prepared using a range of processes. Herbal extracts and tinctures are the main form of botanical medicine used. These are preparations of liquid, semi-solid or solid consistency, obtained from herbal matter usually in a dry state.

Naturopaths recommend herbs as foods or teas that can be incorporated into a patient's daily life. They also commonly prescribe solid-dose forms for oral use, such as compounded tablets and encapsulated dried herbs in addition to topical preparations, such as creams, ointments and oils.

Unlike pharmaceutical medicines which are based on single molecules that may or may not have been derived from natural substances, herbal medicines are chemically complex and may contain many hundreds or even thousands of different phytochemicals, including various macro- and micro-nutrients, such as fats, carbohydrates and proteins, enzymes, vitamins, and minerals. Plants contain secondary metabolites that are produced in response to or in defense against injury, attack or infection, or produced for cell signaling and growth regulation. In practice, the overall pharmacological activity and safety of each herb is partially the result of the interaction among numerous constituents, some of which have demonstrated pharmacological effects, rather than the effect of a single active ingredient.[11]

Herbal medicines are chemically complex and may contain thousands of phytochemicals. The overall activity of the herbal preparation is partially due to the interaction among these constituents.

Dried or fresh herbs?

There is some debate as to whether extracts prepared from fresh or dried material have greater biological activity.

Although some active constituents can be lost in drying, the high water content of fresh material limits constituent concentration. One option is to use a fresh plant extract as the menstruum (a solvent used to extract compounds from plants) for a percolated extract of dry plant material. The final product then contains both the benefits of the fresh extract along with the concentration of the dried plant. A controlled trial study assessing the concentration and range of plant constituents using this method would help clarify this issue.

For patients averse to taking liquid herbal tinctures or teas, commercially prepared solid-dose forms (i.e., tablets or capsules) may improve adherence. The herb garlic is a good example whereby liquid tinctures may be irritating and difficult to swallow for many patients, while a capsule filled with air-dried or freeze-dried garlic or steam-distilled garlic oil is much easier to take. Some commercial formulae combine botanical medicines with nutritional supplements and food products to produce novel formulations aimed at specific therapeutic targets.

Use of Botanical Medicine into the Future

Although herbalists were respected members of the community in 18th- and 19th-century Europe, Australia, and the US,[5,12] the practice was becoming supplanted by biomedical practitioners by the beginning of the 20th century who labeled their competitors as 'illegitimate.'[13,5,14] Consequently, herbalists were unable to maintain their professional influence against an increasingly powerful opposition. For most of the 20th century, herbalists were

marginalized and harassed by biomedical practitioners and their supporters.[14,15] However, increasing research in botanical medicine is validating some traditional practices and revealing new ways to utilize the healing qualities of plant medicines,[16,17] while also discovering potentially unsafe practices and expanding the understanding of plant toxicology.

Because the nature cure approach is first to treat the underlying cause of dysfunction, standard research methodology often is unable to validate many natural treatments. Zeff provides this example: "application of single botanicals or nutrients in double-blinded studies targeting pathology, without the comprehensive approach removing causes, stimulating self-healing mechanisms, and supporting organs or functions … often fail to demonstrate the effectiveness of these measures. That is, if you give the stomach tonics without first correcting the dietary errors that are the causative problems, you will not see profound or permanent improvement." (s*ee S*ection II, Topic 2)

The global, historical tradition of using plants in healing includes many cultural, practical, empirical, and spiritual practices. There is wide geographic variation regarding the herbs selected for use, why they are selected, and how they are used to provide treatment(s). Only a small percentage of this empirical knowledge has been subjected to randomized, controlled trials. Until contemporary research investigation is more comprehensive, the traditional repository of knowledge in botanical medicine must be maintained as one of humanity's valued sources of information. Within this knowledge, lies the collective wisdom of generations that will become a primary source of scientific insight in the

future. Today's naturopaths have a shared responsibility to maintain this traditional knowledge and to contribute to its empirical observations for future generations.

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TOPIC 3

Physical Medicine[i]

Nick Buratovich, NMD; Paul Orrock, ND, DO; Michael J. Cronin, ND, DAAPM; Doug Lewis, ND; Rick Marinelli, ND, LAc

History

Physical medicine has a long history. Most ancient healing practices incorporated forms of manual medicine or manipulation. A central understanding among these practices is that individuals exhibit a reflexive response to tissue injury and pain, by grasping and holding the injured area to reduce pain, for stabilization and to initiate healing. This observation has been used by Egyptian, Greek, Chinese, and Indian cultures, among others.[1] The Western tradition in physical medicine began with the English 'bonesetters' who dominated British manual medicine throughout the 18th and 19th centuries, and influenced contemporary Western schools of physical medicine. In 1896, Benedict Lust expanded on Kneipp's nature cure therapies by adding dietetics, herbs, massage, and electrotherapy – he referred to this combination as 'naturopathy.'[ii] Throughout the early 20th century, manual medicine and manipulative therapy developed through osteopathic, chiropractic, orthopedic, other physical therapies and nature cure practices, which has led to some

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[i] Adapted with permission from: "Physical Medicine" in *The Foundations of Naturopathic Medicine* – (unpublished)

ii Throughout the early 20th century, manual medicine and manipulative therapy continued to develop through osteopathic, chiropractic, orthopedic, other physical therapies and nature cure practices, which has led to some cross-pollination of techniques. In the early 20th century US, many of these professions were closely connected and a majority of naturopathic doctors (NDs) were also doctors of chiropractic (DCs). Multiple degrees were commonplace at this time, when minimal training was required for practice. Today, 'physical medicine' is a term used primarily in North America and does not reflect the same descriptive title in other countries.

cross-pollination of techniques. In the early 20th century US, many of these professions were closely connected and a majority of naturopathic doctors (NDs) were also doctors of chiropractic (DCs). Multiple degrees were commonplace at this time, when minimal training was required for practice. Today, 'physical medicine' is a term used primarily in North America and does not reflect the same descriptive title in other countries.

Definition: Physical medicine involves the use of various manual techniques imparted to the patient primarily by the physician's hands. It can incorporate specific adjunct tools and therapies, such as chiropractic activators, physiotherapy instrumentation, exercise and movement, or injections, all applied manually and with the intent to stimulate an individual's healing capacity and thereby normalize function. Physical medicine encompasses a continuum of manual therapies, from the energetic practice of reiki, soft tissue methods such as massage, myofascial therapy, neuromuscular techniques, and trigger point therapy, to osseous manipulative techniques. Some manipulative therapies have been adapted from osteopathic, chiropractic, orthopedic and physio-therapy practices. Injection therapies may include neuraltherapy, mesotherapy, trigger point injections, biopuncture, and prolotherapy. Interventions or therapies include manipulation, soft tissue techniques, exercise, injections, physiotherapy, and when necessary, referral to the appropriate specialist for surgery. To support tissue and cellular regeneration, other modalities such as nutritional, botanical, and homeopathic medicine also may be used.

The goal of physical medicine is to restore structural integrity and stimulate the individual's healing capacity and, thereby, to normalize function.

Within physical medicine, nature cure doctors understood the importance of 'treating the cause' and therefore assessed patients' history of trauma, and its residual mental, emotional, and physical effects. Integral to physical medicine's use are two non-physical aspects: the physician's healing intention and touch, and the development of the physician-patient therapeutic relationship. This catalytic relationship supports self-efficacy and self-agency in patients, empowering them to be involved in purposeful processes, culminating in a healing response of self-regulation and balance, and a return to health.[2,3]

Purpose & goal

In the naturopathic model of care, the goals and therapeutic intent are to: 1) support normal musculoskeletal functioning by restoring musculoskeletal integrity; 2) encourage the process of self-regulation in response to various adaptive demands to postural stresses or injury; and 3) find and treat the cause of chronic pain by identifying the specific anatomical structures altered in work, sport, or injuries. This approach follows the principle that the true cause of disease within an individual cannot be determined by analyzing only the dysfunctional parts. The cause is determined by examining and recognizing global patterns of structural integrity and individual function. Structure is the physical embodiment of a living

system's pattern of organization. In acknowledging the totality of an individual, and being mindful of the thresholds of individual sensitivity, naturopathic physicians seek the leverage point at which small interventions will lead to larger effects that facilitate transformation or adaptation in a positive, health-inducing manner that relieves stress, rather than increasing it. As the dynamics of adaptation, self-regulation, and healing are initiated, there will be an increasing order of wholeness and integrative capacity within the individual, which is expressed as 'health.'

Physical medicine reflects *tolle totum*

Nature doctors understood that the true cause of disease within an individual cannot be determined by analyzing only the dysfunctional parts. The cause is determined by examining and recognizing global patterns of structural integrity and individual function. Structure is the physical embodiment of a living system's pattern of organization.

Throughout the 20th and early 21st centuries, a variety of physical medicine protocols were developed to assist the release of 'held postural patterns' which were found to be obstructing normal mobility and physiology.[2] These include approaches, such as neuromuscular technique, myofascial release, and what has become known as 'visceral osteopathy,' all of which can be considered to meet the principle of 'treating the whole person.'

Physical medicine is applied to prevent, diagnose, and treat dysfunctions, disorders, imbalances and diseases of the human mind, body and spirit. Its most prevalent use is to address biomechanical problems and structural issues,

such as musculoskeletal dysfunction and injuries involving pain, inflammation, impeded movement, articular fixation, positional dis-relationship, and articular laxity or instability. Importantly, physical medicine also is used to normalize or enhance metabolic processes and balance bioenergetic systems, and to provide non-specific, tonic and constitutional treatments associated with optimal physiologic self-regulation (for example, to correct breathing pattern disorders). Henry Lindlahr advised that both location-specific and constitutional lesions could occur at the spine or in the extremities and organs and that healthy tissues can be strong enough to sustain multiple insults and can return the body to health, with adequate rest and sleep. However, he warned that such normalization would not occur if injuries are severe or prolonged enough to overcome the resistance or resiliency of supporting tissues.[4] To correct chronic conditions and to re-establish mobility, Lindlahr advocated various methods, including:

- manual therapy on the muscles and connective tissue through pressure or stretching
- stretching the spine by affecting associated ligaments
- manipulating tense joints that displayed restricted motion or malposition
- eliciting spinal reflexes using percussive mechanical stimulation (known as spondylotherapy)
- exercise — including ‘active and stretching movements’ and curative gymnastics — to restore spinal curves and posture by strengthening and toning the entire spinal column

Cause(s) of dysfunction

Naturopathic clinical theory includes the concept of Unity of Disease: disease and illness spring from a common cause, the violation of natural laws. In Lindlahr's era, these violations were identified as the patient's ignorance, indifference, lack of self-control and self-indulgence.[4] These conditions result in decreased vitality, abnormal composition of blood and lymph, and metabolic toxicity that can present as an acute or chronic condition. According to Lindlahr, the various therapeutic actions needed to restore health include:

- re-establishing the basis for health
- conserving vital energy
- correcting the composition of blood and lymph
- eliminating toxins by supporting natural detoxification processes
- restoring structural integrity
- motivating the patient to self-responsible health practices

In current terminology, this can be associated with obesity, poor physical conditioning, lack of exercise and movement, insufficient sleep, and a diet containing poor quality food and drink that contribute to metabolic inflammation and disharmony in the patient's biochemistry. Harry R. Spitler, ND, MD, PhD (1881-1949), outlined a framework illustrating how this deviation from healthy lifestyle practices can lead to biomechanical problems[5] (Fig. 1).

Lifestyle deviation …	… results in …	… leading to
• Insufficient exercise • abnormal diet • physical & • postural stress • Injury • environmental toxins • psychological stress	• abnormal circulation • tissue degradation • toxin accumulation • fibrous tissue formation • tissue impingement • accumulation of pro-inflammatory metabolites	abnormal biomechanics

Fig. 1 Spitler's framework: the association between lifestyle factors and biomechanical problems. For example, a sedentary patient eats a fast-food diet and works at a computer 8 hours per day, under economic pressure. The culmination of these factors results in ongoing tension in the upper back and neck, leading to headaches and neck pain.

The most significant predisposing factor to structural dysfunction is a weak structure or tissue, primarily resulting from insufficient exercise, malnutrition, incorrect posture, smoking, and/or poor stress management. Secondary influences may include reflexes from afferent nerve impulses originating from disrupted, injured, stressed, inflamed tissues, traveling to the spine and/or referred via nerve centers and supporting structures of the spine. This can result in an efferent nerve effect, which leads to increased muscle tension that reinforces the constriction, inflammation, and painful sensation at the location. Abuse of function also can cause dysfunction in an individual with a normal spine; therefore, spinal lesions can be the *effect* —not the cause — of dysfunction.

Clinical approach and modalities

In current naturopathic practice, Lindlahr's thoughts are reflected by the Naturopathic Medicine Therapeutic Order,™ in which restoring structural integrity comprises

the middle tier of the model, where physical medicine is considered most effective. Throughout its evolution, a variety of nature cure therapies and modalities have been used to address structural dysfunction. In addition to physical movement (physical culture, *see* Section IV, Topic 3) nature cure practice also included physical manipulation and use of modalities such as hydrotherapy, balneotherapy, electrotherapy, electro-diagnosis, light therapy (also known as heliotherapy), diathermy, and ultrasound therapy. The overall goal of the selected therapy was to restore normal homeostatic physiology and postural balance, to correct structural alignment, and to stimulate the *vis medicatrix naturae* by enchancing circulation of vital fluids, blood, lymph, nerve conduction (locally or referred), viscera, and musculoskeletal tissue. The application enhances the body's ability to resist disease through its inherent recuperative abilities and through adaptive compensatory and postural demands. Many of these have evolved in contemporary practice to include additional modalities, such as prolotherapy, acupuncture, and dry needling.[iii]

In 1937, E.W. Cordingley described the therapeutic use of galvanic current in naturopathic practice,[6] and alternating currents became employed as a component of constitutional hydrotherapy treatment. Other forms of electrotherapy (the use of shortwave and microwave diathermy, as well as therapeutic ultrasound) have emerged in practice, as technologies became available. Application of electrical currents is now shown to enhance the healing of soft-tissue and bone.[7] Today, electrotherapy devices, are used to restore normal function through

[iii] Current and historical use of these modalities and therapies varies around the world, due to different jurisdictions, levels of training and traditional basis of their use.

pain relief, stimulating muscle contraction to enhance blood and lymphatic flow, and to relieve muscle spasm and holding patterns.

Today, physical medicine is a central modality of clinical naturopathic practice, worldwide.

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TOPIC 4

The Ductless Glands and Neurasthenia: An historical account

Sussanna C. Czeranko, ND

As J. H. Kellogg predicted in 1915, the popular disease, neurasthenia, has virtually vanished from medical literature. The term, 'neurasthenia' (nervous exhaustion), was coined in 1869 by George M. Beard, MD. Kellogg observed that it became a widely recognized disease because, "…physicians found the new word a convenient name for all sorts of morbid nervous conditions." [1, p. 15] In Lindlahr's opinion, neurasthenia was, "…merely a convenient term for covering the doctor's ignorance." [2, p. 253] In any case, the study of neurasthenia reveals how the passage of time and the advancement of science have changed how we perceive and label a set of symptoms. 'Nerves' or nervous exhaustion became 'neurasthenia,' that then evolved to 'hypo-adrenia,' later interpreted as 'stress and burnout' and today as 'adrenal exhaustion.' It was not until later that neurasthenia as a syndrome would be understood more clearly.

The study of neurasthenia reveals how the passage of time and the advancement of science have changed how we perceive and label a set of symptoms. One hundred years ago, 'stress' wasn't part of the diagnostic lexicon. Rather, neurasthenia dominated the medical landscape as the late 19th- and early 20th-century precursor to 'stress.'

Symptoms of neurasthenia

Early in the 20th century, Albert Abrams, MD, cited several terms to describe the various symptoms comprising neurasthenia, including: "hypochondriasis, nervousness, brain strain, nervous waste, nervous prostration, nervous exhaustion, nervous breakdown, [and] spinal irritation."[3, pp. 15-6] Beard[4] argued that neurasthenia occurred, "…when people drained their bodies of nervous energy, thereby causing organs to malfunction and allowing any number of symptoms to arise, including indigestion, fatigue, muscle and back pain, impotence, infertility, depression, and irrationality." The exact cause of this drain of energy was not entirely clear.[5]

Kellogg saw the condition as a, "…group of symptoms which are not connected with a definite morbid condition, but which may accompany many various morbid states — just as fever with its accompanying headache, rapid pulse, high temperature, hot skin and prostration is not a disease."[1, p. 14] Kellogg, who had pursued postgraduate studies under Beard, did not share his mentor's view that neurasthenia was a distinct disease, and set out to document the treatment methods he had employed successfully with thousands of neurasthenic patients over 40 years. His methods for treating and curing neurasthenia focused on, "…returning to Nature and in the cultivation of the simple life."[1, pp. 22-3]

Who was diagnosed with neurasthenia?

In post-Civil War America, Schuster explains, the types of people who were susceptible to neurasthenia were, "…

ultracompetitive businessmen and socially active women."[5, p. 2327] S.W. Mitchell, MD, a neurologist from Philadelphia, thought both of these groups were unique, but unfortunate products of this period in American history. Neurasthenia often was linked with hysteria, especially in women. Hysteria was defined as, "…a condition of the nervous system of women, characterized by a suspension or impairment of initiative, willpower and by the dominant influence of imagination or emotion over the sensory and motor functions."[6, p. 207] Women were afflicted with hysteria, while hypochondria was, "…distinctly a disease of men."[7] How did such hysteria present itself in women? Here is one doctor's description:

> Can you picture anything more miserable, more pitiful, than the helpless woman, whose nature has run the gamut of emotions, in the relentless grasp of 'Nerves'? – whose tortured brain whirls her up to the dizziest heights of 'Hysteria', almost bordering on madness – powerless to resist – only to plunge her mercilessly into the deepest abyss of 'Melancholia,' enveloped in impenetrable grayish green masses of gloom, dejection and despair-until nature mercifully comes to her aid, by allowing her to sink into a comatose condition or deep sleep, from which she eventually emerges-outwardly apparently calm, but a completely exhausted nervous wreck; that's 'Nerves'.[8, p. 351]

Speculation about causes of neurasthenia

Neurasthenia, then, was the label attached to an extensive list of presenting symptoms when the early doctors had no idea what the problems were with their patients. In the post-Civil War US, it was fashionable to be diagnosed with neurasthenia, even to the extent that it also was referred to as 'Americanitis' by novelist and philosopher, William James. Today, a similar trend exists with doctors using symptoms of stress and burnout for diagnostic purposes.

Generally attributed to overwork by his contemporaries and fellow physicians, Kellogg rarely found overwork to lead to a neurasthenic state. Rather, "… over-civilization and useless waste of energy in worry … [would] produce neurasthenia."[1, p. 17] People breaking Nature's rules and, "… acting in opposition to her immutable laws" were cited by naturopath, Louis Kuhne, as the cause for nervous diseases, such as neurasthenia.[9, p.160] In the early 20th century, L.A. Summers concluded, "… the greatest factor in the cause of the majority of nervous breakdowns, is the fact that the average businessman lives in a state of tension, i.e., he does not relax … . To live in a continual state of tension is one of the surest ways to break down the resistance of the body."[10, p.241] A key observation was that the symptom of fatigue, common in neurasthenia, was not alleviated by rest or sleep.

Neurasthenia was highly influenced by cultural context. Its symptomatology and etiology became intertwined with events, such as the late 19th-century women's movement, soldiers returning from WW1 (shell shock), and popular literature of the time (e.g., works by Edith Warton and Henry James, among others). However, by the 1930s, diagnoses of the condition declined, due, in part, to decreased reliance on the medical model of 'nervous energy' and to the increasing popularity of Freud's psychoanalytic model for treating psychosomatic conditions.[5]

Daily, naturopathic doctors encounter cases of patients suffering from stress, and have developed many tools to recognize adrenal exhaustion and the effects of stress upon patients. However, 100 years ago, stress wasn't part

of the diagnostic lexicon. Rather, neurasthenia dominated the medical landscape as the late 19th and early 20th century precursor to stress. Fifty years later, Hans Seyle wrote his landmark book, *The Stress of Life*,[11] and forever changed the perception and understanding of stress. Seyle was the first researcher known to have studied stress and to link it specifically with illness.

Twenty years previously, the anatomy and physiology of the effects of stress were first developed by Henry Harrower's work in endocrinology. Harrower saw that the symptoms of, "… the run-down neurasthenic patient practically always [included] dyscrinism,[i] even though it may not stand out above all the other symptoms."[12(p. 515)] This observation helps explain why neurasthenia attracted a host of varying presentations and names such as, "… sexual neurasthenia, congestive neurasthenia, uric acid neurasthenia, auto-toxemic, abdominal (dyspepsia and neurasthenia), and splanchnic." [3, p. 39] In turn, this medley of possibilities reinforced Lindlahr's emphasis on the complexity of illness often overlooked in conventional medical diagnosis.

Harrower also noted that overstimulation of the endocrine glands, such as the adrenals, caused depletion, resulting in hypoadrenia. A prominent London neurologist, S.A. Kinnier Wilson, remarked, "…many of the common symptoms of neurasthenia and hysteria are … of sympathetic origin." He added that it was, "…difficult to avoid the conclusion that defect of glandular function is responsible for much of the

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i Dyscrinism means any disorder of the endocrine glands. [American Pocket Medical Dictionary, 1939]

clinical picture of neurasthenia." Sympathetic tone, he added, "…is dependent upon adrenal support, and until the glandular equilibrium is … attained, sympathetic symptoms are liable to occur."[13, p. 1257] Harrower deduced that emotional overstimulation was the primary cause of adrenal irritation that later resulted in adrenal insufficiency. He commented, "… when the ordinary symptoms of hypoadrenia are enumerated, it will be apparent that there is some intimate relationship between this condition and neurasthenia, for the symptoms of both manifestations are practically identical."[12, p. 516]

Autointoxication

A related exploration in the literature of early naturopathic doctors centered on the concept of autointoxication and morbid matter — both of interest to neurologists, at that time, and to the new discipline of endocrinology. The literature often alluded to 'neurasenthics' who presented with symptoms of atony of the alimentary tract and circulatory stasis with low blood pressure, adding that they often exhibit autointoxication. Harrower noted:

"… the picture of depletion and asthenia, with hyposphyxia (circulatory stasis, cold extremities, low blood pressure) subnormal temperature, reduced tone, and a typical run-down state, [was] one of the most common clinical findings. It accompanies toxemias, acute or chronic; it is a peculiarly marked feature of the post-influenzal let-down; it is an integral part of the nervous breakdown; it is a part of the convalescent syndrome."[12, p. 268]

Harrower concluded that, when combined, these features resulted in a thyro-adrenal insufficiency syndrome.

Twentieth-century views of neurasthenia: terminology moulded by the dominant medical paradigm

Although the cycle of terminology and diagnostic lexicon developed through evolving influence of the biomedical paradigm, the new field of endocrinology was not immediately absorbed into this model regarding neurasthenia. In 1951, Bernard Detmar, MD, observed, "… today, there can be no longer any doubt that the activity of the ductless glands is essential to life. … a disturbance in hormone activity always makes itself felt in the form of some nervous disorder. It is therefore permissible to place disorders of a nervous nature largely on the same level as disorders of the endocrine glands. Certain it is that one never appears without the other. … Both ultimately arise from a common cause, which is diminished vital energy."[14, pp. 20-21]

Many years previously, Kellogg outlined his hypothesis for the etiology of neurasthenia in his landmark book, *Neurasthenia*. Based on his clinical observations, overwork was rarely the cause of neurasthenia. Kellogg cited the causes as worry, insomnia, prolonged and excessive brain activity, sedentary life, and chronic toxemia resulting in chronic constipation. He postulated that, "… insufficiency of sleep, or sleep in a hot, unventilated room or amid noise or other unfavorable conditions, may easily become a cause of neurasthenia."[1, p. 40] Kellogg's contemporary, A.C. Biggs, observed, "… nearly every case of neurasthenia presents

some form of toxemia. Intestinal auto-intoxication frequently exists… often in conjunction with … hepatic insufficiency."[15, p. 217] Four decades later, Detmar concurred with Kellogg, claiming, "… exhaustion is usually the end-effect of a false, unnatural way of living."[14, p.13]

Later in the century, Milton Powell distinguished neurasthenia, "…according to the body system most affected, including gastro-intestinal neurasthenia (atonic); cardiac neurasthenia; spinal neurasthenia (numbness, tingling, etc.); sexual neurasthenia (impotence, frigidity); and cerebral neurasthenia (brain-fog, mental inertia, loss of concentration). The naturopath, in addition to giving good general tonic physical treatment, usually pays some special attention to the systemic part most heavily burdened with fatigue."[16(p. 63)] Powell suggested, "If the primary cause is psychological stress, and physical nerve-cell weakness is secondary, then the condition should be re-named 'fatigue neurosis, or the fatigue-reaction (which in fact is done in the USA Forces)."[16] Today, this would be described as post-traumatic stress disorder (PTSD).

Treating neurasthenia

In response to his hypothesis on the etiology of neurasthenia, Kellogg contended, "… the headache and other discomforts arising from constipation, and the promptness with which the unpleasant symptoms are relieved by a thorough bowel movement, afford evidence of the influence of intestinal poisons in producing neurasthenic symptoms."[1(p. 60)] Kellogg continued, "… how strange that so little attention is given the condition of the

bowels in adults and that headaches, languor, nervousness and other distresses should be attributed to a multitude of vague and occult causes, when so very tangible and sufficient a cause as a colon filled with putrefying excretions and remnants of undigested foodstuffs is so much in evidence!"[1, p. 63]

Stimulants, like drugs used for the relief of [neurasthenia], have been invented for both the patient and physician. They relieve the former of obeying the laws of hygiene and the latter of inculcating them.
Albert Abrams, MD, 1904

Kellogg described numerous remedial courses to reverse the toxicity contributing to neurasthenia: changing intestinal flora with *Bacillus bifidus* and increasing bowel activity.[ii] To aid the body in elimination through the skin, Kellogg used light baths — the sun bath and air bath. The primary purpose of these baths was to stimulate 'vigorous perspiration.' To avoid completely depleting the patient of energy, sweating was limited and concluded by a cold application; either a cold shower, wet sheet rub, cold towel rub, or a salt glow. Biggs suggested, "…when no physiological contra-indication exists, the cold shower is of great value in imparting tone to a debilitated nervous system. … For restlessness and sleeplessness, the prolonged warm bath 94-98°F is efficient; the duration the bath varying from thirty minutes to two hours. The cold sitz

[ii] Kellogg advised increasing bowel activity by (a) increased bulk of food; (b) free use of fresh fruits and fresh vegetables; (c) regularity in relation to bowel movement; (d) special exercises to strengthen the abdominal muscles; (e) use of enema at 80° F; and (f) use of agar agar.

bath and 'water treading'[iii] have been found useful in many cases of melancholia and for relief of various forms of cerebral distress."[15, p. 219] Biggs insisted, "… the chief virtue of cold applications in neurasthenia is the strengthening of the nervous system and the development of the patient's will — the awakening of the patient's vis."[15(p.136)]

E. E. Purinton, MD, however, believed cold plunges aggravated patients with neurasthenia and warned against them. He maintained that the condition manifested as a 'disorder of the solar plexus,' and therefore that recovery should involve soothing or stimulating the 'emotional brain,' advising"… a cold sponge, or a gentle shower, or a modified Kneipp-douche, or a sitz with water thrown over the body by the bare hands. One most effective method is to stand in a tub of hot water and slowly pour a pail of cold water down the spine, over the shoulders, across the chest, repeating several times or so long as perfect reaction follows."[17(p. 184)] Purinton also advised against fasting for this condition and recommended, "… nervous people should learn to eat more, digest more, assimilate more; and work more, exercise more, live more … [because] the neurasthenic … needs a fuller life on all planes."[17, p. 185]

Now what every [neurasthenic] needs is to be brought in direct touch with the elemental forces. Earth and air, music and flowers, winds and sea and sun, stars and visions and celestial amplitudes; such are the healing agencies to restore one's poise. **Edward Earle Purinton, MD, 1908**

[iii] 'Water treading' is walking in knee-deep water.

As a broad approach to treating neurasthenia, Kellogg listed 56 rules for healthful living based on his clinical observations. Some of his suggestions include a meat-free diet; avoiding excess protein and dairy; limiting table salt intake; eating only when hungry; developing abdominal muscles with exercises; sleeping eight hours and avoiding overheating at night; taking a half day off for an outing in the middle of the week; wearing loose, light and porous clothing; and consciously trying not to worry. He also advocated taking a vacation when patients began having dreams about their work,[1] and as a presage to environmental concerns of the 21st century, he warned, "… noise is fast becoming a neurotic habit of the American people. … The nervous system constantly compelled to combat with noise, acquires a habitual alertness and abnormal irritability keeps it forever occupied. … That noise has never been defined as public nuisance under the common law or the sanitary code is strange, for it is easy to prove its injury to human health."[1, pp.220-3]

Far from adhering to the prevailing body/mind duality of the late 19th and early 20th centuries, early naturopaths recognized a body/mind unity, without the benefit of detailed endocrine and physiological knowledge available today.

As we can see, early naturopathic doctors were acutely aware of presenting conditions linked to nervous exhaustion, stress, and fatigue. The case of a 47-year-old male, who was brought to the Bilz Sanatorium (Radebeul, Germany) by a family member, illustrates a classic therapeutic response to a common diagnosis at the time.

The patient is described as arriving in a state of absolute apathy:

> He was utterly without energy or will power to make or carry out a resolution. … He was of a healthy family and had himself always been healthy; he had had to work hard in his life and had suffered much disappointment and vexation in business. He asserted that he had always lived regularly and moderately, but these assertions were corrected by his relations who showed that he had drunk much and smoked to excess. From his exterior he gave the impression of a man of 65: hair and beard were quite grey, his complexion dull, his eyes languid and lusterless; moreover he took no interest in anything whatsoever, so that he hardly replied to the questions which were put to him. The treatment he received consisted of short, cool partial and hip baths, and a stimulant Faradic electric baths, walking barefooted, air baths and gymnastic exercises. At first, … he was altogether too apathetic. After a short time, however, his energy so far increased … his apathy disappeared… He held himself straighter and his aged appearance gave place to one more befitting his age. After a six-weeks' [*sic*] treatment he was so far restored as to show an interest in his profession, a thing he had not done for years, and resumed his work with every appearance of pleasure.[18]

In the formative years of naturopathy, the guiding principles of *vis medicatrix naturae* took shape as the foundation upon which naturopathic practitioners relied. In the early 20th century, the health of the human body was understood to be associated with the function of its organ systems, and for the early naturopath, digestion was pivotal to the assessment and treatment of a multitude of diseases, including those of the brain and nervous system. The adrenal glands of the endocrine system were just beginning to be explored and conditions associated with the endocrine system (or the ductless glands) were just becoming noticed.

It is clear that — far from adhering to the prevailing body/mind duality of the late 19th and early 20th centuries — these early naturopaths recognized a body/mind *unity,* without the benefit of detailed endocrine and physiological knowledge available today. We now have a better understanding of the complex interactions of the endocrine system and our emotions[19] and of the gastrointestinal system's connection with the brain.[20, 21] As Kellogg concluded, “Since neurasthenia, with other degenerative disorders, is primarily a result of departure from natural or physiologic modes of life, the thing of first importance is an intelligent … return to nature. In other words, a neurasthenic must live the simple life.”[1, pp. 22-3]

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TOPIC 5

Tolle totum — Evolution of the 'Whole Patient' in Nature Cure: Then and now

Amy Neil McBride, MS, MAP

As reiterated by many authors throughout these chapters, the philosophy of nature cure and its consequent therapies are based on *how* nature works — the mechanisms and processes that occur in nature to maintain health and to promote healing. In this chapter, we repeat the same, but this time addressing specifically the psychoemotional component of whole-person health, how this concept was expressed by nature doctors and in nature cure practice, and how it now carries forward within research and in the current practice of naturopathic medicine. This discussion illustrates not only how an evolution in terminology has mirrored early clinical observation and emerging contemporary research, but also how nature doctors' early models of the 'whole person' now are explicated by current evidence-informed research in psychoneuroimmunology.

The Co-evolution of Terminology and Knowledge

A clear message that surfaces in Czeranko's[1] account of neurasthenia is the obvious link between patients' physical and psychoemotional presentation, and the simultaneous evolution of a corresponding medical lexicon to define it (Fig 1). The historical accounts of anxiety recorded by many physicians in the 19th to early 20th centuries demonstrate their increasing awareness of its existence and of its link with physical states. Numerous terms or 'diagnoses' were

used to denote ‘anxiety’ throughout these decades — from pantophobia, to anxiety neurosis, and eventually to ‘generalized anxiety disorder’[2, 3, p 472] used in the current edition of the *Diagnostic and Statistical Manual of Mental Disorders*.

“… the study of neurasthenia reveals how the passage of time and the advancement of science have changed how we perceive and label a set of symptoms.” S. Czeranko, ND, 2024

Throughout the history of biomedicine, psychoemotional health (i.e., mental, emotional, psychological, and psychiatric) has been given little attention, compared with physical health. When mental health was addressed, it often was considered to be an outcome of physical treatment or events. In the 19th century, public interest in the nervous system was heightened to the extent that ‘the nerves’ became a frequent metaphor often referenced in popular literature of the time and “… came to explain the means by which mind and body related to each other.”[4, p. 1]

Fig 1. Evolution of medical terminology to describe psychoemotional presentation: from the 19th century to today.

In the 1600s, most mental health problems were attributed to spiritual weakness or to some unnamed ‘imbalance’ in the individual.[4] Physicians approached mental health

problems by bloodletting or purging via emesis to eliminate such imbalances.[5] By the 18th century, isolation became a popular mode of treatment for those with mental illness, followed later by asylums. Some regular doctors[iv] of the time also used an adaptation of hydrotherapy (known as 'The Bath of Surprise') to sedate patients.[6] In the early 20th century, hydrotherapy was one of the first somatic approaches widely acknowledged to be effective in the field of psychiatry, especially for treating psychosis.[7] Cold water sheet 'packs' were used to treat agitated patients, warmer packs for frail patients, and continuous baths to treat depression. In the 1940s-1950s, these methods eventually were replaced by electroconvulsive therapy (ECT) and by antipsychotic drugs.[8]

Body and Mind: The psychosomatic approach in naturopathy

Nature cure is described by Zeff[9] and others as a 'philosophy of practice.' This is demonstrated clearly by early naturopaths' approach to total wellbeing — or *'tolle totum*' (treat the whole person) as the concept now is inscribed by the Naturopathic Medicine Principles of Practice.[10] In its vitalist tradition, a central goal of nature cure therapies is to increase vitality. Unlike the reductionist approach to patients that was becoming increasingly common among conventional physicians of the early 20th century, early nature cure approaches addressed patients'

[iv] A term used in the history of medicine to describe physicians of the 19th century who adhered to an orthodox philosophy of medicine, as opposed to eclectic physicians or homeopaths, who embraced a more multiparadigmatic philosophy and practice of medicine.

psychological and emotional presentation without separating these aspects of being from physical presentation[11]— a concept consistent with the traditional and indigenous world medicines that contribute to naturopathy's multiparadigmatic approach to health.[12]

In 1918, Henry Lindlahr articulated clearly the direct connection between body and mind in his text, *Philosophy of Natural Therapeutics*: "Every thought and every emotion has its direct effect upon the physical constituents of the body."[11, p. 471] Lindlahr likened the body-mind-soul connection to the harmonious music of a symphony and advised nature cure physicians to, "look for causes of disease and for means of cure upon the material, mental and psychical planes of being."[11, p. 466]

> "The true artist realizes that MIND [sic], the **player** [sic], must study SOUL, the **harmonics**; and that the mind must also have its **instrument**, the BODY, in perfect condition in order to interpret perfectly and artistically the harmonies of the 'Symphony of Life.'"
> Henry Lindlahr, *Philosophy of Natural Therapeutics*, p. 463

Thus, by the early 20th century, naturopaths already were aligned with the increasingly popular psychosomatic view of health modeled in 1936 by Hans Selye. Selye, a Hungarian endocrinologist and author of *The Stress of Life,*[13] proposed the General Adaptation Syndrome as a model to articulate the body's 3-stage response to stress. In *Naturopathic Medicine: Treating the whole person,* Roger Newman Turner, ND, DO, refers to Selye's whole-person

model as a basis for understanding the naturopathic process of healing[11] (Fig. 2), because Selye focused on the necessity of balance among the three components of his model in order to maintain whole health. [11]

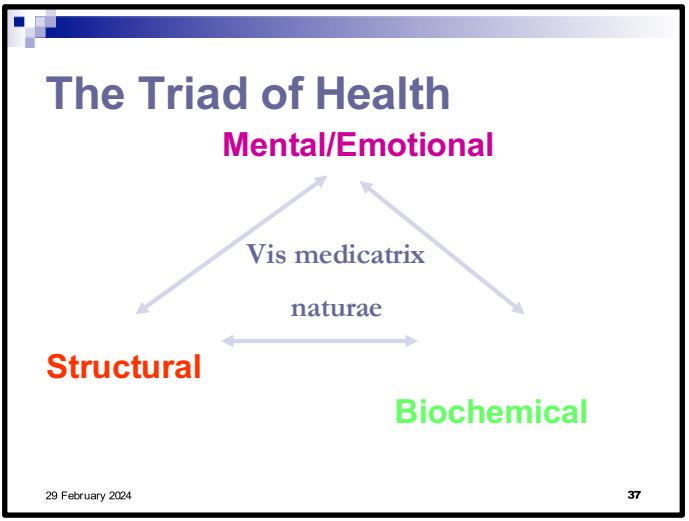

Fig 2. Elucidation of the means by which the body survives in a hostile environment was advanced considerably by Hans Selye's hypothesis of the General Adaptation Syndrome (GAS). The GAS also provides a clear direction for the naturopathic understanding of the process of healing, since it reinforces the concept that all 3 axes are equally important. Reprinted with permission from the author.[14, p.24]

Newman Turner describes the psychosomatic model (the study and treatment of emotional factors in disease) as a discipline that has, "paralleled naturopathy in its development throughout the twentieth century"[11, p. 25] and that remains emphasized in naturopathic practice.

As an increasingly popular model in contemporary biomedical practice, the definition of 'psychosomatic' has been fairly consistent, as shown by these examples:

- Dorland's Medical Dictionary, 24th ed.: "pertaining to the mind-body relationship; having bodily symptoms of psychic, mental or emotional origin."[15, p.499]
- Cambridge Dictionary: "relating to a *physical* problem *caused* by *emotional anxiety* and not by illness, *infection,* or *injury*."[16]
- Cleveland Clinic: "Psychosomatic disorder is a psychological condition that leads to physical symptoms, often without any medical explanation. It can affect almost any part of the body."[17]

Far from Selye's original emphasis on the importance of balancing each axis of the Triad of Health (Fig. 2), the definitions above reveal a contemporary biomedical influence. They reflect a unidirectional, cause-effect etiology in which psychoemotional dysfunction lies clearly at the root of physical dysfunction (hence, 'psycho' precedes 'somatic' in terminology). However, an evolving shift in focus is becoming evident within more recent definitions; for example:

- in the *APA Dictionary of Psychology*, the American Psychological Association (APA) expands its definition of 'psychososmatic' from "relating to the role of the mind (psyche) in diseases or disorders affecting the body (soma)" to "referring to any interaction between mind and body"[18]

- the American Psychiatric Association appended the title of its 2019 edition of *Textbook of Psychosomatic Medicine* with '*and Consultation-Liaison Psychiatry*' based on the organization's renaming the subspecialty, 'psychosomatic medicine' to 'consultation-liaison psychiatry'[19]

These definitions indicate a decreased focus on the separation of body and/or mind, to an increased awareness that body and mind must be considered simultaneously. Popularization of this concept among today's physicians is directly consequent to research in psychoneuroimmunology (PNI) that began in the late 20th century. This research has demonstrated increasingly that a unidirectional, cause-effect model of body-mind interaction does not accurately represent the complex, dynamic system that comprises the human organism. And, as we witnessed with the terminology evolving from neurasthenia, so have models and terminology evolved to illustrate this understanding of the body-mind relationship.

Evolving from 'Psychosomatic' to 'Embodied'

In the early to mid-20th century, the concept of psychosomatic was strengthened by numerous studies measuring physiologic responses to various psychological events. The majority of early studies focused on aspects of the autonomic nervous system (e.g., heart rate and respiration) that produced symptoms or sensations directly *within our awareness.* At the time, this was the limit of scientific knowledge and technology, and the sympathetic nervous system response became a conventional model

that maintained the reductionist idea of body-mind dualism. The popular view still remained that the body simply ‘reacts’ and the reaction is within our awareness (i.e., we can feel and see responses, such as sweating, increased heart rate, and skyrocketing blood pressure). Over time and with further investigation, research showed that behaviors, such as deep breathing and relaxation, may attenuate some of these physical symptoms. In a biomedical approach, these observations still reinforced a linear, cause-effect model of mind and body, leading to many ‘mind over matter’ processes, such as meditation and its various hybrids. Today, body and mind often remain modeled as two separate entities with the central nervous system as the switchboard that, more often than not, can override human will. It is not surprising, therefore, that medications developed to treat mental health problems have generally targeted the nervous system (as did 19th-century approaches to neurasthenia).

In 1962, the concept of ‘embodiment’ was formally introduced in the discipline of psychology by philosopher, Eugene Gendlin, PhD.[20] In contrast to conventional interpretations of ‘psychosomatic,’ Gendlin’s model of embodiment encompasses the phenomenon of ‘awareness’ — that which occurs both within and external to, one’s awareness (consciousness). It is this important differentiation that successfully navigates the conceptual barriers to the body-mind dualism.

Polyvagal theory: connecting emunctorology, psychosomatics, movement, and Gendlin's 'felt sense'

Polyvagal Theory is another comparatively recent model that describes the relationship between physical and psychological aspects of health.[1] Originated in 1994 by Steven Porges, PhD, the theory focuses on the role the vagus nerve (the 10th cranial nerve)[2] and the autonomic nervous system play in regulating behavior and health. Like Gendlin's 'felt sense,' polyvagal theory acknowledges the neroception involved in shifting psycho-physiologic states occurs "beneath the level of conscious awareness."[1]

As a model, Polyvagal Theory pinpoints the dorsal and ventral branches of the vagal nerve (key component of the emunctories) as a central player in downstream nervous system responses, especially in response to trauma, stress, danger, or safety.3 As such, the model is applied not only in medicine, but also in diverse fields, such as education and corporate management as a means to address stress by re-balancing the autonomic nervous system and thus achieve self-regulation. In applying polyvagal theory as an explanatory model to illustrate the role of movement therapy2,4 to achieve simultaneous physiological psychological self-regulation, Sullivan[5] articulates the conceptual parallels between the neurophysiology of PVT and the 'ancient wisdom tradition of gunas' in yoga.6 Collectively, these models provide another contemporary articulation of the nature cure emphasis on whole-body health via detoxification of the emunctories and attention to movement and psychospiritual awareness.7

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Tolle totum in the 21st Century: A role for embodiment?

Contrasting the standard body-mind trajectory with naturopathy, Newman Turner observes that naturopaths have, "…endeavoured [sic] to apply a more unifying concept to the management of emotional disorders — one which has sought to avoid the duality of the body/mind."[11, p.123] Embedded within the Naturopathic Medicine Principle of Practice,[21] *tolle totum*, naturopaths are guided to consider the 'whole person' in their treatment approach — both physiology and psychoemotional presentation. For Gendlin, embodiment does not imply *either* body *or* mind (or vice versa), but 'both,' 'always.' Gendlin's model maintains that the body *communicates* everything that is not only within conscious awareness, ***but also that which is not within conscious awareness.*** It extends beyond perception and reactivity to perceptible physiologic changes (e.g., increased heart rate or respiration), while modeling humans as beings that are continuously intersubjective with each other, and with everything around and within them. Using this conceptual model, clinicians can approach patients as beings who are *constantly* and *simultaneously* interacting physically *and* psychologically with the world. It is an approach consistent with the Naturopathic Medicine Determinants of Health and the Naturopathic Medicine Principles of Practice[21] within contemporary naturopathic practice.

"Naturopaths have endeavoured [sic] to apply a more unifying concept to the management of emotional disorders — one which has sought to avoid the duality of the body/mind."[11, p.123] **Roger Newman Turner, ND, DO**

Importantly, Gendlin refers to embodiment as 'experiencing,' rather than as 'experience.' The latter term, as employed by Carl Rogers' person-centered approach to psychotherapy,[22] is limited to processes within conscious awareness,[20] whereas 'experiencing' also embraces processes that are not in conscious awareness, but are nevertheless, ". . implicitly meaningful … present, directly referred to, and felt."[20, p. 243] It is this 'felt sense,' that lies at the root of embodiment, according to Gendlin. The body explicates (communicates) this 'felt sense' through symbols (language, art, music, dance, etc.) as the felt sense emerges into conscious awareness; however, the felt sense nevertheless is manifested physically and psychoemotionally when it's not within conscious awareness. Newman Turner observes that a complex model of humans also was recognized by Henry Lindlahr: " … naturopathy is possibly unique among the unconventional therapies in placing equal emphasis on all aspects of what Lindlahr called the 'three-fold constitution of man' … and the web-like interrelationship between the factors which regulate our health."[11, p. 25]

The physiology of embodiment: a sample of research from psychoneuroimmunology

It has been recognized for many years that immune system mediators affect the course of psychiatric illness.[23] Below, are selected details from this research.

- The immune, endocrine, and nervous systems produce chemical communicators (cytokines, hormones, neurotransmitters) that serve as a common chemical language for communication within and between them.[24]

- Brain cells can present and process antigens and can produce immune system proteins. Synapses are formed between immune and neural cells in lymphoid tissue. Neurotransmitters, in turn, are recognized by immune system cells.

- Both acute mental stress and infection activate *common* brain circuits. The brain interprets cytokines as internal signals of sickness[25] and, therefore, mental stress also activates sickness behavior.

- People with mental dysfunction, such as mood disorders, psychotic disorders, delirium, anxiety, dementia, and cognitive disorders, have abnormally high levels of pro-inflammatory cytokines.[26]

- The U.S. National Comorbidity Survey,[27] showed high levels of comorbidity between anxiety disorders and physical disorders, including specific findings: (a) anxiety disorders are associated with a broad range of physical disorders; (b) PTSD, panic attacks, and agoraphobia are more likely associated with specific physical disorders than with generalized anxiety disorder; (c) co-occurrence of an anxiety disorder is associated with a higher likelihood of disability and role impairment; and (d) high levels of anxiety are associated with an elevated risk for non-suicide-related death.

- Numerous studies show a direct link between depression and acute physical illness [e.g., cardiovascular disease,[28] as well as chronic illness (e.g., multiple sclerosis).[29]

- Physical symptoms are the leading complaint of 50-70% of people diagnosed with Major Depressive Disorder (MDD) when they first report to a doctor. Many of these symptoms, such as insomnia, hypersomnia, fatigue, psychomotor agitation, and weight or appetite change, are unexplained. Eighty percent of people with either MDD or anxiety disorders present *exclusively* with physical symptoms.[30]

- Pain is present in 30-60% of patients with depression, and pain predicts depression and anxiety more than any specific medical illness.[31] These figures are similar in various countries, confirming that such symptoms are not psychosocial or genetically biased.

- Among people with physical disorders, the comorbidity of psychoemotional disorders is associated with higher levels of disability and role impairment.[27]

Avoiding duality: the mind-body unity

Advocating for increased attention to patients' psychoemotional presentation in 1967, British naturopath, Milton Powell, observed in the *British Naturopathic Journal,* "The patient is not to be regarded as having a mind in a body, but as constituting a **mind-body unity**."[11, p.125] Similarly, Gendlin referred to a continuous and dynamic intersubjectivity he termed the Responsive Order.[32] That is, organisms do not always respond (or interact) the same way in the same circumstances; rather, we are 'responsive' with our environment (broadly defined) and it is this response that we may reliably define as the recurrent empirical variable, as opposed to isolated physiologic or psychological variables. Today, the Responsive Order is indeed upheld by discoveries in psychoneuroimmunology; for example:

- Psychosocial stressors activate the *same* neural circuitry activated by infectious agents, but this activation occurs at a different location in the neuro-immune-endocrine cascade.
- Immune activation produces different changes in the body, depending on the particular type of stressor,[33] its frequency and duration, and individual coping strategies.[34]
- Activity of the hypothalamic-pituitary-adrenal (HPA) axis can be 'primed' (through experience) to activate at a lower threshold; for example, negative early life experiences (i.e., abuse, emotional neglect, poor bonding[26] or maternal stress during prenatal development[35] can pre-sensitize a child's vulnerability to stress.
- Negative mood and hostility affect immune function. People with rheumatoid arthritis (RA) often experience flares of the disease following a stressful event. Zautra[36] found that levels of the cytokine, Il- 6, increased more significantly after stress in people with RA than in those without RA. Both groups showed an increase in Il-6, but the increase was greater for people with RA, suggesting that the inflammatory response could be additive (i.e., people with RA had flares of disease following stress, because the same cytokine (Il-6) already was present).
- The immune system reacts differently in people with different ways of being, different attitudes, and different perceptions of the world. For instance, women with inflammatory diseases are more likely to suppress emotion and to have a tendency toward self-sacrifice and inner tension.[37]

- Studies of the effects of psychological interventions (mainly behavioral) on physiologic markers show that physiologic changes occur when a person experiences a sense of control or mastery over specific stressors[38] (think, '*docere*').

" 'The argument is not that depression is caused by immune activation. The argument is that whatever does cause depression (e.g., negative thoughts, loss of a loved one, etc.) **may have access to the same neural circuitry** that evolved to mediate sickness and activates that circuitry. Some of the symptoms of depression, particularly the vegetative symptoms, may result from this process and may represent essentially 'sickness responses.'[33, p. 98] The positive feedback circuit between the neural and immune system helps maintain the depression."[39]

The Relevance of Embodiment to Nature Cure: Depuration, detoxification, drainage

For doctors, thinking of patients as 'embodied' is an approach that complements the nature cure focus on depuration, detoxification, and drainage. Embodiment extends these concepts beyond the process of ridding the physical body of toxins to also include ridding the body of psychoemotional 'toxins.' Importantly, this includes more than just stress reduction — it encompasses its own psychoemotional depurative effects. Stukey's 2010 literature review[40] of the role of expressive arts in psychoemotional health, reinforces this point:

- music decreases anxiety and restores emotional balance
- auditory stimulation can decrease pain and calm neural activity, and may help restore the immune system to

effective function with reductions in heart rate, respiratory rate, etc.

- visual arts, aside from the expected outcomes such as enhanced self-worth and distraction (from pain), showed overall enhanced outcomes for patients and shorter hospital stays
- expressive writing affects cognitive, emotional, social, and biological parameters: in studies of patients with HIV, for instance, those exposed to 'emotional' writing for 6 months showed decreased CD4+ lymphocytes and viral load at study end

The process of inhibition (suppression of emotion, expression, and feelings) can increase autonomic activity, can produce somatic symptoms, and can diminish wellbeing. Studies show[41] that written emotional disclosure (also known as 'therapeutic writing') produces changes in immune functioning, including consistent and significant improvements in health outcomes.[42] The hypothesized mechanism of action in written self-disclosure is its provision of opportunity for writers to express previously inhibited thoughts and emotions.[43] In his review, Stuckey noted that the depurative effect(s) of expressive arts is its ability to reach the subconscious self[16, p 259] — a concept strongly advocated by Gendlin's concept of the 'implicit felt sense' (that which is outside of conscious awareness) and more recently alluded to (but not articulated) in the 2022 *Merck Manual* definition of 'somatic symptom disorder:' "…the symptoms are not intentionally produced or feigned and may or may not accompany known medical illness …

patients are commonly unaware of their underlying psychiatric issue."[44]

"… emotions which are repressed and cannot be discharged through the normal channels are converted into physical symptoms which serve partially as a release and partially as a defence [sic] against their expression."[11, p 124] Roger Newman Turner, ND, DO Naturopathic Medicine: Treating the whole person

What is the Importance of the Embodiment Concept in Clinical Practice?

It sometimes can be difficult to escape our pursuit of cause and effect. The key aspect to consider in an embodiment model, however, is not *cause*, but ***process***: that is, the *same* neural, immune, and endocrine circuits may be activated by *different* 'experiencing' (or stressors), and the response to those stressors is individualized. It is a complex cascade that illustrates Gendlin's[45] description of embodiment and Lindlahr's 'symphony of life:'

Gendlin: "Our own living bodies also are interactions with their environments, and that is not lost just because ours also have perception… . In sensing itself the body functions as our sense of each situation. It would be a gigantic omission to miss this role of the body's self-sentience, and to try to constitute the world out of percepts of the five senses."[45, p. 2]

Lindlahr: "While studying mental and emotional causes of disease we must realize that every mental and emotional vibration is instantly transmuted into the physical material vibrations of the physical body. … Vibrations originating on

one plane of being – physical, mental or psychical – are by continuity transmuted into the vibratory conditions of the other planes."[11, p.36]

Each concept is similar, differentiated only by the vocabulary of its era, as discussed at the beginning of this chapter. Although beyond the scope of this chapter, psychotherapists familiar with Gendlin's philosophy and technique can assist patients in 'attending to' their felt sense in order to explicate implicit phenomena that have been beyond the patient's conscious awareness. This involves working with patients to explore 'the feeling of' certain experiences, as opposed to 'how did you feel' conversations. For instance, a patient might describe 'the feeling of' intense joint inflammation as feeling trapped in quicksand or entrapped in chains, whereas the inflammation itself might feel warm, tender, and/or painful. Explicating the implicit feeling may then help that patient discuss additional psychoemotional experiences contributing to the physical presentation.

Embodiment: it's 'the feeling of' an experience, not your feeling 'about' an experience.

'Embodiment' further articulates nature doctors' *tolle totum* approach to patients. It enables clinicians to consider patients as *more than* their behaviors, experiences, thoughts, and emotions, and as *more than* their physical being. It helps doctors to understand patients as always and simultaneously responding physically, psychologically, and emotionally to both external and internal

environments, and that a physical response may not always be apparent. With the increasing body of empirical and RCT evidence now upon us, we know that assisting patients through the process of *attending* to their experiences (the implicit felt sense) can afford both physiologic change and psychoemotional forward movement.

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TOPIC 6

The Effects of Light and Color on Health and Wellbeing

Cheryl Deroin, NMD

Use of Light throughout the History of Medicine

Ancient cultures, including the Egyptians, Romans, Greeks, and Chinese used light to resolve physical maladies, emotional imbalances, and to assist the body's return to homeostasis. Heliopolis, the Greek city of the sun, was famous for its healing temples, in which patients were brought into specifically colored rooms. The windows of these healing rooms were covered with special cloths dyed violet, red, blue, or green. With each color, the sunlight entering the room gained specific qualities to soothe the mind and heal the body. Herodotus (c. 484-425 BC) was the originator of heliotherapy,[1] a medical therapy using exposure to sunlight during specific times of day and on specific areas of the body, to regain health.

Water is good; air is better, but light is best of all. Arnold Rikli[2]

In the late 1800s, heliotherapy regained popularity in different parts of Europe through nature doctors, such as Swiss physician, Arnold Rikli (1823-1906). Therapeutic exposure to sunlight was used to treat tuberculosis, cholera, gangrene, diabetes, obesity, gastritis, and hysteria among other ailments.[1] Many other physicians, including Auguste Rollier (a Swiss physician, 1874-1954), Benedict Lust, and Henry Lindlahr followed Rikli's treatment

protocols in their sanatoria or health institutions.[3] From 1928 to the middle of the 20th century, Champneys, Stanley Lief's nature cure clinic in England, included designated male and female enclosures in the grounds, where patients could sunbathe in the nude. In the early 1920s, Harry Spitler, DOC, MD, MS, PhD, theorized a role for specific frequencies of light (i.e., color) in the development and function of vision and general physiology in humans. In his thesis, *The Syntonic Principle* (1941), he suggested that various light frequencies achieved these physiologic effects by stimulating and balancing the sympathetic and parasympathetic nervous systems.

The role of light in nature and evolution

"Plants have sophisticated energy-harvesting machinery to convert solar energy … into chemical energy. Microorganisms…. have light-gated ion channels that enable phototaxis and thus enhanced energy harvest. The vision system of higher organisms is based on phototransduction proteins … . Fruit flies and jellyfish generate bioluminescence, and insects and birds reflect colorful irradiance with photonic crystal structures… . These examples illustrate not only the extraordinary connection between light and biology, but also the role of light as an important determinant and driving force of natural evolution." SH Yun and SJJ Kwok, 2017[4]

Physiologic Effects of Sunlight

Sunlight as medicine is just as necessary to the body's survival as are food and water.[5,6] Energy derived from the sun is the source of vitality through the food we ingest and the air we breathe. Without this source, photosynthesis would not take place and, more significantly, our ability to

maintain DNA reproduction at a cellular level would be eliminated. Light, in the form of photons, is absorbed by cellular DNA.[7] Photons initiate cellular alignment, regulate chemical energy, and assist in generating ATP. Most of the body's enzymes and proteins are activated by light, leading to 'chemiluminescence,' which then influences visual perception that can be associated with specific neural frequencies.[8] Only light of certain wavelengths and frequencies can affect cellular DNA, and only sunlight contains the total spectrum.

"Photons are force carriers. They carry the energy or the force of light. ... [they] are not matter, but can interact with matter to alter its chemistry, structure, and energy." Ray Gottlieb, OD, PhD[9, p 2]

The two wavelengths in sunlight that have beneficial properties are the infrared and the ultraviolet (UV) range. Ultraviolet rays are absorbed by the epidermis. As their penetration increases, their energy is transformed into chemical energy, resulting in skin pigmentation. Sunlight increases red blood cell count, increases the amount of hemoglobin in the cells, and normalizes white blood cell function,[10] thus increasing the body's resistance to disease.[11] It maintains the normal alkalinity of the body and decreases lactic acid in the blood, preventing acidic accumulation that is commonly associated with illnesses, such as cancer and arthritis.[12]

Sunlight helps maintain the normal alkalinity of the body by decreasing lactic acid accumulation in the blood. This prevents acidic accumulation (one form of Lindlahr's 'morbid accumulations') commonly associated with several chronic illnesses.[12]

Sunlight therapy decreases resting heart rate, blood pressure, respiratory rate, and blood glucose. It can increase strength, endurance, and tolerance to stress.[5] Ultraviolet and infrared rays stimulate the body's ability to maintain intercellular preservation of nutrients and to manufacture vitamins A and D.[5] Exposure to sunlight also increases phosphorus[13] (necessary for regulation of calcium in the body), and iodine (thus enhancing thyroid function).

The brain receives sunlight via the eyes. Photoreceptors in the eyes (rods and cones) transform photons into electrical impulses that are sent to the brain at approximately 234mph.[14] Some impulses travel to the visual cortex for the construction of images, while other impulses travel to the hypothalamus and directly affect the nervous system and the endocrine system.[15] The hypothalamus sends photons[4] to the pineal gland, which produces melatonin, the hormone that regulates our circadian rhythms.[16] The pineal gland also affects reproductive function, growth, body temperature, blood pressure, motor activity, sleep, tumor growth, mood, and the immune system.

Melatonin affects all the neurotransmitters. For example, neurotransmitters, such as dopamine and serotonin, require light to regulate sleep, to focus and gather information, and to regulate emotions residing at deeper

levels of the limbic brain. Without specific wavelengths of sunlight, dopamine and serotonin, acetylcholine, and other neurotransmitters cannot be synthesized in adequate amounts, and information cannot be transmitted from the brain to other parts of the body.[17, 18]

There are as many serotonin and dopamine receptor sites in the lining of the digestive tract as in the brain, itself.[27] Each cell membrane contains receptor sites that attract and repel neurotransmitters. Digestion also can be enhanced by sunlight as the more balanced the neurotransmitters support this.

Artificial light cannot substitute for the specific wavelengths carried by the sun to the Earth, just as synthetic vitamin C cannot substitute for vitamin C absorbed from food. Nevertheless, the practice of phototherapy (using artificial light for therapeutic purposes) is becoming increasingly popular. In the field of dermatology, for example, phototherapy is used to treat a variety of skin disorders;[19] for treatment of post-operative keloid tissue (using pulsed light and heat energy);[19] and to treat *Acne vulgaris* (because the porphyrins synthesized by *Propionibacterium acnes* are sensitive to visible light).[20] Near-infrared light (NIR) has shown promising results for treating stroke and traumatic brain injury, without tissue heating or damage.[21]

Color therapy

Visible light is classified by wavelength. Because of their wave-particle duality, photons form wavelengths of light that create color when transmitted at a specific frequency.

Each of the visible colors is not only a single wavelength, but also comprises a broad range of wavelengths that appear as bands of color (a spectrum) to the human eye. The sun's rays consist of a rainbow of colors within and beyond the visible spectrum. These are classified within approximately 700 bandwidths (or wavelengths) within the visible spectrum, ranging primarily from 290-990 nanometers (nm). For example, green is composed of 70 different wavelengths within the range of 490-560 nm.

John Bastyr, ND, (1912-1995) medical pioneer and co-founder of Bastyr University, used both ultraviolet and infrared therapy, as well as colored light, in clinical practice. His practice was influenced by Carl Loeb, MD, author of *Handbook of Specific Light Therapy*: *an up-to-date treatise on light therapeutics as applied with the mountain sun and harmono chrome therapy*[22] who used carbon arcs with different cores projected through colored prisms to isolate light frequencies as colors in the spectrum. Bastyr also used the visible spectrum in practice, such as cobalt light exposure on pregnant women to prevent hemolytic development of bilirubin in unborn infants, and erythroblastosis in newborns.[23, p. 87] Pregnant women exposed to cobalt blue light also experienced reduced stretch marks and soreness, less painful contractions, and decreased labor time.[23, p 96]

The use of color therapy was first recorded in the late 1800s by Edwin Babbitt, MD, using a chromodisc — an instrument that directed light onto the body. Babbitt also used sun-charged water in colored bottles to treat certain ailments. His book, *Principles of Light and Color*,[24] discussed the use of color therapy as a curative tool and a non-invasive method for effecting change within the body. A brief history of color therapy is provided in Box 1.

Box 1 An historical overview of color therapy

Spectro-Chrome, developed in 1920 by Dinshah Ghadiali (1873-1966) in 1920, was a program that assigned attributes to colors based on the theory that the human body reacts to light, colors relate to physiological function, and exposing the body to specific colors restores homeostasis.[25]

The Syntonic Principle written in 1921 by Harry Riley Spitler, MD,OD, discussed how the use of light, administered through the eyes, could balance the autonomic nervous system. Spitler was one of the first to research the effect of light and color on the body's biochemistry.[9]

Light, Radiation, and You: How to stay healthy was authored by John N. Ott, ScD (Hon) in 1985. Ott, a naturalist photographer and pioneer in photobiology, used time-lapse photography to demonstrate the influence of the type of light and type of electromagnetic radiation on plants and animals, on the organism's response and growth.[26]

Esogetic Colorpuncture[11] was developed in the 1970s by Peter Mandel, ND, a German naturopathic physician.[28] Mandel's work was greatly influenced by Fritz Albert Popp, PhD, a German biophysicist who demonstrated that all cells communicate by light with the spectrum of visible light and microwave energy. All cells constantly emit and absorb small packets of electromagnetic light, called 'biophotons.' When a cell becomes disturbed, the light vibration around the cell becomes disharmonious. The disharmonious light can negatively influence the vibrational patterns of neighboring cells. Mandel used Kirlian photography to demonstrate that vibrational imbalances in the light emissions from cells could be brought into balance with the application of different colors of light. Each color is associated with a particular wavelength and photon intensity. The colorpuncture method is based on seeing each individual as a being of light with a unique path. By applying specific wavelengths of light to specific areas on the body, colorpuncture sends the light into the

deepest parts of the unconscious where people can access knowledge about what they need to do in order to heal. Stimulating the cells with light and color therapy through the skin can release stored memories, repressed and unconscious emotions, traumas and other physical blockages that can interfere with healing on physical, emotional and mental levels.[27]

The energy of light is associated with its vibrational frequency, its wavelength, and the quality and quantity of photons.[4] However, the environment of the individual receiving the light also is significant. The amount and intensity of light individuals can absorb varies widely. Every individual has a rate-limiting factor that determines the amount of information or energy received, but there is no specific way to know this factor. Hence, with the use of color *and* light it is important to:

- understand where the imbalance resides in a person
- open the pathways for information and energy carried by light to flow both to and from the body
- provide only the frequency and quality of wavelength the body is ready to receive

Addressing individual needs permits light therapy to work more effectively. Specific wavelengths of light in the form of color can re-establish a healthy environment in the brain and body, and can shift the circuitry of how an individual responds to external stimuli.[28] Every individual's visual perception is unique and is determined partially by genetics, childhood development, and personal growth. Light and color therapy do not attempt to change this perception, but to help the body return to homeostasis.

With a return to homeostasis, individuals are then able to perceive their own needs on a spiritual level (as in a belief system), an emotional level (how one responds to a situation or to a person), and a physical level (food or lifestyle choices).

"If a cell is vital and working normally, light has little impact, but if a cell is under stress and out of balance, photons of the appropriate color can optimize a broad range of local and systemic systems." … Dysfunctioning mitochondria can be resuscitated by light and light exposure can prevent or reverse mitochondrial diseases… . Cells communicate and coordinate with other cells throughout the body. Light's impact on one type of cell will influence the metabolism of other types of cells. Various types of cells (e.g., liver, muscle, hypothalamus, etc.) respond to photo-induced modulations of cellular pH in a variety of different ways.[28, pp. 10-11]

Today, phototherapy is widely researched and used in medical practice to target a variety of conditions, including cancer, depression, brain injury, dementia, sleep disorders, ocular tumors, and mood disorders. However, the ability to conceptualize therapeutic properties in terms of 'energy,' rather than by physical substance remains challenging within the dominant worldview of medicine. In his 2005 address upon receipt of the Nobel Prize for Physics,[28] Ray Gottlieb, OD, PhD, recognized this challenge and advocated for an update to Spitler's theory, using knowledge from contemporary research:

"Spitler had it right when he wrote:'Light carries chemical potentialities … . It probably would seem strange to walk into a chemist shop [a pharmacy] and request a quantity of light by the gram or pound as one might purchase other chemicals, yet the fact remains that light carries chemical potentialities just as do other chemicals that are purchased by weight.' " [28]

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TOPIC 7

Contact with Nature: An essential component for optimal health

Kurt Beil, ND, LAc, MPH

Early nature cure practitioners were acutely aware of the important connection between health and nature, and incorporated contact with nature into their practice. Throughout the 19th and early 20th centuries, a philosophy of practice evolved, based on a belief in nature's inherent healing properties and on results from their own empirical practice. Today, this same philosophy has developed as an indispensable component of contemporary naturopathic clinical practice and is increasingly supported by evidence-based research.

'Prescribing' the Natural Environment

Henry Lindlahr (1862-1924), a prominent force in shaping the philosophy of early naturopathy, maintained that any organism striving to be in a state of optimal health, "…must vibrate in unison with its correlated harmonics in nature."[1, p. 34] Such ideas have existed throughout human history. Indigenous and native peoples across the globe have honored the comprehensive, interconnected relationship with the Earth for thousands of years.[2] The Chinese Taoists understood and practiced living in harmonious balance with the "Way" of nature. In ancient Greece, Hippocrates (c.460-370 BCE) acknowledged environmental forces affecting health in his treatise, "Air, Water, Places,"[3] while Galen (129-216) promoted the importance of natural and

non-natural influences on hygiene.[4] [i] This holistic approach to health contended with opposing Cartesian, reductionist ideas (worldviews) throughout the European Renaissance (c.1300-1650) and Age of Enlightenment (c.1685-1815).[5] During the Industrial Revolution (c.1760-1840), medicine further followed the path of mechanistic reductionism, while society simultaneously experienced significant growth of cities, increased pollution, and degradation of health. The reactionary Conservation Ethic movement (1850-1920) arose during this time, that promoted a reverence for the physical beauty and spiritual value of nature — as exemplified by naturalist John James Audubon (1785-1851); Romantic writers, such as Johann Wolfgang von Goethe (1749-1832); as well as the Transcendentalists, Ralph Waldo Emerson (1803-1882), Henry David Thoreau (1817-1862), and Walt Whitman (1819-1892).[6] At a time of increasing separation from the natural world, this movement reconnected people with the ancient awareness that the environment is a primary force in shaping health, as advocated by the Environment Theory of Florence Nightingale (1820-1910);[7] the urban nature of landscape architect, Frederick Law Olmsted (1822-1903); and the writings of naturalist, John Muir (1838-1914).

It is within this greater social context that nature cure pioneers, such as Sebastian Kneipp (1821-1897), Arnold Rikli (1823-1906), and Emmanuel Felke (1856-1926) provided sanitaria in natural settings for people seeking a

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[i] Hygiene' in the classical Greek context, was named after the goddess *Hygeia* and referred to the holistic 'art of health' (as opposed to the therapeutic 'treatment of disease' associated with the god *Asclepius*). It is more synonymous with current concepts of prevention and *salutogenesis* (health promotion) than with modern uses referring to personal cleanliness.

'return to nature' experience in which to take their regimens of diet, exercise, hydrotherapy, and other modalities.[76] Over time, the empirical knowledge accumulated through nature cure practice evolved into early naturopathic clinical practice that encouraged naturopaths to support patients' self-healing capacities and conditions for health. As Zeff observes in "The Fundamental Principles underlying Nature Cure Methodology" (Section II, Topic 2), "Nature cure physicians treat … disturbance, not by suppressing the body's adaptive reaction to the disturbance, but by enhancing its self-healing mechanisms using methods to enhance immune activity."[8] Although nature doctors of the 19th century were able to observe the health benefits resulting from patients' time in nature, they didn't have the tools to elucidate the direct link with enhanced immunologic activity. As described later in this chapter, today's applied sciences enable us to further understand the influence of nature on numerous systemic physiologic and psychological outcomes.

"In all cases, and in all diseases, man can recover and again become happy only by a true return to nature: man must today strenuously endeavor, in his mode of living, to heed again the voice of nature, and thus choose the food that nature has laid before him from the beginning, and to bring himself again into the relation with water, light and air, earth, etc., that nature originally designed for him." Adolf Just, Return to Nature! p.6

In a time dominated by emergence of the Industrial Revolution and the rapid growth of cities, early nature doctors realized humans were increasingly deprived of an

inherently essential connection with the natural world. Adolf Just (1859–1936), one of the strongest proponents of this belief, observed, "…man has become sick and miserable only because he no longer heeds the VOICES of NATURE [sic], and has thus everywhere transgressed the laws of nature, and lost his way." [2, p.6] Today, Just and colleagues' sentiments retain their relevance. The feeling we have 'lost our way' is increasingly acute in an era with lifestyles that promote some of the greatest environmental challenges5 and environmental dissociation[3,4] in human history. Currently, fewer than 20% of Americans recreate outdoors more than once a week, and less than half spend five hours or more outside, weekly.[6,7] More people spend more time inside offices, automobiles, and digital spaces disconnected from the natural world and exposed to unnatural stressors that erode wellbeing.[9,10] The consequent impact includes numerous personal and societal health issues, recently collectively identified in popular media as Nature Deficit Disorder.[ii], [8]

The evolution of nature's role in health: from nature cure to contemporary naturopathic practice

Naturopathic physicians continue to rely on the interrelationships among health, healing, and the natural environment. Today, this is expressed in three components of naturopathic clinical theory (the Naturopathic Determinants of Health, the Naturopathic Model of Healing, the Naturopathic Medicine Therapeutic Order™). The Six naturopathic Principles of Practice dictate *how* this clinical theory is applied in practice.

[ii] Nature Deficit Disorder is a term coined by Richard Louv to "serve as a description of the human costs of alienation from nature." [Ibid] It is not a recognized medical (ICD-10) or mental health (DSM-V) diagnosis.

Nature as a determinant of health In naturopathic clinical theory, 'nature' refers to the collection of material objects and immaterial phenomena, including animal, vegetable, mineral and other components, existing in the Earth's ecosphere that have not been produced by human beings. When referring to nature's effects on health, naturopathic medicine focuses on the salutogenic (health-promoting) aspects of nature (i.e., natural light, pure water, organic food, exposure to the earth and soil, time spent outdoors in natural environments). Exposure to nature — according to early naturopathic theorists — builds vitality, stimulates the vital force, and engages the healing response (*vis medicatrix naturae*). Of course, some aspects of nature are deleterious to human health (e.g., poisonous snakes, carnivorous predators, toxic metals, natural disasters) and cause a decline in vitality or may suppress or injure the body's natural process of healing, but they are not what are intended here.

Naturopathic model of healing This model illustrates how nature increases or decreases vitality — depending on its presence as a healthy exposure or as a corrupting exposure —and how engaging with nature stimulates the healing response.[11]

Naturopathic Medicine Therapeutic Order™ According to this algorithm, connection with nature is represented at multiple levels of clinical treatment. At the most fundamental level (Level I), direct contact with a safe and supportive natural world is essential for establishing the basis for health. Physiologic necessities, such as oxygen, water, food, and shelter, derive from nature, and ensure not only human survival, but also optimal health. Because life, itself, is a manifestation of the natural world, contact with nature stimulates the vital force in patients and the energetic properties of birth, growth, regeneration, and healing that allow life to prosper derive from this source.

Six Principles of Practice The six Principles of Practice guide naturopathic physicians on how to apply naturopathic clinical theory when working with patients. Incorporation of natural environments allows simple, direct application of these principles in prevention and treatment plans (Table 1).

Pamela Snider, ND

Table 1. Using the Six Principles of Practice to implement contact with nature in clinical practice

Principle	Nature	Clinical example
Healing Power of Nature (*Vis medicatrix naturae)*	Nature and natural elements are imbued with life force. The patterns and processes of nature support health, stimulate healing, and create a harmonious, balanced state of wellbeing.	Time spent in a forest increas heart rate variability, immune system function, relieves depression and anxiety, and improves feelings of vitality an quality of life.[12]
First Do No Harm (*Primum non nocere*)	Use gentle exposure to nature as a low-force intervention.	Have a patient with mild depression place a bouquet o flowers or indoor houseplants around the home.[13]
Doctor as Teacher (*Docere*)	Empower and educate patients to regularly interact with a safe and healthy natural world.	"Walking in your local park fo 30 minutes 2-3x per week will help you lower your blood pressure, lose weight, improv your mood and increase your energy. Do you want me to help you find directions?" [207]
Treat the Cause (*Tolle causam*)	Address patients' imbalance of modern vs. natural experiences.	Accumulated health effects from 'urban stress' (i.e., crowding, traffic, noise, etc.) can be reduced by nature-based retreats.[14]
Treat the Whole Person (*Tolle totum*)	Nature exposure is a multifaceted healthcare approach and intervention that benefits every studied aspect of holistic wellbeing.	Gardening has been shown to improve cardiovascular function and body mass index benefit mood and self-esteem enhance social interactions an sense of community, and increase intake of vitamins, minerals, antioxidants, and healthy soil bacteria.[15]
Prevention (*Preventir*)	Contact with nature supports intrinsic homeostatic mechanisms.	Inflammation from free radica induced oxidative stress can b prevented, in part, by regularl connecting with the ground t absorb free electrons directly through skin (via the process Earthing).[16]

Hereditary Biophilia: The evolutionary connection between humans and nature

'Biophilia,' a term first used by psychologist Eric Fromm, refers to humans' subconscious affiliation with other living systems. In 1984, noted Harvard biologist Edward O. Wilson used the term as part of his "Biophilia Hypothesis" to suggest that this affinity for the natural world is *inherent* and due to our common biological and evolutionary origins.[24] He proposed no one has to be taught to recognize the beauty of a radiant sunrise or the majesty of an old-growth *Sequoia* grove because it is an adaptation to living for millennia in direct connection with nature. Decades of research have supported the biophilia hypothesis,[iii] demonstrating that humans often respond automatically to non-threatening nature encounters with an enhanced sense of joy, appreciation, and peace.[28] These positive reactions to nature are nearly universal across many different cultures[25,26] and provide further evidence for the shared historical response to natural experiences our species has encountered throughout its collective existence.[27] Evidence suggests biophilia is such an ingrained psychological response that we may *require* it to achieve optimal function,[29] in a manner similar to physiologically essential nutrients, such as vitamin C or omega-3 fatty acids. This has led some to refer to contact

iii Technically, due to the substantial evidence base, this should now be called the 'Biophilia Theory,' but for historical purposes continues to be referred to as a 'hypothesis' in most academic and professional circles.

with nature as ‘vitamin N’[20] with attempts to empirically determine minimal and optimal ‘doses.’[199-201]

Biophilia: humans’ subconscious affiliation with other living systems. Recent research reveals humans’ response to nature has evolved from a cumulative ancestral response to the environment that has provided the signals, knowledge, and resources required for humans to survive and, importantly, to thrive.

Contemporary Evidence Supporting Time in Nature

During the 19th century, there were no randomized controlled trials (RCT) to validate claims of biophilia or nature cure’s efficacy. Practitioners made their recommendations based on direct observation (empirical evidence) and the application of clinical theory. Healing results were profound, and patients traveled from far and wide to receive the benefits of the Nature Cure. However, the lack of RCT evidence and an increase in pharmaceutical-based therapy resulted in a decline of Nature Cure methods. By the 1930s, conditions that once were treated using time in nature became treated in hospital environments, and the role environment played in the etiology and treatment of medical conditions also faded from view. In 1984, this trend changed with Ulrich’s landmark study, “A View Through a Window.”[211] Since then, numerous studies have confirmed that time spent in and around nature benefits many aspects of health and wellbeing.[14–16] Some of the largest umbrella- and meta-analyses (Table 2) report its significant positive effects on all-cause and stroke-specific mortality, cardiovascular disease (CVD) morbidity, dys/hyperlipidemia, type 2

diabetes, depression, low birth weight, physical activity, sleep quality, and self-reported health status.[17,18] Extensive studies have also validated nature's potential beneficial effects on depression, anxiety, hypertension, obesity, and cancer.[70, 179, 96, 184, 181, 182] With the increase in empirical and RCT evidence to elucidate the causative mechanisms of action, use of nature Rx programs is beginning to proliferate again. [207] 'Exposure to nature' is a fully holistic experience that affects every aspect of health — from optimal ion channel and neuro-immuno-endocrine function, to improving intersubjectivity among humans, and between humans and the environment, including the following concomitant physical, cognitive, pschoemotional, electromagnetic, spiritual, social, and environmental benefits.

Table 2. Meta-analyses and systematic reviews identifying positive health effects of nature/green space on clinical conditions

Decrease in:				Improvement in:
• All-cause mortality[186]	• Low birthweight	• Physical activity
• Stroke-specific morta	• Anxiety [179]	• Sleep quality
• CVD morbidity[180]	• Cancer [181,182]	• Self-reported heal
• Dys/hyperlipidemia	• Hypertension[96]	
• Type 2 diabetes	• Insomnia[183]	
• Depression[70]	• Obesity[184]	

Psychophysiological health benefits

Although they did not have terminology for it, one of the reasons nature cure practitioners brought patients to nature-based locations was to decrease stress. Today, the study of this concept is known as environmental psychophysiology.[17] The stimuli of nature cause an innate,

biophilic response affecting neurological, psychological, and endocrine systems.[88-91] Evolutionary adaptations from ancestors living millions of years in a natural landscape have resulted in a balanced baseline setpoint of sensory-perceptual neuro-endocrine responses that we still have today.[24] Non-threatening forms of pastoral landscapes, quiet foliage, and tranquil animals subconsciously signal the anterior cingulate gyrus (e.g., amygdala)[18] that no imminent danger is present.[78] Similarly, the gentle, repetitive, uninterrupted sounds of nature (e.g., falling rain, whale songs) and pleasing aromatherapeutic scents of flora that have been utilized for thousands of years to induce relaxation have been empirically validated.[79,80] These environmental stimuli provoke an ancient parasympathetic nervous system response that promotes relaxation of physiologic systems, leading to muscle relaxation, decreased heart rate and breathing, and increased psycho-emotional relaxation.[81, 82] By contrast, many contemporary stimuli (e.g., automobile traffic and video display screens) are relatively new experiences to our collective awareness. Although they may not be directly life-threatening, the fast movement and loud sounds stimulate the sympathetic nervous system in the same manner as prehistoric threats, promoting a subconscious physiologic 'fight, flight, or freeze' response.[83, 84] Modern urban environments also have been shown to activate brain areas, such as the amygdala, in ways natural environments do not.[19, 98]

"The physician could not deal with the problems of disease if he did not concern himself with the integrated reactions of man to environmental forces. He would have little chance to help his patient if he did not try to comprehend the effects of the total environment on the human condition." [30] **René Dubos, 1964**

Constant exposure to these modern stimuli also accumulates over time and contributes to Selye's famous 'exhaustion stage' of the General Adaptation Syndrome (known commonly as 'chronic stress burnout').[85] Clinically, this contributes to the accumulation of allostatic load that manifests as conditions, such as adrenal fatigue, blood glucose dysregulation, hypertension, systemic inflammation, and immune system dysfunction. Collectively, these contribute to the known outcomes of chronic stress, such as cardiovascular disease, type 2 diabetes mellitus, and obesity[86, 87] (Table 3). The difference between the stress-inducing properties of urban society and the stress-reducing properties of nature have been demonstrated by numerous studies regarding visual [88–92] and auditory stimuli. [82,93–95] Since the 1980s, studies using biomarkers of chronic stress and the effects of allostatic load (e.g., blood pressure,[96] salivary cortisol,[97] heart rate variability (HRV),[91] pro- and anti-inflammatory cytokines,[99] DNA methylation,[100,101] and telomere length[105–107] have demonstrated the beneficial effects of natural environments versus the deleterious effects of modern, built environments.

Table 3 Sensory input creates physiologic responses that have been shown to precipitate several health conditions.

Sensory input	Physiologic response	Accumulated Symptoms	Selected Clinical Outcomes
• Auditory • Visual • Olfactory • Tactile	• Blood pressure • Salivary cortisol • Heart rate • Pro- & anti-inflammatory cytokines	• Chronic stress • Adrenal fatigue • Dysglycemia • Hypertension • Immune dysregulation	• CVD • Type 2 DM • Obesity

For example, the Japanese practice of *shinrin-yoku* or 'forest bathing' has demonstrated that walking through a forest compared with an urban setting conveys significant, positive health effects on parasympathetic and sympathetic nervous system activity, including reduced systolic and diastolic blood pressure, reduced concentrations of salivary cortisol, and decreased overall heart rate. This consequently enhances positive mood and decreases negative mood and anxiety states.[20,12] Other responses to forest bathing result from exposure to aromatherapeutic chemicals produced by vegetation. These chemicals, primarily terpenes known as phytoncides, have measurable immunostimulatory, anti-inflammatory, and mood-regulating effects.[21, 22] These findings suggest the psychophysiological mechanisms resulting from regular exposure to natural environments provide protective, preventive, restorative, and therapeutic health effects

"Breathing fresh air also exercises a most rapid and beneficial influence on a patient. The window in the sickroom should, therefore, be open.... Let those able to walk enjoy the open air as much and as often as possible." Friedrich Eduard Bilz, The Natural Method of Healing, v1, 1901, p. 1

Cognitive health benefits

Nature doctors of the 19th century frequently recommended extended walks in natural settings to clear the mind and enhance mental clarity. This may have been based, in part, on pioneering psychologist, William James, and his theories on attention (1890) which stated certain stimuli possess the ability to free the mind from distraction and to provide 'mental resources' for other cognitive activities.[23] Later research by Rachel and Stephen Kaplan combined James' ideas with Wilson's biophilia hypothesis to form the Attention Restoration Theory (ART), which suggests humans cognitively process natural stimuli (e.g., seeing beautiful flowers and pastoral landscapes or hearing birds singing) with less cognitive effort than urban stimuli (e.g., high-density infrastructure, traffic noise, etc.).[31, 24] Decades of research have validated ART, with evidence confirming exposure to visual and auditory nature stimuli can improve visual and spatial working memory, information-processing speed, and directed and sustained attention, while human-produced stimuli can have the opposite effect.[33,34] [25,26] ART research has identified four distinct aspects of an environment that influence restorative cognitive capacity[31,32] (Box 1).

Box 1. Four attributes of Attention Restoration Theory (ART) that influence an environment's perceived restorative effects

- Fascination: how well does the environment capture 'indirect' attention (i.e., without requiring mental effort)?
- Being away: how well does the environment provide opportunity to mentally separate from the thoughts and concerns of daily life?

- Extent: how well does the environment create a sense of organizational structure and opportunities for exploration?
- Compatibility: how well does the environment meet the individual's intended needs and goals for the experience?

Kaplan S. The restorative benefits of nature: Toward an integrative framework. *J Environ Psychol*. 1995;15(3):169-182.

Menardo E, Brondino M, Hall R, Pasini M. Restorativeness in Natural and Urban Environments: A Meta-Analysis. *Psychol Rep*. 2019. doi:10.1177/0033294119884063.

The benefits of ART have been measured in many settings and include decreased burnout in healthcare facilities, to increased workplace satisfaction and productivity in offices, to improved academic performance in children when exposed to greener schoolyards.[219, 221, 222] In particular, the attention-restoring capacity of natural environments has been shown to confer a beneficial influence on children diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) in a manner that may be as effective as standard pharmaceutical medication at improving attention and cognitive performance.[47,48] Playing in natural-landscaped outdoor spaces, compared with indoor or outdoor 'built' playgrounds, can significantly improve severity and frequency of ADHD symptoms.[45,46] Population-based epidemiology studies have demonstrated 'greener' schoolyards and neighborhoods are associated with significantly lower rates of childhood ADHD, even after controlling for socioeconomic, nutritional, and environmental factors.[49–52]

Psychoemotional health benefits

The beauty of the natural world has long been recognized for its ability to alter a person's emotions and improve mood. Many studies demonstrate that time in nature can effectively increase positive affective states, such as happiness,[53, 28] joy,[53–55] subjective wellbeing[62,29] (one of the strongest predictors for overall health) and vitality.[56,57] (Figure 1).

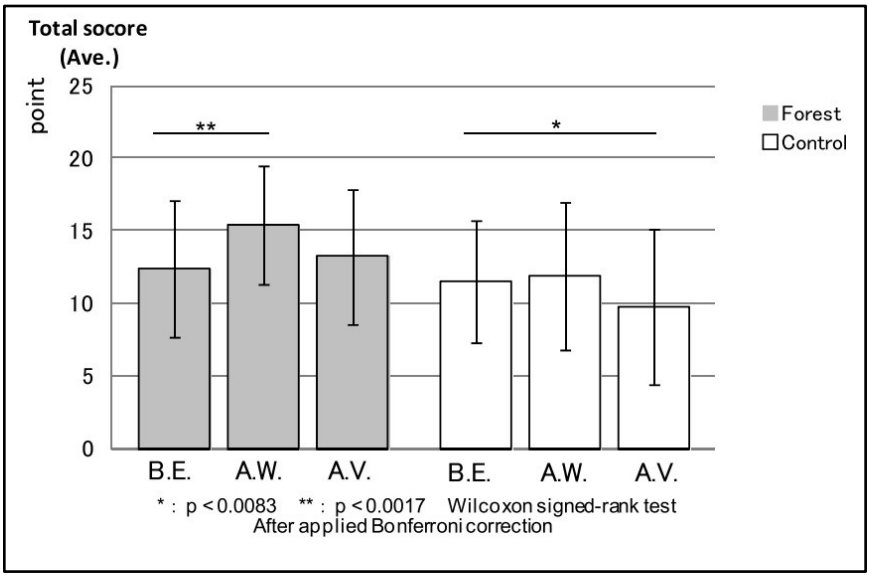

Fig. 1 Influence of forest (gray) and urban (white) environments on Subjective Vitality before (B) and after (A) 15-minute walking (W) and viewing (V) exposures.
Reprinted with permission from Takayama et al., 2014.

These states are more than just 'feel good' metrics — they demonstrate positive health effects that have direct outcomes for both mental and physical health status. The emerging health-promotion fields of ecopsychology, [233] salutogenesis,[64] positive psychology,[65] focus to varying degrees on an individual's personal relationship with the

natural world and how this 'connection to nature,'[243,245] improves quality of life and psychological resilience, while also reducing the burden of mental ill-health.[66–68] For urban dwellers whose regular contact with natural environments may be minimal, contact with nature has demonstrated improved outcomes in every psychopathology diagnostic category[75] of the *Diagnostic and Statistical Manual of Mental Disorders* (fifth edition),[30] and may confer a measurable offset of Nature Deficit Disorder. This is particularly true for depression and anxiety, for which several systematic reviews have shown that time spent in both natural green (i.e., vegetated) and blue (i.e., water-based) spaces significantly reduces both symptom severity and frequency immediately during and after exposure.[71-74]

"If we analyze the operation of scenes of beauty upon the mind, and consider the intimate relation of the mind upon the nervous system and the whole physical economy, the action and reaction which constantly occur between bodily and mental conditions, the reinvigoration which results from such scenes is readily comprehended." Frederick Law Olmsted, 1865 [27]

Electromagnetic health benefits

One of the most well-known and most prescribed early nature cure practices for mental and physical health is walking barefoot on the earth. When undertaken in the early morning this is called 'dew-walking' and was recommended by Preissnitz and Kneipp as a form of hydrotherapy and to stimulate circulation.[76] Other practitioners, such as Rikli and Just, advocated for constant barefoot walking and other ways to directly connect with

what they referred to as “earth power.” [76, p. 102] These practitioners recognized there were benefits to physically connecting with the earth, before scientific explanations for causal mechanisms were available. We now understand that direct physical contact with the ground neutralizes a slight net positive electrical charge that naturally accumulates in our bodies due to cellular oxidation and exposure to electromagnetic radiation.[265] For almost all of human history, regular contact with the earth allowed this charge to easily dissipate, producing an antioxidant effect that eliminates free radicals, and reduces inflammation in cells and tissues.[266] In the modern era, this direct connection with the Earth often is disrupted by paved concrete, rubber-soled shoes, and by living primarily indoor lifestyles resulting in an accumulation of imbalanced physio-electric positive charge. When uncorrected, this charge alters the function of ion-related processes, such as neural signal conduction, muscle contraction, hormone release, and cell membrane transport, leading to chronic inflammation, pain, and other manifestations of chronic disease.[267] Although contemporary research remains inconclusive about the association between our physical disconnection from the ground/soil and the prevalence of chronic disease in the modern era, evidence has shown that reconnecting, either directly or via specialized electro-neutralizing pads and sheets, has beneficial effects on many health parameters, including:

- sleep quality[268]
- muscle pain and post-exercise recovery[269]

- hypertension[270]
- physical function, energy, and mood; decreased fatigue and pain[271]
- parasympathetic vagal tone via heart rate variability[272]
- blood viscosity[273]
- skin conductance, blood oxygenation, respiratory rate, pulse rate, and perfusion index[274]
- serum electrolytes, glucose, iron, ferritin, thyroid-hormones, and immunoglobulins[275]
- circadian cortisol production, subjective pain and stress[276]

"And there is indeed nothing of greater interest and greater importance than the earth with its manifold and powerful curative effect....Whenever opportunity offers, one ought to sit on the ground even with clothes on. In taking walks and making tours, we ought frequently to rest by sitting or lying on the bare earth." Adolf Just, Return to Nature, p.102

Microbial exposure benefits

Early naturopaths were likely unaware of the numerous benefits incurred by barefoot walking and other methods of direct contact with the earth and soil. Data supporting the Hygiene Hypothesis[31] demonstrate casual contact with naturally-occurring microbes has multiple beneficial immune system effects,[277] including increasing regulatory T-cell (Treg) count and activity, and expression of anti-inflammatory cytokines (e.g., TGF-β1, IL-10, IL-17) in human skin, gut, and respiratory tracts.[279, 280] It has been observed that individuals spending time in more rural communities and/or in the developing world harbor more biodiverse

microbiomes and have more robust immune systems than individuals living in the relatively sterile urban and/or developed environments (where the majority of human populations live).[282] These microbial-induced immunomodulatory effects have been linked with reductions in environmental allergic reactions[32] and enhanced function of digestive, neurological, genitourinary, and other physiologic systems.[278] The Old Friends hypothesis suggests millions of years of co-adaptive evolution has created a beneficially symbiotic relationship between humans and certain environmental microbes that is illustrated by health benefits in individuals exposed to these microbes compared with those who are not.[281] For example, the common soil bacterium, *Mycobacterium vaccae*, has been shown in randomized, double-blind, placebo-controlled trials to induce healthy chemical, histological, functional, and behavioral changes in stress-related physical and mental health states (Box 2). These studies suggest that regular, frequent time spent outdoors with exposure to soil containing *M. vaccae* (and other commonly-occurring microbes) may be a simple, natural method to prevent or treat many physical and mental health conditions and to enhance the health benefits of vitamin N.

Box 2 Beneficial effects of exposure to *Mycobacterium vaccae*

- Upregulate serotonin function in the dorsal raphe nucleus and prefrontal cortex, decrease depression- and anxiety-related behaviors[283]
- Prevent stress-induced anxiety behaviors, and histopathological and functional colitis [284, 285]
- Reduce fear-startle response via upregulation of serotonin-receptor genes in the dorsal raphe nucleus and reduced corticotropin releasing hormone mRNA in the amygdala[286–288]
- Reduce stress-induced inflammation (i.e. hippocampal microglial priming and pro-inflammatory cytokines) and anxiety behavior[289]
- Prevent degenerative changes in various areas of the brain such as the dorsal raphe nucleus, hippocampus, and amygdala associated with mood, memory, and emotional stress response, respectively[290, 291]
- Increase cognitive function and stress resilience (including stabilizing gut microbial diversity in the presence of stressors)[292]
- Prevent trauma-related disruptions to sleep and behavior[293]

Spiritual health benefits

Early naturopaths recommended spending time in nature as a spiritual exercise. Current research shows that spending time in nature provides opportunities for individuals to experience their own spiritual nature.[109] The grandeur and mystery of nature can inspire some individuals to find meaning and purpose in life.[110] Such

experiences are essential aspects for optimal health and for achieving a sense of wellbeing[111,112] The sense of wonder when experiencing nature has been shown to contribute to improved positive mood, connection with others, connection with the environment, and feeling of immense reverence and respect, sometimes mixed with fear.[114,115,116] Nature can provide a place of solace and comfort, along with opportunities for reflection, stress release, and self-realization.[113] For some, observing the cycles of the seasons provides a metaphor to comprehend life's journey of birth, growth, decay, and death, while stimulating experiences in nature may provide personal and spiritual transformative experiences.[118, 119] Such transcendental events can help impart perspective and meaning to life, and it has been suggested that experiences of this type are necessary to achieve an optimal quality of life.[120] Nature-based therapeutic retreats are now used to help patients with cancer,[121] adults with depression, PTSD-affected military veterans, and at-risk urban youth.[122–125]

Sociobehavioral health benefits

Spending time in nature can promote feelings of connection with other people and with society as a whole,[126] and can increase altruism, generosity, and other prosocial behaviors.[127–129] Green public spaces also may have a moderating influence on negative antisocial behaviors in children[137] and violent crime in adults.[138] Parks and public gardens provide opportunities for team sports and other social activities that benefit physical and mental health,[135,136] and create opportunities for social gathering and community engagement, which support independent

social determinants of health, such as social cohesion and social capital.[130–134] Shared green spaces have the potential to unify people from diverse racial and ethnic backgrounds,[139, 142, 143] while also recognizing that diverse perspectives, appreciations, and even physiologic responses to the same green spaces can occur between different cultural groups.[33,34] Disparities of access, quality, and safety in urban parks, community gardens and other green spaces for low-income neighborhoods and communities of color are well known,[35–378] and directly affect health outcomes in populations already at risk from multiple sociocultural and economic factors.[149] Research has shown that low socioeconomic populations receive more health benefits from the same amount of green space than more privileged groups[152,153] through a variety of individual, community, and environmental health mechanisms.[150,151] Urban planning 'greening projects' with a focus on public health are increasingly common in communities with the highest rates of health disparities,[154,155] conferring substantial benefits to the physical and mental health of the community.[158-160]

Benefits for planetary health

'Planetary health' is a term used to describe the effects of human civilization on individual, societal, local, and global ecosystems.[172] Concern for planetary health is one of the most long-term outcomes resulting from contact with nature,[109] because individuals are more likely to engage in ecologically conscious, pro-environmental behaviors after having contact and connection with the natural world.[163–164] This establishes a positive feedback cycle of mutually

sustainable action to protect and preserve human and ecosystem health for current and future generations.[165, 166] This integral relationship between external connectedness to nature, personal and community health and wellbeing, and ecological sustainability has been understood by indigenous communities for thousands of years,[167, 168, 170] and is only now beginning to be acknowledged and practiced by contemporary medical communities. Planetary health is a topic in which primary care physicians can play an increasingly pivotal role,[173,174] and naturopathic physicians' holistic, nature-based orientation toward health and wellness enables them to contribute significantly to this movement.[175]

Simultaneously, the contemporary diminishing connection from nature decreases people's concern about environmental issues and reduces their tendency to engage in environmentally protective behaviors.[38,39] This has created a downward spiral of unawareness, inaction, and apathy that erodes both the sustainable health of environments and of the people who live in them across multiple generations.[40–42] Spending time in nature helps humans feel connected with their environment and world, consequently leading to improved attitudes and behaviors to protect and preserve those natural spaces, while simultaneously increasing sense of personal and social wellbeing.[21,22] The reciprocal relationship between humans and nature can positively or negatively influence the health of both.[23]

The relationship between human beings and the natural environment is intrinsic and ancient. As living beings on planet Earth, we have evolved across the millennia in and with our surroundings to respond and be affected in certain ways. The harmonious connection and exposure to natural settings advocated by founders of naturopathy remain relevant, today. In our current era, when many people live disconnected from the natural world, including the holistic benefits of exposure to nature can be an effective complementary approach to addressing physical and mental dysfunction and improving health for optimal wellbeing.

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