SUSAN MCDOWELL



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Natural Running, Walking and Movement to Respect Your Body

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Introduction

Nobody taught us to walk. We simply started, somewhere around our first birthday, and then spent the next few decades in shoes that reshaped our feet, sitting for most of our waking hours, and treating movement as something to book at the gym. This book is about undoing some of that. It will show you how to check your own feet, gait, balance, and walking speed in a few minutes; how to choose shoes that let your feet do their job; how to build up, safely and gradually, to walking and running with less shoe or none; and how to fold more natural movement into an ordinary day. Along the way I will show you what the research actually says, where it is strong, and where it runs out.

In an age where technology and sedentary lifestyles dominate, reconnecting with our natural movement patterns has never been more crucial. Throughout the chapters of this book, we explore various aspects of walking, balance, and natural movement, delving into their profound effects on our overall health and well-being.

We begin by highlighting the often-overlooked importance of walking in Chapter 1, “First Steps: The Underrated Importance of Walking.” This opening chapter sets the foundation for appreciating the simplicity and significance of walking. As we

journey through the subsequent chapters, we uncover the secrets of balance and coordination, the wisdom of ancient movement techniques, and how modern training can enhance our fitness and endurance.

From redefining fitness to embracing barefoot living, each chapter offers valuable insights and practical advice on incorporating natural movement into our daily lives. Whether you are a seasoned athlete or someone looking to improve your health, this book provides a comprehensive guide to harnessing the power of walking and natural movement. Join us on this journey to holistic care, where we nourish our bodies with movement, embrace the freedom of barefoot living, and transform our foot health. By the end of this book, you will have the knowledge and tools to make walking and natural movement a joyful and sustainable part of your life. The final chapter, "Stepping Stones," turns these insights into a practical, step-by-step guide to assessing your feet, choosing your shoes, and earning your way toward barefoot living.

This book draws on my own experience of walking and living barefoot, on the research, and on the first-hand accounts of practitioners: physiotherapists, a natural podiatrist, movement educators, and people who have made the change themselves. Several chapters are told in their voices. Where a chapter describes clinical practice in the first person, it is the practitioner who is speaking, as noted at the start of that chapter. With clear explanations and practical advice, we aim to shed light on how rediscovering our natural walking patterns can profoundly influence our health and well-being.

How to Read the Evidence in This Book

Health writing has a habit of turning one interesting study into a rule for everyone. I have tried not to do that here, and it is worth explaining how, because the same habits will help you judge anything else you read about feet, shoes, and exercise.

First, a single study is not the science; it is what happened once, in one group of people. Early results are often striking, and later, larger trials usually shrink them. That is not science contradicting itself: it is science working. When this book reports a finding, it says how large the study was and, where it matters, whether the result has held up.

Second, much of what we know about walking, sitting, and health comes from observational studies, which follow large groups of people and look for patterns. They can show that two things travel together; on their own, they cannot prove that one causes the other. People who walk a lot may also sleep better, smoke less, or simply have been healthier to begin with. Where a finding is an association rather than a demonstrated effect, I say so.

Third, read past the headline, and even past the summary. Abstracts tend to report the most favorable comparison and leave the limitations for later. A small trial whose results range from slight harm to large benefit tells us very little, however confident the press release sounds.

Fourth, ask who paid. Studies funded by the makers of a product are more likely to report results that favor it; a review of research on sugary drinks and weight gain, for example, found that studies with industry funding or other financial conflicts of interest were about five times more likely to conclude that there was no link. That does not make a shoe company's research wrong, but it is a reason to look for independent confirmation, and this book points out

where a claim rests mainly on the word of someone with something to sell.

Finally, cause and effect can run both ways. Are runners lean because they run, or do lean people take up running? Often the honest answer is a bit of both. Several chapters are told by practitioners in their own voices, and their clinical experience is valuable; but experience is not the same as evidence, and where the two part company I have tried to show you where the research ends and opinion begins. The notes at the end of the book list the main studies and sources, chapter by chapter.

Join us as we delve deeper into the transformative power of walking and barefoot living and discover how these fundamental activities can lead to a healthier, more vibrant life.

CHAPTER ONE

First Steps

The Underrated Importance of Walking

WALKING, A FUNDAMENTAL HUMAN movement, plays a critical role in our overall health and well-being. Despite its significance, modern society often overlooks the value of walking, focusing instead on more intense activities like running, weightlifting, and cycling. However, walking deserves more appreciation for its profound impact on our lives. For most of human history, walking was simply how people got from one place to another; it was woven into daily life and contributed to health and longevity.

Walking is often considered the most underrated movement, given how frequently we perform it and its foundational role in maintaining our health. In a society that prioritizes work-focused and exercise-focused activities, walking stands out as the most beneficial movement with the least risk. Most people can walk, and increasing the amount of walking in our daily routines can significantly improve our health, longevity, and quality of life.

Books such as *In Praise of Walking* by Shane O'Mara and *Perfect Motion* by Jono Linin delve into the exceptional importance of walking. O'Mara's book takes a data-driven, scientific approach,

exploring the evolutionary significance of walking, while Linin's book offers a more story-based perspective. Both books highlight the crucial role walking plays in our lives, each in its own way.

A Lesson from Injury

Injuries can profoundly affect our ability to walk, as evidenced by my recent experience with a puncture wound injury to my foot. This unexpected event prevented me from walking properly for several weeks, giving me a newfound appreciation for my otherwise fully functioning feet. The injury taught me the importance of foot health and the challenges faced by those with persistent foot pain.

Walking, unlike other forms of exercise, is accessible to most people and carries minimal risk. It is the foundational movement, akin to water or essential fatty acids in nutrition, which ensures our bodies function correctly. By walking more, we can enhance our health and well-being, making it a vital component of our daily lives. Walking is an essential yet often overlooked activity that significantly impacts our health and longevity. By recognizing its importance and incorporating more walking into our routines, we can enjoy a higher quality of life and better overall health. Walking is a simple yet profound topic. In this chapter we will cover the basics, and I will also share my own recent struggle to walk properly.

I've been dealing with a foot injury from a puncture wound. While collecting firewood in the bush, I was wearing thin-soled shoes which gave me false confidence. I wasn't paying enough attention and stepped on a sharp stick that pierced my shoe and went about 2 centimeters into my foot among other minor injuries. Reflecting on my injuries, like knee and shoulder pain, I recall

certain activities I couldn't do. Handstands and weightlifting were impossible with shoulder pain, while squatting or running was out due to knee pain. However, I could always walk, which provided comfort knowing I would not aggravate my injuries.

Walking is one of the few forms of exercise that is truly accessible to almost everyone.

The importance of foot health has been highlighted, as injuries to the feet and ankles can significantly impact mobility. Unlike other injuries, issues with the feet are immediately noticeable since they bear the body's weight with each step. For instance, a puncture wound in the foot can prevent one from placing any weight on the affected area. Initially, it is advisable to avoid putting strain on such injuries to aid recovery. This experience underscores the value of being able to walk pain-free, which many may take for granted.

How Walking Made Us Human

To provide context for this chapter, I often revisit our evolutionary background. Understanding how the human body evolved, and how we reached our current state, can inform what we should be doing in our daily lives. Although our genes have not evolved significantly in the past few hundred years, our lifestyles and environments have changed considerably. This creates challenges as we try to adapt and meet the needs of our bodies in modern conditions.

When discussing walking or locomotion in general, it is important to note that movement is a distinguishing feature of animals compared to most other organisms. Unlike plants, which move due to external factors, animals generate their own movement to find food, escape predators, and reproduce. Plants rely on external forces, such as wind, to disperse their seeds.

Animals face significant challenges in movement and navigating their environment to find food, escape predators, and reproduce. According to the book *In Praise of Walking*, the genes for walking and locomotion likely developed in ancient oceanic creatures. These creatures had similar gait patterns to humans and crawled along the sea floor. Interestingly, the same genes for locomotion are found in both these ancient animals and humans. Evolution adapts to new environments without creating entirely new genes.

Human bipedalism, the ability to walk on two legs and stand upright, distinguishes us from other animals, especially our ape relatives like gorillas and chimpanzees, who typically use all fours for speed. Most land mammals also move on four limbs, such as horses and dogs. While birds walk on two legs, they primarily fly, with exceptions like ostriches and emus. Unlike these birds that have a more horizontal spine, humans have a unique upright spine, a distinct feature among mammals. Among mammals, humans stand apart because of our evolution from arboreal life and quadrupedal locomotion to bipedalism. This transition afforded us several advantages.

Firstly, bipedalism enabled a more efficient gait, allowing us to cover greater distances with less energy expenditure. This efficiency facilitated migration, such as the significant event referred to as "Out of Africa." This capability also enhanced our hunting strategies, as standing upright freed our hands for using tools and weapons while moving.

Moreover, bipedalism provided us with the ability to have face-to-face interactions, thus fostering social connections. Walking in an upright position allowed for better awareness of our surroundings and quicker communication of environmental cues. These aspects were crucial for collaborative activities like hunting, foraging, building shelters, and transporting resources. The

upright posture permitted us to carry materials such as wood, further assisting in our survival and advancement. Human advancement along the evolutionary path is unique, marked by distinct characteristics that set us apart from other species. These include opposable thumbs—though they do not entirely distinguish us—as well as larger brains and the ability to walk upright bipedally. These features have significantly contributed to our development, though their impact on the planet has been both beneficial and detrimental given the current strain from the large human population.

Learning (and Relearning) to Walk

Understanding the mechanics of walking is essential, as it is a highly complex skill often taken for granted. This complacency stems from learning to walk at an early age and typically not needing to relearn it unless affected by an injury or brain trauma. Physiotherapists who work in stroke rehabilitation, for instance, regularly meet people who have lost all mobility on one side of the body, and with it the ability to walk. Rehabilitating these patients underscores the complexity and significance of this fundamental human capability.

In cases of brain injury, rehabilitation can be challenging due to the impaired functionality of certain brain regions. This often necessitates various adaptive processes for the brain to relearn how to control those muscles. Much of this process involves repetition. In the context of a brain injury, particularly a stroke affecting the motor cortex, the connection between the nervous system and the muscles can be severely disrupted. For example, achieving hip extension requires glute activation, which may be

compromised. Therefore, it is crucial to re-teach the individual how to activate these muscles through repetitive exercises.

Rehabilitation therefore relies heavily on isolated strengthening exercises. The patient is taught, again and again, to activate the glutes and quadriceps independently before these movements are integrated to restore functional muscle coordination. This step-by-step approach helps rebuild the neural pathways and muscle connections necessary for proper motor function.

The process is quite gradual, akin to the development in children. When we are infants, the systems in our bodies are designed to develop naturally without injury. However, a baby does not emerge from the womb fully ready for independent actions. It requires numerous repetitions and inevitable falls to learn mobility. Fortunately, these falls are less significant during early childhood due to the shorter height and reduced risk of severe injury.

In contrast, as we age, losing the ability to walk can have severe consequences. Falls in older adults can be life-threatening. While it is true that inherent systems facilitate learning to walk, the environment plays a crucial role. Observing others walking can inspire children to seek the same independence. This concept is often noted in writing on play: no one teaches a child how to walk explicitly. Even if someone attempted to do so, it might not be beneficial and could potentially cause confusion. The development of walking occurs naturally through observation and repetition.

It is important for individuals to observe others walking and understand that there are elements in their environment that they need to navigate. This understanding helps them utilize their problem-solving abilities to figure out how to reach their destination, whether it's by rolling, crawling, or eventually walking. Walking becomes the most efficient method once the necessary patterns are established.

Interestingly, even today's advanced four-legged and humanoid robots struggle to match the energy efficiency and adaptability of human walking, a testament to the complexity of the walking pattern. The process of walking requires significant balance and stability, which children learn gradually through trial and error. To walk effectively, one needs the ability to balance on two legs and also on one leg. This highlights the importance of hip stability and overall balance, as deficiencies in these areas can affect walking and running. Additionally, the mobility of various joints is crucial for walking. Movements such as hip flexion and extension, ankle dorsiflexion and plantar flexion, and big toe extension and flexion all play a role in the mechanics of walking. In short, multiple body parts must work together synchronously to create a fluid walking pattern.

What Shoes and Chairs Take Away

Furthermore, modern lifestyles often involve prolonged sitting and wearing shoes, which can reduce hip and ankle mobility. Sitting for extended periods can decrease hip extension, and shoes, along with sedentarism and lack of squatting, can limit ankle range of motion. This reduction in mobility can impact walking efficiency.

When individuals transition to barefoot shoes or walking barefoot, they often experience noticeable changes due to the removal of these limiting factors. This initial discomfort is particularly evident for those who have worn traditional shoes throughout their lives, as they may have developed tighter calves and other mobility restrictions. The human body is accustomed to certain environments, and when introduced to different conditions, some individuals adapt well while others require a more gradual adjustment. Providing the body with its most natural

environment enhances efficiency, applicable to activities such as walking, running, and squatting—fundamental human movements. The body's various regions work cohesively to maintain these patterns.

It is noteworthy that the body's ability to perform these movements becomes second nature after rigorous learning during childhood. Initially challenging, these patterns become ingrained over time. This developmental milestone, particularly a child's first steps, is highly significant, symbolizing newfound independence and mobility.

Walking represents a crucial developmental phase, offering unparalleled independence by enabling efficient movement from one point to another. Parents must monitor their children closely during this period. However, the appreciation of this milestone often wanes until mobility is compromised later in life.

The brain and spinal cord collaborate to facilitate rhythmic movements through **central pattern generators (CPGs)** located in the spinal cord. The brain initiates the desire to walk, while the spinal cord regulates the repetitive motion required for the activity. This system also applies to other rhythmic activities like breathing, swimming, and running.

KEY CONCEPT

Central pattern generators

Networks of nerve cells in the spinal cord that produce rhythmic movements such as walking, running, swimming, and breathing. The brain decides to walk; the spinal cord keeps the rhythm going, constantly adjusting it to input from the feet, eyes, and ears.

Walking involves reciprocal movement, where opposite limbs move in unison to maintain balance, stability, and momentum. Deviating from this pattern can disrupt efficiency and coordination.

Additionally, modern society's predominantly flat terrain contrasts with the varied landscapes our ancestors encountered, which constantly challenged the adaptability of our feet and ankles. The foot-ankle complex conveys critical information to the brain about ground conditions, enabling appropriate adjustments in movement behavior.

Understanding the mechanics and significance of walking underscores the intricate and remarkable capabilities of the human body.

In society, many natural movements that occur at the foot, ankle, hip, and throughout the body—resulting from varying terrains—are missing. It is important to address this issue because walking should be adaptable. Our central pattern generator continues to function while adapting to different inputs from our feet, eyes, and ears. Therefore, we should expose ourselves to environments that encourage challenge and adaptation. Currently, it is possible to navigate most places without encountering stairs or hills. Seeking out these natural elements and going barefoot or wearing minimal footwear that does not disrupt natural foot function, is essential for maximizing the benefits of walking.

Even small variations in ground texture, such as rocks and gravel, can promote adaptability. These micro-movements serve as "**movement nutrients**" for the feet, enhancing the overall health benefits of a walk. Gradual exposure to more challenging terrains is crucial, rather than attempting strenuous barefoot activities initially.

KEY CONCEPT

Movement nutrients

Just as food supplies nutrients, varied terrain supplies the feet with micro-movements. Rocks, gravel, grass, slopes, and uneven ground all "feed" the foot-ankle complex with sensory input and small adjustments that flat pavement and cushioned shoes take away.

Personally, transitioning to a barefoot lifestyle revealed the gradual nature of this adaptation. Initially, daily walks by the river, lasting 30 to 40 minutes, were sufficient to acclimate. Over time, specific textures, such as metal grates over sewers, became enjoyable aspects of the walk. Observing how others react to various surfaces during barefoot walks highlights the gradual build-up of tolerance and enjoyment. Ultimately, as the body and mind begin to crave the experience of walking, the improvements to physical and mental well-being become evident. This intrinsic motivation underscores the importance of regular walking. One never regrets taking a walk.

One never regrets taking a walk.

There might be times when you do not feel like going out or you are feeling particularly lethargic. However, if you push past that reluctance and go for a walk, you are unlikely to regret it. Walking invariably enhances one's mood and provides a beneficial break from activities, even if you are deeply engrossed in work or a creative endeavor. Taking breaks to walk can reinvigorate your focus and productivity as extended periods of continuous work necessitate intermittent pauses.

Walking as Moving Meditation

Walking, especially when combined with nasal breathing, proves remarkably advantageous. Humans and most animals naturally breathe through their noses, with exceptions such as dogs who pant for temperature regulation. Unlike most animals, humans cool themselves efficiently by sweating, making nasal breathing our default method unless under extreme exertion.

Nasal breathing is our default at rest: the nose warms, filters, and humidifies the air on its way in. Some of the bolder claims made for it are less well tested, but for an easy walk it is a natural fit. The act of walking involves multiple body parts working in conjunction, potentially transforming into a form of moving meditation. During walking, not only are the hips, ankles, feet, and toes engaged, but also the arms, head, and trunk require stabilization and coordination. Walking outdoors, particularly in natural settings, demands constant environmental awareness to navigate obstacles safely.

This full-body engagement heightens sensory input, ensuring safety and situational awareness. Evolutionarily, being present and vigilant in natural environments was crucial for survival, fostering a state of mindfulness and complete sensory attunement. This connection to the present moment, facilitated by activities such as walking meditation, mirrors our inherent state of being and contributes significantly to physiological and psychological well-being. Combining present-moment awareness with walking yields comprehensive physical and mental benefits, reinforcing the value of integrating these practices into daily routines.

One of the benefits of barefoot walking is that it encourages mindfulness and awareness of one's surroundings. Concerns about stepping on objects like glass or dog waste can be mitigated by

being present and attentive while walking. By using peripheral vision and maintaining awareness, potential hazards can be noticed in advance.

Shoes provide protection for feet, which can lead to a decreased need for vigilance regarding what is beneath one's feet. In modern environments, where threats such as predators are minimal, people often walk without paying close attention, sometimes leading to accidents. While there is a role for foot protection, individuals walking barefoot should be cautious and mindful to avoid injury. Instances where distractions, such as using a phone, result in accidents highlight the importance of staying focused.

Engaging in activities with some level of risk can enhance focus and performance by tapping into a **flow state**. Barefoot walking, though generally low risk, can still serve as a tool for achieving this heightened state of presence.

Walking, especially with nasal breathing, activates the **parasympathetic nervous system**, promoting relaxation and counteracting the stress-related fight-or-flight response. Chronic activation of the sympathetic nervous system due to stress can contribute to health issues. Gentle activities like walking help maintain balance between stress and relaxation.

Running typically engages the sympathetic nervous system, preparing the body for high-intensity activities. It may be beneficial for building resilience to stress if followed by proper recovery practices, including nutrition, sleep, and hydration. However, excessive running without adequate recovery can be detrimental.

It's important to balance physical activities, incorporating both exercise and relaxation. Walking can be a restorative practice, helping individuals feel better and manage stress effectively. While running can be beneficial in certain contexts, regular walking is essential for overall well-being.

Walking is highly beneficial, especially for those with limited mobility, as it's less impactful on the joints. Unlike sedentary individuals who might lack good running patterns, walking offers numerous advantages, including weight loss and overall health improvement.

Walking and the Brain

Movement greatly benefits brain function, particularly in activating the vestibular system essential for balance and stability. Walking in varied, natural environments enhances this effect. Research shows that regular walking can increase brain volume and function, notably in the hippocampus, which is crucial for memory, learning, mood, and stress regulation.

The best-known study here followed 120 sedentary adults aged 55 to 80 for a year (Erickson and colleagues, 2011). Half walked for forty minutes three days a week; the other half did stretching and toning. In the walking group the hippocampus grew by about 2 percent, while in the stretching group it shrank by a little over 1 percent, roughly the loss expected in a year of normal ageing. The authors described the change as reversing one to two years of age-related loss. Memory improved in both groups, and the gain in volume tracked with levels of BDNF (brain-derived neurotrophic factor), a protein that supports the growth and connection of nerve cells.

Continuous physical activity, like walking, helps maintain both body and brain health. It aids in preventing falls, a major cause of injury and death among older adults. Simple tests, such as the **sit-and-rise test** (see Chapter 10) and walking speed, are strong indicators of overall health and mortality risk. Maintaining the

ability to walk confidently and get up and down off the ground is crucial for longevity and well-being.

Depression is common: estimates vary from country to country, but a substantial minority of people will go through a major depressive episode at some point in their lives. One of the largest studies of exercise and depression, led by researchers at the Black Dog Institute in Australia, used data from the HUNT cohort in Norway, which followed almost 34,000 adults for nine to thirteen years. People who reported no exercise at all at the start had 44 percent higher odds of developing depression than those who exercised for one to two hours a week, and the researchers estimated that about 12 percent of later cases might have been prevented by as little as one hour of activity a week, at any intensity. Two caveats matter. The study measured exercise in general, not walking in particular, and it found no comparable protection against anxiety. It is also observational: it shows an association, not proof. Still, it points the same way as a good deal of other research, and walking is the easiest way most of us have to reach that first hour. Regular walking likely supports mental well-being through its meditative effects, its lift to mood, and its benefits for cognitive function.

Furthermore, engaging in walking promotes social interaction, which serves as a protective factor against various mental health conditions. Walking provides an opportunity to enter a meditative state, fostering creativity, problem-solving abilities, and stress regulation. Many individuals experience increased clarity and fresh perspectives after taking a walk, especially when faced with complex tasks or assignments.

In summary, incorporating regular walking into one's routine offers substantial benefits for mental health, including reduced risk