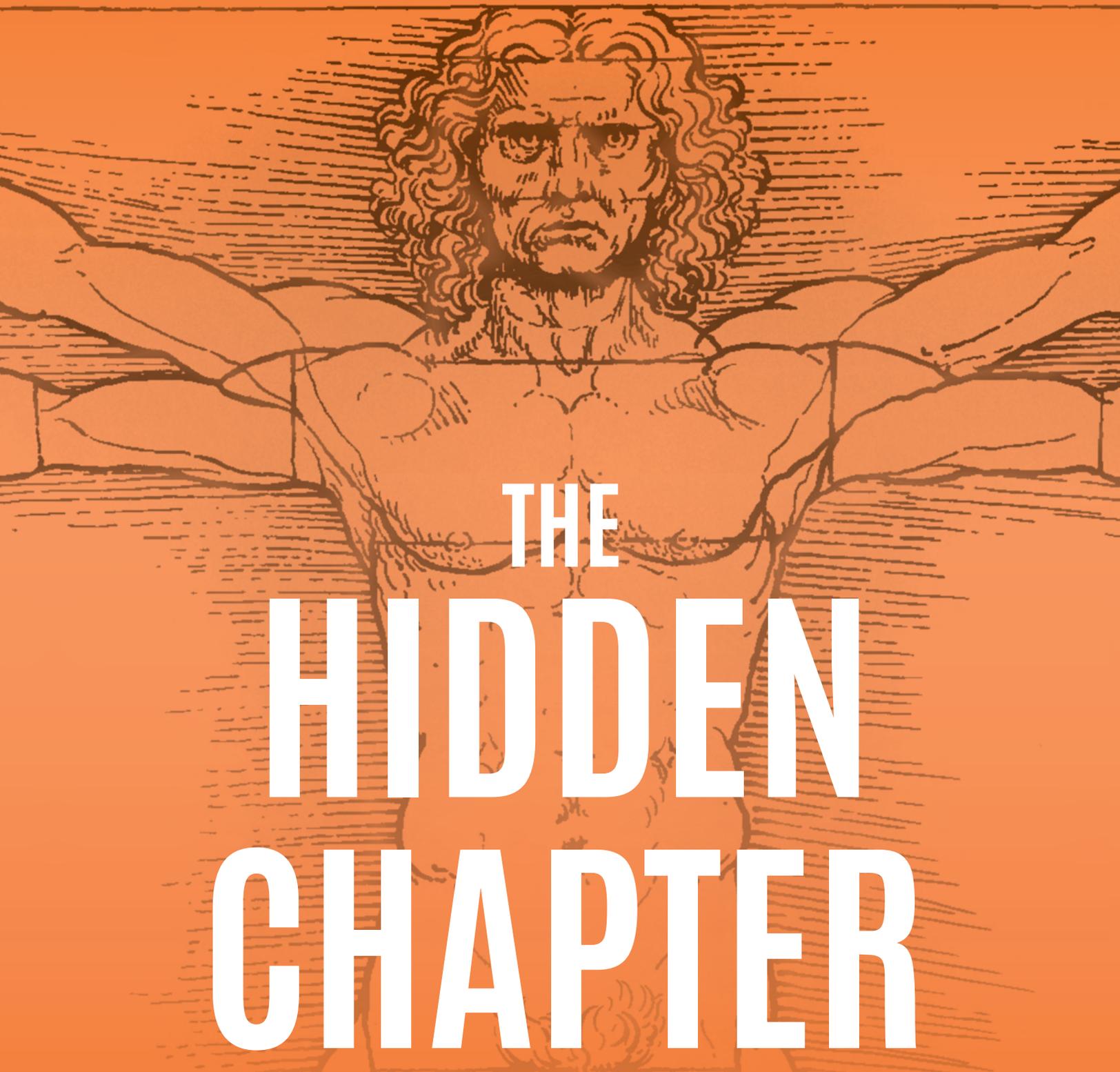


THE SECRETS ONLY A BIOCHEMIST, DIETITIAN AND
CERTIFIED SPORTS NUTRITIONIST COULD KNOW

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THE HIDDEN CHAPTER



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MOVE MORE, WORKOUT LESS: THE NEW SCIENCE OF EXERCISE AND ENERGY

"To me, if life boils down to one thing, it's movement. To live is to keep moving."
~ Jerry Seinfeld

What do you think of when you hear someone talking about the importance of moving your body? Do you automatically start thinking of running a mile, taking an exercise class, or lifting weights? This is frequently the direction people's minds go, but there's far more to movement than traditional exercise.

The fact is, our modern-day lifestyle is sedentary, and exercise alone isn't enough to combat the potentially detrimental effects of an otherwise inactive lifestyle. Stated differently, exercise can't undo sitting, and even if you're an avid, consistent exerciser, you are not exempt from the harm that sitting can do.

As grim and hopeless as that may sound on the surface, it's not all bad news; in fact, as you'll come to find out, it's actually quite encouraging, especially considering the crazy-busy, ultra-demanding lives that so many of us lead. What it means is that you don't necessarily have to bust your butt in the gym (although you certainly can if that's what floats your boat) nor do you need to dedicate an hour or more at a time to traditional exercise (again, you can if you want).

You see, what seems to be most important – regardless of whether or not you're the exercising type – is that you move your body throughout the day...and you move it often...and you move it consistently. And the thing is – and this is especially cool if you're the type who doesn't have time to exercise – is that even little, tiny doses of movement sprinkled in during the day add up (like compound interest) to make an enormous difference when they're consistent over time.

To that end, my goal is to help you move your body – better *and* more often – regardless of where your fitness level currently sits (no pun intended). In other words, whether you're an experienced athlete, avid exerciser or complete newbie to the movement scene, this chapter will equip you with the tools you need to "start where you are" to help knit more movement into the fabric of your day.

So, let's get a move on (that pun *was* intended)!

I remember first hearing the "exercise alone isn't enough" news several years ago, and it absolutely floored me. There I was busting my tail in the gym -- lifting weights and doing HIIT -- four, five, and sometimes, six days a week. Over the past 20 years, I have identified myself as an athlete, and I was an athlete alright...a professional desk jockey (i.e., "sedentary athlete").

Come to find out, it wasn't doing me nearly as much good as I thought, because I, too, was spending the vast majority of the rest of my days sitting...in the car to and from work...at my offices at work and home...on the couch at the end of the day.



Maybe you've even heard the term "sitting disease" or "sitting syndrome" which foreshadows the potentially costly, if not lethal, effects of sitting too much. While this terminology may seem like a dramatization, when you look deeper, you will quickly begin to see that it's no laughing matter.

Like many people, I was sitting myself to death, despite the fact that I was doing more than "enough" exercise according to various health and fitness organizations, which typically recommend at least two days per week of strength training and 150 minutes per week of moderate-intensity aerobic activity or 75 minutes per week of vigorous aerobic activity.

Don't believe me? Here's a direct, jaw-dropping quote from a groundbreaking paper published in the journal *Annals of Internal Medicine*: "Both the total volume of sedentary time and its accrual in prolonged, uninterrupted bouts (anything over 30 minutes at a time) are associated with all-cause mortality, suggesting that physical activity guideline should target reducing and interrupting sedentary time to reduce risk for death."¹

The kicker, mind you, is that this association was independent of moderate to vigorous physical activity. In other words, it doesn't matter if you get your workout in; spending too much of your day sitting seems to increase your risk of an early death. Practically speaking, each additional hour of daily sitting has been associated with a 2% increased risk of all-cause mortality, a rate that more than doubles for adults sitting more than 7 hours a day.²

Additionally, prolonged sitting and sedentary time has been shown to increase the risk of obesity, weight gain, diabetes, some cancers, muscle loss (i.e., sarcopenia), high blood pressure and cardiovascular disease, as well as mental health problems. These negative outcomes are generally shown to be independent of the amount of time spent in moderate-to vigorous physical activity.

In the short term, too much sitting can zap your energy and creativity, make you feel sleepy and foggy-brained, impair your ability to think

quickly and clearly, hamper learning and memory, and make you feel irritable and restless. It can put you in a bad mood, make your neck, back and other parts of your body ache and even rob you from the expected benefits of exercise. I know that may sound exaggerated, but I kid you not; physical inactivity and sitting for prolonged periods of time are really that bad for you.

Now, here's where things get even more interesting. Studies like the one published in the *Annals of Internal Medicine* also show that breaking up (or interrupting) sedentary periods with "movement breaks", for example, may be one of the most powerful ways to protect yourself from the long-term consequences of sitting too, and what's more, these very same movement breaks can also help improve your fitness levels, boost your energy, spark your creativity, enhance your productivity and put you in a better mood to boot!

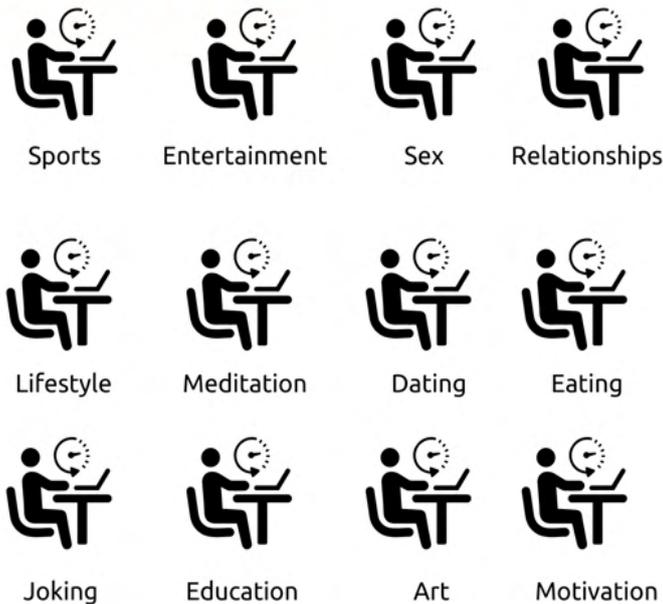
"Those who think they have not time for bodily exercise will sooner or later have to find time for illness."

~ Edward Stanley



So, let's recap what we've learned so far: "Sitting Disease" is really a "thing" -- and a serious "thing" at that. Sitting too much and not moving enough (i.e., being sedentary for longer than 30 minutes at a time) are both problematic. Even if you exercise, you are not immune from the ill effects of an otherwise sedentary lifestyle. While exercise should still be viewed as a good thing, moving your body more throughout the day may be even more important.

Is this what we want?



Graphic A

Here's another way to look at it: With traditional exercise, at best, we're only making a dent in about 5% of our time during the day. That means we're potentially ignoring the lion's share of our days, limiting the potential to optimize the health benefits of other daily activities, such as those involving low-intensity physical activity.³

When I'm talking about weaving more "low-intensity physical activity" into your day, I'm talking about parking farther away from the door at the grocery store, taking the stairs rather than the elevator (even if that means just taking the first flight of stairs then hopping on the elevator for the rest), walking to lunch or to the store, making an extra trip to the car to bring in your belongings, playing with your kids (instead of on your phone), dancing around the house (like no one's watching), making time to do chores and yard work, standing or squatting (instead of sitting in a chair) and so on.

Simply put, I'm talking about making conscious decisions to add more movement in our days – even if it seems "inconvenient" initially. After all, you can



see where “convenience” has gotten us, and we have become so accustomed to convenience that we often miss those everyday opportunities to move our bodies more. Trust me, opportunities abound; we just have to look for them, and as you seek them, before you know it, movement becomes knitted into the fabric of your daily life.

FASCIA: THE FABRIC THAT HOLDS US TOGETHER

Now, if you are the science-y type (like I am), then you’re going to geek out on this next section, as we dig a bit deeper into some of the anatomical and physiological reasons that a sedentary lifestyle – and sitting, in particular -- is such a health hazard.

For starters, let's talk about something called “fascia”. If you’ve never heard the term before or are only vaguely familiar, fascia is a sheath of inseparable tissue that surrounds, penetrates, and connects all structures of the body, said differently, our fascia is like a layer of saran wrap that surrounds, clings to, and holds every organ, muscle, bone, nerve, etc., in place. It’s basically like an internal layer of skin.

The fascia thrives on regular movement, and ironically, when your fascia is healthy, you move better. In other words, you need movement to keep your fascia healthy, and you need healthy fascia to move well. The bad news is that prolonged periods of inactivity lead to “sticky fascia”. I’ll expand on this in a moment, but the CliffsNotes version is that sticky fascia can lead to a wide range of problems, including flexibility and mobility issues, difficulty maintaining balance, pain, digestive discomfort and so much more. Aside from movement issues, for example, these problems are also linked to the “bad mood” and irritability that often results from sitting too much.

Now, let’s take a deeper dive into the problems mentioned above.

Sticky fascia

As mentioned, fascia is one of the body’s main structural tissues, and along those lines, it is primarily made up of the body’s primary structural protein, collagen, which is known as the “glue” that supports, connects and holds everything together in the body.

Collagen proteins are made by a certain type of cell called fibroblasts, and they are designed to slide along each other and quickly change into any shape that could be useful to you. When you maintain a shape or position for any length of time, fibroblasts lay down tiny strings of collagen to support you. When you move, some of those strings are dissolved. As you’ll see, this is advantageous because if you repeat the same shape, such as sitting, over and over, fibroblasts lay down strings of collagen repeatedly. It's as if they say, "She must like this shape. Let's support her!" But when you habitually repeat a shape, fewer and fewer strings are dissolved or stretched out.⁴

Staying in one position for long periods and doing it repeatedly allows fibroblasts to lay down supportive fibers that literally stitch us into the shape we are



practicing. When these fibers are not stretched out through regular, playful, and mindful movement, the fascia becomes "sticky". Instead of being smooth, slippery, and flexible, the fascia thickens and dries up, limiting mobility and causing painful knots to develop. Instead of stretching and gliding, the sticky fascia becomes gummy and crinkles up. The bottom line is that too much inactivity makes connective tissue less pliable, which is not a happy place for muscles to do their elastic-like work.

Sticky fascia doesn't only affect your muscles and joints; it can also influence the health and function of nerves and blood vessels, which live in and are supported by the connective tissue matrix. If their function is impeded...did someone say brain fog? Headaches? Circulatory issues?

Carpal tunnel and sciatica are two common nerve-related problems that often coincide with sticky fascia, which often stems from this lack of movement. In fairness, sticky fascia can also result from too much of the same type of movement that overworks a certain part of the body. From that standpoint, too much sitting qualifies as a posture that's repeated over and over.

Blurry maps

Although the fascia is recognized as one continuous sheath, from head to toe, of connective tissue, it is actually classified into various meridians (i.e., fascial lines), each one grouping muscles with similar functional patterns together (e.g., superficial front line, spiral line). For our purposes, the names of the myofascial meridians aren't as important as this key point: The fascial meridians are the road maps within our bodies.

Along those lines, if one of our roads is damaged, others are soon to follow due to compensation patterns. In other words, if one of our fascial roads is "closed", we are bound to make compensations, which can lead to even more problems.

Another way to think about the fascial network is that it is like the Internet system in the body, designed to deliver fast and efficient communication among the various tissues and organs of the body (for example, the brain and musculoskeletal system). If one of the "sites" (i.e., fascial lines) is not working properly, it can have widespread repercussions. Worse, if the entire Internet is "down", it can have devastating consequences.

Returning to the idea of sticky fascia, when areas of the body are stressed from holding compression or tension for too long (e.g., prolonged sitting, poor posture), the body will develop more layers of connective tissue to protect it from future stress. These fascial adhesions cause stiffness, joint compression, pain, nerve impingement, poor circulation, decreased proprioception, reduced range of motion and more. And again, because "it's all connected", problems with sticky fascia accrue like compound interest. Meaning, an issue in any given area can be magnified across the body.



Use It or Lose It

Sticky fascia and the laundry list of problems that comes along with it aren't the only issues of concern when it comes to sitting too much. Another enormous concern with lack of movement can be summed up incredibly simply and concisely as this: Use it or lose it.

Yes, I realize that may sound trite, but it's arguably nowhere more accurate than with physical capacity, whether we're speaking in terms of flexibility, mobility, strength, speed, agility, balance, endurance...you get the point.

It all comes down to this simple statement: If you don't use it, you lose it! Movement skills and physical capacities that we don't call up and use on a regular basis fall out of our movement repertoire. Consider the following, for example.

Can you get up and down from the floor like you did as a child? If you can, fantastic, but if not, ask yourself why that is the case. Is it because you are taller (i.e., further from the ground)? Is it because you are too old? The answer, to both, is an emphatic "no!"

Whether because of inhibitive injuries, aging joints or something else, the real reason you may not be able to get down to the floor and back up like you did when you were playing as a child is simple: You haven't routinely been moving through that range of motion. In other words, your sphere of movement, likely over time, got smaller and smaller. For many people, this is a gradual shrinking sphere of movement that occurs as a result of life becoming more and more sedentary over time, with fewer variations and complexities of movement. In other words, instead of challenging our bodies with a broad array of movements that challenge joints through a full range of motion, we spend more and more time in one place: Sitting.

It's not all bad news, I promise. If your movement sphere has shrunk, do not despair! The great thing about "use it or lose it" is that it works both ways; in other words, you can grow your ability to move back! How? The same way you acquired it.

Think, when you were a baby, how did you grow your movement repertoire? You experimented and practiced. To grow your movement repertoire, you ran experiments, engaged in novel, playful and mindful movement. We can apply the very same concepts now – wherever you are in your movement practice – to grow and expand your physical capacity and sphere of movement.



MOVE YOURSELF INTO A BETTER MOOD

"A vigorous five-mile walk will do better for an unhappy, but otherwise healthy adult than all the medicine and psychology in the world." ~ Paul Dudley White

As I mentioned earlier, sitting too much can not only zap your energy, creativity and productivity and make your neck, back and knees hurt, it can also put you in a bad mood. For example, research published in the journal *Preventive Medicine Reports* found that sedentary time is closely related to several aspects of mood disturbance, including depression, anxiety, fatigue and confusion.⁵

While one may make the "chicken or the egg" argument, what's not up for debate is the relationship between sedentary behavior and mental well-being. In other words, regardless of "which came first", they seem to be tightly knit together. Most importantly, we also know that movement is a highly effective antidote – arguably the most powerful medicine – to promote mental health and to combat mental health disorders.

Despite some debate in this area, consider the findings of a recent meta-analysis published in the *Journal of Psychiatric Research*, "Our data strongly support the claim that exercise is an evidence-based treatment for depression."⁶

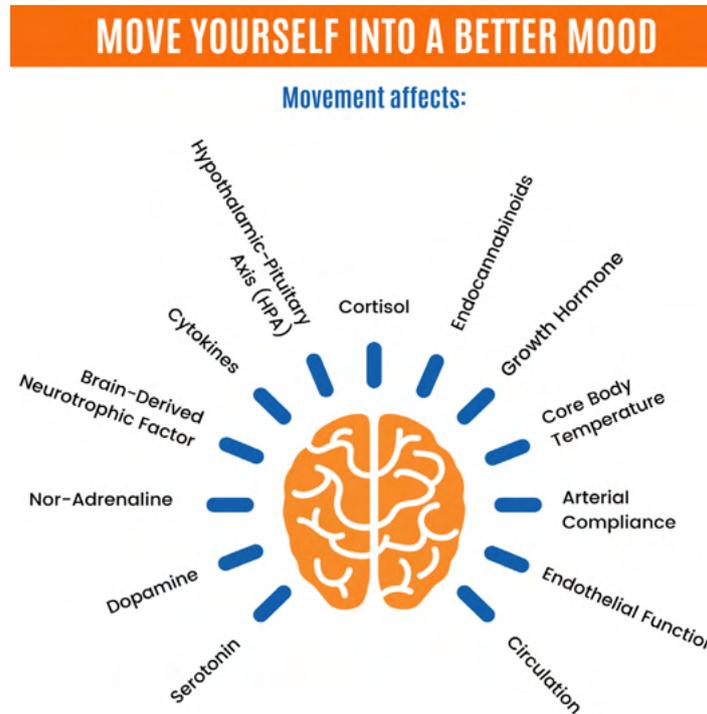
Although structured exercise can be a very powerful tool to promote feelings of well-being, staying true to the theme of this chapter, working toward sitting less and moving just a bit more during the day can go a long way to improving mood. For example, research shows that "decreasing daily sedentary time by 60 min may prevent or significantly attenuate the negative effects of sedentary time on mental well-being."⁵ Practically speaking, that means taking 5 minutes every hour (from say, 8am to 8pm) to move your body.

As far as "how it works, there's a number of potential mechanisms movement can help put you in a better mood:⁷

- It can increase the availability of "feel-good" neurotransmitters, such as serotonin, dopamine and nor-adrenaline in the brain.
- It can stimulate the release of brain-derived neurotrophic factor, which has been called "miracle grow" for the nervous system and brain.
- It can help reduce pro-inflammatory cytokines.
- It can help normalize the hypothalamic-pituitary axis (HPA), and more specifically, it can help reduce elevated levels of the stress hormone cortisol.
- It may help increase levels of endocannabinoids, including the "bliss molecule" anandamide.
- It may help improve levels of growth factors, such as growth hormone and insulin-like growth factor-1.
- It increases core body temperature, which may exert anti-depressant and anxiolytic effects by imparting feelings of relaxation and/or inducing heat-shock proteins



- It can increase circulation (including blood flow to the brain), improve arterial compliance and restore endothelial function.



Graphic B

While those are all compelling, intriguing and important explanations and reasons to move your body, there's one thing that seems to get overlooked in the movement-mood connection. It comes back to the fascia, and it can be most simply summed up by the notion that you do, in fact, store emotions in your fascial system, which is referred to as myofascial interoception.

Interoception is scientifically defined as the awareness of the bodily condition based on the information derived directly from the body. The body's receptors that send information about interoception are not only located in the viscera (i.e., internal organs) but also in the myofascial areas of the trunk and limbs.

How does this relate to your bad mood from sitting too much? Well, these receptors are set up to sense "how you feel."⁸

These profusely distributed receptors are tuned to fire when your body experiences everything from a full bladder to the gentle touch of a lover or friend. They sense activity in your hollow organs and allow you to feel your heartbeat.

Interoception helps to explain why your "heart sinks," you "feel on top of the world," you sometimes have "butterflies in your stomach," you have a "gut feeling," or even a "big head" when you are not "grounded." Those are real sensations, real emotions. Depending on your emotional-vocabulary and self-awareness, your



interoceptive perceptions can be rich, diverse and accurate or clumsy, monotone, even distorted.

How healthy is your interoceptive sense? One way to take stock is to see if you can feel your heartbeat in your chest. Try it! Is this easy for you? Is it difficult? The ease with which you can or cannot feel subtle body sensations will give you clues about the quality of your interoceptive sense.

Now, how does this relate to the bad mood you get into from sitting too much. Because we know that fascia is negatively affected from chronic couch or chair sitting, we know that fascia is richly innervated with many interoceptors that carry mechanical sensations to the areas of your brain that place these sensations in an emotional context, we can understand how mood is affected by what is happening in fascia.

Can you imagine the sensations that interoceptors read when fascia is sticky, gummy, and dehydrated? Contrast the feeling you get when you are chained to a desk with the feelings you have after good massage. (Yes, manual therapists are very well aware of this connection between the fascia and emotions.) Sit for a long time, and you will probably not be in a favorable mood. How is your mood after a good yoga class? Better than when you sit, right?

Sitting in traditional chairs, couches and desks for long periods negatively affects all body systems, especially fascia. The more you sit, the more likely you are to face brain fog, low energy and creativity, achiness, irritability, restlessness and even a bad mood.

If you feel trapped at your desk, don't lose heart! We have some workable solutions and ideas for you, regardless of your fitness level and movement background. It's time for a "movement break", but before I provide specific examples, it's important to talk about the ancestral basis for movement, and perhaps even more importantly, what movement looks like.



Resource Hacks

Standing desk/workstation. As I mentioned, I spend a good chunk of time standing to work. This not only provides a bit of a metabolic boost, but it also helps reduce sleepiness, fatigue and lower back discomfort. Standing can also improve posture and some markers of cardiometabolic health, such as blood glucose and blood lipids. I've used everything from a kitchen counter to a stack of books on a desk to an adjustable desk to a fancy standing workstation, such as those by Uplift, Jarvis and Vari/Varidesk. I don't have a specific recommendation outside of getting properly



fitted so that the desk and your computer monitor are at appropriate heights. Use [this resource](#) as an example. **An important note:** Too much sitting tends to grab all the headlines, but too much standing may be just as bad, if not worse. For instance, there's evidence that prolonged standing may double the risk of cardiovascular disease compared to prolonged sitting. As usual, the truth is probably somewhere in the middle, and it's likely that a combination of sitting (preferably incorporating active postures), standing and walking is optimal.

Pomodoro timer. Although you can simply set a timer on your smartphone to remind yourself to get up and move frequently throughout the day, many people find that apps -- such as **PomoFocus** and **TomatoTimers** -- that implement the Pomodoro Technique (i.e., working in 25-minute blocks) are particularly useful. Some people do find the Pomodoro method to be a bit too rigid. In that case, a customizable timer, such as **MarinaraTimer** (or again, your very own smartphone), can be highly useful to tailor to your own productivity needs. The important point is to schedule activity breaks, and I think you'll also find that working against the clock (i.e., a deadline) can work wonders for productivity.

Activity tracker. It seems like there are *so* many activity trackers out there, with new and upgraded models being added to the menu of options quite often. As an avid biohacker, I've used quite a few, and I prefer those that collect all kinds of data, such as steps, resting heart rate, heart rate variability, body temperature, respiratory rate, sleep (e.g., sleep quality, duration, cycles, etc.), activity/inactivity and such. My favorite activity and sleep trackers are the **BioStrap**, **Oura Ring**, the **WHOOP strap** and the **Garmin Fenix**.

TAKE A "MOVEMENT" BREAK

Most people recognize that there's an evolutionary mismatch between modern dietary practices and those of our hunter-gatherer ancestors. In other words, how, what, how much and when most people eat today bears little resemblance to how we evolved to eat over the course of hundreds of years.

This discordance between our ancient roots and the contemporary nutritional patterns have arguably played a tremendous role in the rise in obesity and non-communicable chronic diseases, such as cardiovascular diseases, diabetes and cancer.

Diet isn't the only place where this evolutionary mismatch exists. There's also a huge chasm between modern physical activity patterns (or lack thereof) and those of our hunter-gatherer ancestors.

The human body was designed to move...to move at relatively slow speeds for long durations of time...to move at high velocities over fairly short distances...to



carry loads over distances... and to lift, move and throw a variety of objects, ranging in size and shape.

If you lived as recently as a couple hundred years ago, for example, your movement repertoire would probably be much more diverse just because of your “natural” lifestyle. Your day might have included various patterns of squatting and lunging as you hunted, gathered and farmed.

Playful movements, like jumping over a stream, would not have been used just for games. You would have had opportunities to expand and grow your movement repertoire as you practiced balancing, carrying, climbing, lifting, running, throwing and vaulting. You would have often walked, miles a day, and crawling would not have been a rusty artifact from your childhood; it would be a staple. Deep breathing, also a valuable movement skill, would not have been trained out of you by an over-stressed air-hungry tech-forward society.

The bottom line is that modern physical activity patterns don’t incorporate a fraction of what humans evolved to take on. As harsh as it may sound, many people are nothing more than professional desk jockeys, sitting their lives away, and it’s taking a tremendous toll.

Even the relatively small percentage of folks who do manage to meet the minimum exercise guidelines are, despite being in “better shape”, not much better

“Lack of activity destroys the good condition of every human being, while movement and methodical physical exercise save it and preserve it.”

~ Plato

off than the rest of the largely sedentary population. That is because research shows that exercise alone is not enough. The point is not that you shouldn’t exercise. That couldn’t be further from the truth, and I very much advocate that everyone lifts weights and does some aerobic training (I’m especially fond of high-intensity interval training or HIIT).

But exercise itself can’t combat an otherwise sedentary lifestyle. It’s not enough to simply make time for exercise. We need to make movement a part of our daily living; it needs to be sewn into the fabric of our lives.

The message isn’t just exercise...it’s exercise, sit less and move more. We need to break up long periods of inactivity and sitting time. In other words, we need to incorporate more movement into our days, which we can do with micro-workouts...exercise snacks...movement breaks...intermittent exercise...or, as I often like to say, micro-doses of exercise.

To combat the adverse effects of prolonged sitting, research over the last several years has focused on breaking up periods of inactivity at regular intervals (e.g., every 20 - 30 minutes) with short bursts (e.g., 2 - 3 minutes) of light-intensity physical activity. These studies have observed improvements in metabolic health, energy levels and reductions in all-cause mortality.⁹

There’s been an impressive number of recent studies that have helped shine a light on the health benefits of “exercise snacks” and “movement breaks” as part



of your day. For example, researchers from McMaster University investigated the effect of stair climbing movement breaks on cardiorespiratory fitness. In the study, sedentary young adults were randomly assigned to either a non-exercising control group or an exercise group, which involved vigorously climbing 3 flights of stairs (60 steps) 3 times per day, separated by 1 - 4 hours of recovery, 3 days per week for 6 weeks.

Despite only exercising for about a minute or so per day (about 20 seconds per movement break), the exercise group significantly improved their cardiorespiratory fitness (as measured by peak oxygen uptake), providing evidence that exercise snacks don't just break up periods of sitting, they may actually contribute to improving fitness.¹⁰

Most recently, research conducted at the Human Performance Laboratory at The University of Texas at Austin provided more evidence of the power of exercise snacks--and the rather scary side effects of prolonged sitting.¹¹

The purpose of the study was to determine if interrupting prolonged sitting (i.e., 8 hours of inactivity) with hourly cycling sprints improved postprandial plasma triglycerides. This particular metric was chosen because high postprandial triglycerides are a risk factor for cardiovascular disease, and physical inactivity elevates postprandial triglycerides, thus raising the risk of disease.

In this study, subjects participated in two separate trials. The first one consisted of an 8-hour period of sitting during which the participants were allowed to leave their spot only for short food and bathroom breaks. The second trial also consisted of an 8-hour period of sitting, but this time, it was interrupted every hour with five 4-second all-out cycling sprints, which were performed during the last five minutes of the hour.

If you're keeping score at home, that means, every hour, they did 20 total seconds of exercise snacks spread over five minutes. Over the course of the entire 8-hour trial, they performed 160 seconds of total time exercising.

The morning after the interventions, postprandial triglycerides and fat oxidation (i.e., fat burning) were measured over a 6-hour period. The reason the researchers looked at postprandial (which means "after a meal") triglycerides is because high post-meal lipids (i.e., triglycerides) are a risk factor for cardiovascular disease, and generally speaking, prolonged sitting and sedentary time are associated with elevated levels of post-meal lipids.

The sprint protocol resulted in a 31% decrease in plasma triglycerides and a 43% increase in whole-body fat burning compared to the sitting only protocol. These data indicate that very short, hourly bouts of all-out exercise snacks interrupting prolonged sitting can significantly improve postprandial triglycerides and fat oxidation after a high-fat meal in healthy young adults.

On a related note, additional research conducted at the Human Performance Lab at The University of Texas at Austin indicates that prolonged sitting and a relatively physically inactive lifestyle may lead to 'exercise resistance'. That is, being



sedentary can actually make people “resistant” to the metabolic improvements that are typically derived from an acute bout of exercise.¹²

For example, this group of researchers found, in people who are physically inactive (e.g., < 4,000 steps per day) and sitting for a majority of the day, a 1-hour bout of vigorous exercise failed to improve lipid, glucose and insulin metabolism measured the next day. According to the researchers, “It seems that something inherent to inactivity and/or prolonged sitting makes the body resistant to the 1 hour of exercise, preventing the normally derived metabolic improvements following exercise.”¹³

Said differently, if you spend most of your day on your bum, you may be washing out many – heck, maybe *all* -- potential benefits that you’d expect to get out of your hard work in the gym. That’s disheartening, I know. Yet it agrees with epidemiological studies reporting adverse effects of prolonged sitting on cardiovascular health and all-cause mortality, independent of participation in exercise or physical activity. In other words, it’s another reason to break up periods of sitting and physical inactivity with exercise snacks. If you want to reap the rewards of your workouts, then exercise alone may not be enough; an overall physically active lifestyle may be the key. Out of the same Human Performance Lab at UT-Austin, research suggests that the bottom-of-the-barrel threshold for daily step count may be 8,500.

These studies represent just the tip of the iceberg when it comes to movement breaks. This jives with what my good friend Ben Greenfield had to say in his book, *Boundless*, when discussing the top reasons “you can’t burn fat”. Says Ben, “While a formal workout at the beginning or end of the day is not necessary for weight loss, low-level physical activity is.” What Ben means by “low-level physical activity” is incorporating more non-exercise movement throughout the day. In other words, sitting less and baking in more of those ancestral movements I alluded to above, such as walking, gardening, housecleaning, taking the stairs and so on.

Basically, the idea here is to increase a key component of metabolism called “non-exercise activity thermogenesis, or NEAT for short. Some also refer to this as non-exercise physical activity, or NEPA, but I think NEAT is a catchy acronym, as in, a NEAT way to get and stay lean and healthy.

Essentially, this component of metabolism accounts for all calories burned throughout the day during non-scheduled exercise activity, and it includes things like taking the stairs, doing chores, taking a walk, getting up and moving around and fidgeting.

While there’s not a specific definition for movement breaks and exercise snacks, most research involves micro workouts ranging from 1 - 15 minutes completed 3 - 4 times daily (spaced 1 - 4 hours apart) repeated 3 times a week. It’s important to note that you could get away with shorter exercise snacks at a higher intensity.

As I mentioned above, when it comes to breaking up prolonged sitting and sedentary periods with movement, a good rule of thumb is to take a movement break



every 30 – 60 minutes. If you can schedule those movement breaks for about 5 minutes, that would be great, but here's something *really* important: Something is always going to be better than nothing. In other words, if you can't spare 5 minutes and can only swing 2 minutes (or 30 seconds even), you better believe that's going to be better than nothing.

Along those lines, I like to encourage folks to embrace an "always something" mindset in exchange for the more common, less effect "all-or-nothing" train of thought. Though it may be helpful to set timers and reminders and have some sort of plan of attack initially, it really doesn't need to be all that structured. The real goal here is to break up periods of sitting and sedentary time and to accumulate more low-level physical activity throughout the day.

In addition to regular movement breaks, simply transitioning from sitting to standing every 30 minutes across a workday reduces fatigue and lower back discomfort, while maintaining work productivity, compared to seated-only work.¹⁴ Standing up to work not only increases metabolic activity, it reduces sedentary time, sleepiness, physical fatigue and overall and lower back discomfort.¹⁵ Standing can also improve circulation (as long as you're not standing completely still for a prolonged period), posture and various markers of cardio metabolic health (e.g., blood glucose, blood lipids).

I also recommend taking a page out of the playbook of hunter-gatherers, who spent their sedentary time in more active postures like squatting and kneeling, which lead to higher levels of muscle activity than chair sitting. In other words, our ancestors most likely did not sit passively in chairs when they had down time; instead, they would have squatted, knelt or otherwise sat with interruptions that required low-intensity muscle activity, which would potentially reduce the negative effects of inactivity. Along these lines, recent research suggests that it is possible that time spent inactive is not as important as the intensity (i.e., muscular effort) of inactivity.

A SLIGHTLY UNCONVENTIONAL WAY TO WORK

Ask yourself, how many positions can I work in? If you work at a desk for hours at a time, it can be life changing to run this experiment. In how many different ways can you stand? Can you, for example, stand on one leg with the other foot resting on the inside of the standing leg?^{16,17}

How many configurations can you find for your hands and arms while you stand staring at your screen? Could you stand with one arm across your body, "hanging" your hand on your shoulder? When you're sitting in your chair, how many different ways can you arrange your legs? Could you squat to do some work?

Here's a mind-blowing idea (don't dismiss it too quickly): Could you move your laptop, notebook or tablet to the floor and do some work while you're on the ground? Once you begin experimenting with working on the ground, you'll realize a whole world of postures will be revealed to you!





Graphic C-1



Graphic C-2

While the goal is to sit less and move more, as I alluded to above it can be highly beneficial to find different ways of sitting so that your body is not in the same position day after day, hour after hour, minute after minute. Like standing, working on the ground tends to force you to shift from position to position, as it can be challenging to maintain a single stationary posture for an extended period of time.

What's more, these positions and postures tend to be more "active", meaning that they involve more muscle activity compared to sitting in a chair, and potentially, a lowered risk of all the negative effects we've been preaching about that are



associated with more sedentary time. I urge you to practice different ways of standing and sitting. Shut your office door if you have to.

See if you can work while sitting or even lying on your belly on the ground. If you can't move your computer to the floor, can you work on a laptop or tablet? Could you take a phone call down there? Better yet, rest from work and take a movement break by playing on the ground!



Hewes, G. W. (1955). *World distribution of certain postural habits. American Anthropologist, 57(2), 231-244.*

Graphic D

Whether you are able or willing to work from the ground, including even a little more diversity in your repertoire of working postures will benefit you. Try to catalogue these postures for yourself. Even a mental catalogue will drive you to keep experimenting. The fascial pliability that comes from this style of working is invaluable. If you struggle with neck or back pain or discomfort elsewhere in your body, I think you'll be surprised how useful this practice can be for "hacking" your way to better health, comfort and mobility.

Don't fret if the ground is inaccessible to you at this point. If pain or injury prevents you from reaching the ground, just experiment. Remember, all it takes is a little experimentation and progression. After all, that's how you learned to move in the first place. If you can't get all the way down on the ground, can you kneel? Can you utilize a low bench or stool in your office? No matter how small it may seem, almost any change from the norm (and away from the chair) is likely going to be



beneficial to you. Remember, always something beats all-or-nothing (especially when it's nothing) any day of the week.

Exercise Snacks: Advanced Movement Breaks

In addition to walking breaks and other low-level movement, I usually also like to bake some "exercise snacks" into my day. These are generally more structured, and like their name implies, they look a lot like mini workouts or "bite-sized chunks" of what I might do during a normal workout routine.

Below, I'm going to share some specific examples of some of my favorite exercise snacks, but please keep in mind that these are a bit more advanced and are best suited for someone who is experienced with the movements I'm describing. As always, it's best to consult with your health-care practitioner before starting a new exercise program, and if you're not familiar with an exercise, it's best to become proficient by working with a fitness professional.

If you're not currently exercising, have little to no exercise background or have been "out of the game" for a while, consider "exercise snacks" the icing on the cake...the top-shelf cookies, if you will. In other words, this wouldn't be the place to start. Rather, focus on incorporating more of the low-level physical activity, walking more and spending more of your day in active postures.

Having said all that, let's get to some of my go-to exercise snacks, which, again, would be best suited for experienced to advanced exercisers, athletes and lifters who have at least two years of consistent strength training experience under their belts. If that's not you, please don't be discouraged. I am all for you practicing the movements and strategies that I recommend below, but if any movement is new to you, I urge you to get proper instruction and supervision from a qualified fitness specialist. Plus, I'll have a bunch more recommendations in the sections that follow, which can be incorporated regardless of fitness level and/or exercise experience.

One of my favorite exercise snacks is to perform 5 - 10 explosive kettlebell swings each minute for 5 minutes. Another one of my favorites incorporates elements of with the popular Tabata-style interval training. Basically, I alternate 20-second sets of explosive kettlebell swings with 20-second sets of pushups, separated by 10-second rest periods. I'll repeat that sequence four, five or even six times (for a total of four, five or six minutes, respectively).

Speaking of SIT, I do like building in some of those 20-second all-out efforts most days of the week. This may include some kettlebell swings, medicine ball throws, stair climbing or hill sprints. Believe it or not, I usually do these "cold"; I feel like being able to jump right into more intense activities such as these is a good, youthful sign of being "young", and I also believe it's the way humans were designed. Evolutionarily speaking, we would have needed to "get up and go" (without a "proper" warm up) at the first sign of danger.

In addition to walking and kettlebell swings, some of my favorite movement breaks include loaded carries (where you walk around while holding a kettlebell or

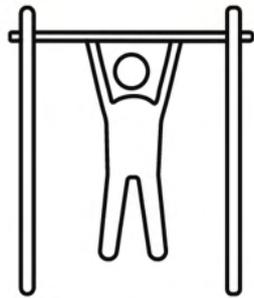


dumbbell), climbing flights of stairs, bodyweight exercises and a variety of stretches and mobility exercises, including...

“Undoing Sitting” Complex:

- 30 seconds of hanging from a pullup bar.
- 30 seconds of sitting in the deep goblet squat position (usually holding a kettlebell) · Switch back and forth for time (e.g., 5 minutes)

“Undoing Sitting” Complex:



30 SECONDS

Advanced:

Hang from a pullup bar

Novice:

Back against a wall with arms straight up



30 SECONDS

Advanced:

Sitting in the deep goblet squat position holding a kettlebell

Novice:

Sitting in a goblet squat position while holding onto a counter or light weights

← SWITCH BACK AND FORTH FOR TIME →

(E.G., 5 MINUTES)

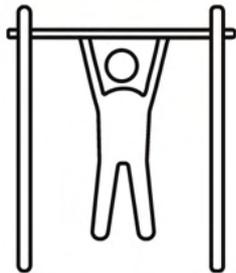
Graphic E



Hang and Crawl Complex:

- 10 - 30 seconds hanging from a pullup bar.
- 30 seconds bear crawl
- Switch back and forth for time (e.g., 5 minutes)

Hang and Crawl Complex:



10-30 SECONDS

of hanging from a pullup bar



30 SECONDS

bear crawl

← **SWITCH BACK AND FORTH FOR TIME** →
(E.G., 5 MINUTES)

Graphic F



Hip Openers:

- Kelly Starrett's Couch Stretch: 30 seconds each side
- Pigeon Stretch: 30 seconds each side.
- Cycle through 2 - 3 times per side

Hip Openers:



Advanced:

Kelly Starrett's Couch Stretch:



**30 SECONDS
EACH SIDE**



Novice:

Pigeon Stretch



**30 SECONDS
EACH SIDE**



Cycle through 2 - 3 times per side

Graphic G



Single-Leg Exercises:

- Single-Leg Deadlift: 8 - 12 reps per side
- Single-Leg Split Squat (Rear-Foot Elevated): 8 - 12 reps per side
- Cycle through 2 - 3 times per side

Single-Leg Exercises: Cycle through 2 - 3 times per side



Single-Leg Deadlift

 **8-12 REPS
PER SIDE**

Advanced:

Single-Leg Deadlift (with barbell)

Novice:

Single-Leg Deadlift (with light weights keep toe of rear leg on ground for balance)



Single-Leg Split Squat (Rear-Foot Elevated):

 **8-12 REPS
PER SIDE**

Advanced:

Single-Leg Split Squat (Rear-Foot Elevated)

Novice:

Single-Leg Split Squat (Hold onto a counter or don't lift rear leg off of floor)

Graphic H

Movement breaks are also the perfect time to incorporate some “yoga flows” into your day. Here’s a simple one that I picked up from Joel Greene’s book *The Immunity Code* (a fascinating book, by the way) that promotes circulation and mobility, and overall, it just helps you feel good. And we all know it feels good to feel good!

- Start in the downward dog position. With your head inverted, take three deep breaths, breathing through your nose.
- Move to the cobra position, taking a couple deep breaths through your nose.
- Move to the child's pose, breathing deeply several times through your nose.
- Come up to your feet and reach your hands toward the ground; breathe into a good hamstring stretch.
- Repeat the flow once more.



Finally, I like for at least one movement break during the day to be dedicated to foam rolling or some sort of self-myofascial release/massage such as that. Again, while I'm doing that -- focusing on areas like my calves, quads, IT band, glutes and thoracic spine -- I'm consciously breathing deeply through my nose. Only a few minutes an hour can make a massive difference.



Resource Hacks

Kettlebells. Often called iron cannonballs with handles, some would argue kettlebells have finally gotten their due time in the spotlight, thanks to many people transitioning to at-home workouts. Kettlebells are incredibly versatile, and many would contend they are the single best piece of workout equipment you could own. And it's hard to argue that, especially if you are looking to start or build upon your home gym. Referred to as "the AK-47 of exercise equipment", kettlebells can help build muscle, strength, power, conditioning, mobility and resilience. They really are the total package, as more people than ever are realizing. While it can still be tricky getting your hands on one, I have used and purchased kettlebells from **Kettlebell Kings**, **Onnit**, **Fringe Sport** and **Rogue**, which all produce high-quality cannonballs with handles.

Pull-up bar. A pull-up bar is a fantastic tool to help build upper-body strength and muscle, and as I mentioned, it's great for helping "undo" the negative postural effects of sitting and working at a computer. While you can certainly pick up a fancy, robust pull-up bar/station from a retailer like **Rogue**, I find that a modest **doorway pull-up bar** is more than enough to get the job done. You can also opt for a set of **gymnastic rings** or a **suspension trainer**, which offer versatility, travel benefits and a wider library of exercises.



The ULTIMATE Movement Break for EVERYone

When it comes to getting in more low-level physical activity, walking is a HUGE one for me, and I believe it may be one of the best (if not THE best) type of movement break for folks of all ages, fitness levels and exercise experience. I walk anywhere from 2 - 5 miles (sometimes more) every day...I walk in the morning and after intense workouts (to burn some extra fat) ...I walk after meals...I take walking meetings and interviews...I walk with my wife...I walk with my dog.

I'd go so far as to say that walking is arguably the best, most sustainable type of exercise you can possibly do to get in better shape and live a long, healthy life. After all:

- You don't have to go to the gym to do it; you don't even need a gym membership.
- You can do it anywhere, including outside where you can reap even greater benefits.
- It doesn't require any expensive equipment -- none at all, actually.
- You don't have to wait till you're "in shape" to get started; virtually anyone can do it.
- You can even do it with friends, who can keep you accountable and help make it even more worthwhile.
- Walking is a fundamental movement pattern, and it's an essential component of a hunter-gatherer fitness regimen.

On top of all that, as simple and basic as this movement pattern is, walking has a long list of powerful benefits, such as:

- Better fitness
- Less body fat
- Weight loss and weight maintenance
- Better blood pressure
- Better mood
- Lower risk of heart disease
- Lower risk of type 2 diabetes
- Lower risk of dementia
- Longevity
- And more

One of the biggest advantages of incorporating walking breaks throughout the day is that brain blood flow will be boosted. Sitting for extended periods of time unequivocally decreases blood flow to the brain. Practically speaking, this can negatively affect the ability to think, learn and understand, as well as energy levels, creativity, and ultimately, long-term brain health. Recent research, however, shows



that taking short walking breaks (as little as 2 minutes) every 30 minutes or so can prevent the decrease in brain blood flow associated with sitting.¹⁸

If you were to take nothing else from this section, it is my hope that this holistic message gets through: Sit less, exercise and walk more. When it comes to the latter, I'd say that includes at least 30 - 60 minutes of brisk walking, or about 2 - 3 miles, per day.

As far as step count, a good target is at least 8,500 steps per day (more is almost certainly better), based on recent research that has not yet been published.

Remember, though, you don't need to accumulate all this walking at once (although that's fine too). Everything and anything counts, including walking breaks as short as two to ten minutes. Even though it all adds up, here are some ideal times to walk:

- In the morning (preferably within 1 - 2 hours after waking to support circadian rhythms)
- Fasted (before eating) and/or after exercise to promote fat burning/utilization
- Before and after meals to promote healthy blood sugar metabolism
- During the day when you need an energy/creativity boost
- On phone calls/virtual meetings

"Back to the Basics" Movement Breaks

I've made reference to this before, and it bears repetition: As children, we expand our movement spheres through curiosity and playful exploration. In other words, we broaden our capacity and sharpen our ability to move through experimentation and practice.

As I mentioned, though, the old "use it or lose it" mantra most certainly applies to movement, and that's why, as adults, our movement sphere comparatively diminishes as we shy away from exploration, play and experimentation. The neat thing is, much like riding a bicycle, you can once again expand your movement sphere -- in much the same way that you grew it as a child.

Here's a simple example: Have you seen a baby on all fours (i.e., quadruped) engage in rocking? This is a common baby movement. In a quadruped position the baby begins to rock his hips, shifting backward and forward. In some cases, it looks like the baby is preparing to launch himself. It's a fun and bouncy motion. It seems purposeless, but this is the foundation for crawling, as the baby begins to explore and engrain new movement patterns, which in turn, mobilize, stabilize and strengthen the soft tissues (e.g., joints, muscles, tendons, ligaments) involved. This is essential preparation for upright behavior like walking.

The path to learning to move – and Re-learning to move – goes like this:

"A lack of exercise robs the body of an essential ingredient."

~ Karen Sessions



THE PATH TO LEARNING TO MOVE – AND RE - LEARNING TO MOVE – GOES LIKE THIS:



- ✓ Experiment
- ✓ Grow stability
- ✓ Get strong enough to maintain a shape or manipulate an object for longer periods (strength endurance)
- ✓ Build muscle or change body composition
- ✓ Use your stability, your strength endurance and changed body composition to get really strong
- ✓ Learn to move with power, learn to accelerate your center of mass or an object.
- ✓ Refine the movement and/or marry it to another acquired motor skill [19]

Graphic I

This is why I love Tim Anderson's Original Strength system, which helps people at all ages, all fitness levels and all abilities expand, enrich and sharpen their movement skills by focusing on the pillars of human movement with an emphasis on "The Big 5 RESTS", rolling, rocking, breathing, crawling and moving the head. In other words, the Original Strength system helps you build a strong, resilient and healthy body by returning to the very same movement patterns that served as your foundation when you were a youngster.

While it is great for beginners, Original Strength is excellent for folks dealing with injuries and mobility issues, as well as for even the most advanced and experienced athletes who are looking to continue to add strength, power and resiliency.

I try to include at least one of the Original Strength "movement snax" into each day. Those alone will make you feel amazing, invigorated and alive! You can find a ton of Tim's content for free on YouTube by searching for "Original Strength". Also, renowned strength coach Dan John provides free demonstrations of some of Tim Anderson's Original Strength movements on his YouTube channel (just search "Dan John Original Strength". Here are some examples:

- Prone head nods
- Prone find your shoes
- Quadruped rocking



- Quadruped rolling
- Quadruped head nods
- Quadruped find your shoes
- Kickstand rocking
- Forward/backward crawling

Ready to give it a try? Let's start with rocking. Get on the ground on your hands and knees. This is a quadruped position. "Tuck" your toes so that the balls of your feet and your toes are contacting the ground. Tune into your breath. Make the exhale audible. Notice the position of your low back. Can you put a little extension into your lower spine? In other words, can you put a little "arch" in your low back? Gently draw your belly button toward your spine.

Keeping a little extension in your lower spine and your belly button gently drawn toward your spine, begin to rock your hips back toward your heels.

Rock back with every exhale. Make the exhales strong and the motion very bouncy. It should feel like you are preparing for a mini launch forward. Only rock back as far as you can maintain the small arch or extension in your lower spine. Rock back 10, 15 or 20 times. Then rest in a face down position. Repeat three or four more times.



Graphic J

Rocking Video Demonstration

<https://youtu.be/GasOJxUIHxo>

Or check my YouTube channel for the Hidden Chapter playlist

How'd that feel? Pretty awesome, right? Now, let's try rolling. Lie face up on the ground. Tune into your breath. Take time to notice which body parts are more in contact with the ground. Reach above your head with your right arm, placing it on the floor alongside your head. Slowly drag your left foot up, bending your left knee,



placing your left foot on the ground. Pause. Notice how you have formed one long line on the right side of your body. Your right arm and right leg are extended. These limbs will form a shelf for you to roll over.

Now push your left foot into the ground. Use that force to roll the left side of your pelvis up and slightly over to the right. Do this slowly and repeat it a few times.

Keep your right arm alongside your head while you practice reaching with your left arm. Pretend mom is in the room and she has something you want. She's on your right side above your head so you have to turn your gaze and reach toward her with your left arm.

Put the reaching and the pushing together now. Do this by pushing strongly through your left foot, rolling your pelvis up and over while you reach with your left arm. Notice how easily your pelvis lifts, then your ribcage. Soon you are rolling over the shelf formed by your right arm and leg. If you allow it, you will flop right over onto your belly!

On your belly now, cock your left leg up and out to the side, knee bent. Turn your head to the side and place your hands under it for support. Now rest. Feel which parts of you are supported by the ground.

Try the same sequence going the other direction by starting on your back with the left arm and leg acting like a shelf.



Graphic K-1





Graphic K-2

Rolling Video Demonstration

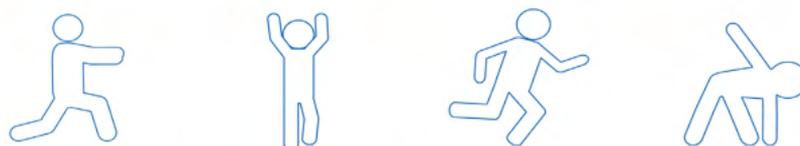
<https://youtu.be/sOv4N0hP9BA>

Or check my YouTube channel for the Hidden Chapter playlist

Beyond rocking, rolling, crawling, breathing and moving the head, the following is a list of movements have been referred to as “primal,” “foundational” and “basic” human movements, which everyone should have in their repertoire:



PRIMAL, FOUNDATIONAL, AND BASIC HUMAN MOVEMENTS



- ✓ Sit
- ✓ Stand
- ✓ Walk
- ✓ Run
- ✓ Bend
- ✓ Hinge
- ✓ Squat
- ✓ Lunge
- ✓ Rotate
- ✓ Push
- ✓ Pull
- ✓ Object Manipulation

Graphic L

Our ancestors used these movements regularly with skill and grace. Refining your ability to move in these ways is very healthy. You developed many of these skills by handling all sorts of toys (even if your toys were only empty boxes, sticks or “just” rocks to your adult counterparts).

Would you like to sample functional movement play? Try this squat exercise:

Doorway Squat

This exercise and the overhead wall squat (below) are designed to refine your squat mechanics. Find a doorway. Face the side of the door jamb that does not hold the door. Place your bare feet very close to, but not touching, the door jamb. Your feet should be lined up on either side of the jamb, just about hip-width apart. Wrap your hands around the door jamb hooking your fingers on the molding. Your nose should be close to the door jamb.

Tune into your breath. Notice where your weight is in your feet. Try to connect the big toe ball, little toe ball and heel to the ground. This is your “tripod”, and these three points should remain connected to the ground through this entire exercise. Your feet should be supple and adaptable, but these three points should stay on the ground.

To begin the squat, lead with your butt as if you were about to sit. Squat as far down as you can maintain an upright spine without bumping your head on the door jamb. Slide your fingers down and back up the door jamb as you go. Use them for very light support. Avoid leaning or hanging backward. Avoid letting your knees fall very far inward or spread very far out.



Move mindfully. Notice what moves well and what is less mobile. Continue to breathe and avoid holding your breath or grunting during any part of the movement. Adjust by moving closer or further from the door jamb to make the squat harder or easier.

Complete 12 repetitions. Rest and repeat 12 more. When you are ready, try barely holding onto the door jamb. When this is easy and you can squat all the way to the floor, move to the overhead wall squat.

Overhead Wall Squat

Find a wall. Facing the wall, place your bare feet about the distance of one of your feet from the baseboard. Line your feet up about hip-width apart. Raise your arms overhead and fully extend them. There should be no bend in your elbows. Your hands and arms should not touch the wall.

Tune into your breath. Notice where your weight is in your feet. Try to connect the big toe ball, little toe ball and heel to the ground. This is your “tripod”, and these three points should remain connected to the ground through this entire exercise. Your feet should be supple and adaptable, but these three points should stay on the ground.

To begin the squat, lead with your butt as if you were about to sit. Squat down as far as you can without touching the wall with any part of your body, including your arms and hands. You should also maintain an upright spine. Avoid letting your knees fall very far inward or spread very far out. Keep your head aligned, ears in line with your shoulder. Allow your shoulder blades to slide down your back.

Move mindfully, noticing what moves well and what is less mobile. Continue to breathe and avoid holding your breath or grunting during any part of the movement. Adjust by moving closer to or further from the wall to make the squat harder or easier.

These squat patterns represent just a couple of the primal movements that we should all have access to in our spheres of movement. I encourage you to explore the other foundational movements as well. Along those lines, experimenting with and refining basic human movements is definitely a project you could tackle on your own. But if you’d like to work with an expert, here are some systems to check out:

- **Alexander Technique:** Created by Frederick Matthias Alexander
- **Chek Institute:** Created by Paul Chek.
- **Functional Movement Screen or FMS:** Developed by Gray Cook and Lee Burton
- **the Ready State or TRS™:** Created by Kelly Starrett
- **TRX®:** Created by Randy Hetrick. Good instructors certified in TRX® training will cue their students carefully. They will use fundamental human movements in their programming and explain what needs to be stable and what needs to move. Under the instruction of a certified teacher, you should learn to pay attention to the “weights” and “spaces” of your body.
- **Strong First®:** Founded by Pavel Tsatsouline. We have included this system



in our functional movement category because of its strong emphasis on good body mechanics linked to basic human movements. This method excels at teaching object manipulation through its use of kettlebells.

- **Pilates:** Created by Joseph Pilates. Pilates is one of those movement teaching systems that has, in some cases suffered dilution, misinterpretation and even misuse at the hands of the agenda-driven and in the studios of owners touting flat abs and trendy exercise. The abundance of chic and fashion-forward Pilates instructors in our time would likely enrage the late Jo Pilates. [22] The “original” Pilates method and responsible iterations thereof are heavily rooted in teaching movements that are obviously connected to developmental play and basic human movement. Look for certified teachers. **Fletcher Pilates, Stott® (or Merrithew®) and Basi®** are just three examples of Pilates schools that train instructors. There a handful of other reputable schools/ The good ones put their spin on the original method while showing high regard for Joseph’s intention for the work.

This is not a complete list of functional or corrective movement teaching systems. Working with an instructor certified in any one of these methods could be very helpful. Many functional and corrective movement practitioners are also rehabilitative wizzes. Their work can help you reprogram your nervous system and recover after an injury. Educated functional and corrective movement teachers also have lots of knowledge about self-myofascial release techniques like foam rolling. Stretching and tissue lengthening methods are almost always included in their approach. By researching, reading and watching videos about these modalities you could begin to play with functional or corrective movement on your own. However, it’s best to work with the experts. Trainers certified in corrective exercise are good resources too. Taking a break from traditional training and seeking out the help of instructors certified in these or similar modalities will only enrich your movement life, keeping you in touch with your drive to play.



Resource Hacks

Foam roller. This is not necessarily an essential, but it sure is a nice tool to have in the toolbox. Foam rollers represent a highly accessible, cost-friendly form of self-care; in fact, foam rollers are basically designed to mimic the feeling of a massage therapist, with the goal of relieving tired muscles, unlocking tight muscles, reducing



muscle soreness and promoting recovery and performance. There's no shortage of options, and if you are not doing any form of self-myofascial release, then arguably anything will be a helpful step in the right direction. Two of my favorite options are the **GRID by Trigger Point** and **RUNGA Mobility Balls**.

Becoming a Supple Leopard. I admit that I'm no expert when it comes to flexibility and mobility. In fact, I was more like the guy who didn't have time for stretching. That is until I came across Kelly Starrett's book *Becoming a Supple Leopard*, which is an incredibly detailed and comprehensive resource. It is truly the ultimate guide to improving mobility and flexibility, resolving pain, preventing injury and addressing stiff, achy joints and muscles. This is a biohacker's guide to hacking your own movement, and allowing you to live a healthier, more fulfilling life.

Original Strength. Earlier, I mentioned Tim Anderson's Original Strength, and it bears repetition because it's such a powerful and effective system. Original Strength is based on the fundamental principle that we were all created to move. However, after life has gotten the best of us, our bodies have changed and so has our capacity for movement. The Original Strength system helps the body remember how to move, find hope and enjoy life with those you love and truly care about. It's about restoring your body's abilities the same way you did the first time you learned to walk. The system is designed to help you feel better, sleep better and live better. If you're interested in "pressing reset" and learning to move better, I highly recommend that you check out **Original Strength** and the copious resources Tim and his team have compiled.

TAKE A GYM BREAK

"We don't stop playing because we grow old; we grow old because we stop playing."

~ George Bernard Shaw

If you're an avid exerciser or regular gym-goer, hold onto your seat, this next part may knock you off your rocker: As crazy as it may sound, I want to encourage you take a break from the gym. In fact, take a break from structured exercise. And do it often! Does this sound like bad advice? If you're an avid exerciser, the idea of intentionally taking breaks from your routine may sound as smart as driving the wrong direction down a one-way road on purpose!

Speaking of purpose, what do you believe is the purpose of exercise? Your answer to that question could reveal fundamental beliefs that may be sabotaging your goals or even wrecking your body. For many faithful gym goers, there's a long list of obvious "health" benefits associated with exercise, such as weight management, endurance, strength, performance and so on.



The reality, however, is that list (long as it may be) does not describe the purpose of exercise. Rather, those are benefits of exercise.

Most exercisers are so focused on benefits that those good results become their purpose. But what happens to your exercise routine if you become injured, your favorite class is canceled, the gym closes, you have to relocate, or your partner hates that piece of equipment in the house? If you're locked into benefits and you also view those benefits as your purpose, a change in your routine can feel like a giant set-back. We need to look beyond benefits to find the greater purpose of exercise, which is much bigger than the benefits.

You are actually very familiar with this capital "P" Purpose. It's related to another English word that begins with "p." Can you guess? It's "play." When you were a child, how did you get your exercise? If you were able-bodied, and not "raised indoors", you played, most likely outside and probably for many, many hours.¹⁹

Did you ever tell your friends, "I'm too sore from climbing trees, I think I'll stay in today"? Did you write your reps, sets and other acute variables in a notebook, tracking the regularity of your hide and seek games or your personal records for lifting heavy fort-building materials? How many steps did you get every day? Did you make sure to get your heart rate in the "fat-burning" zone? Did you periodize your play? If I was a betting man, I'd put my money on the answer being a resounding "no" to most, if not all, those questions. You just... played.

Why did you stop playing? "I grew up."... "I had to work."... "I don't have time."... "I'm too tired."...and the list goes on. These are all the normal answers. The "no time" and "low energy" lamentations are all too common. This idea is stitched into common beliefs about movement: children need to play, and adults need more serious movement like exercise or sport.

The good that comes from play is immeasurable. Many aspects of childhood play are related to psychological, sociological, emotional and physical development. Through play, we grow, practice, progress and refine. We learn about and enjoy ourselves. We learn about others. We learn about and enjoy our world. Play and joy are often connected. It is usually creative, spontaneous and fluid.²⁰

Everyone agrees, as children, we need to play. Please hear yourself say that. Play is a "need." As children, we have other needs too. We need nourishment. We need to feel safe. We need love. Did your need for nourishment, love or safety go away as you transitioned to adulthood? Healthy adults will recognize that they still have those needs, and ideally, they will find healthy ways to fill them. Did your need for play vanish while all your other basic needs remain? No! Along with other fundamental human needs, the need for play is still with you.

Even if you don't realize it, you may be trying to fill this need for play and movement, and is often the case, with all the "wrong things". Let me explain. Many people try to fill their need for nourishment with low-quality, unhealthy foods, like junk food, fast food, convenience foods and the like. When it comes to the need for play, because of the commonality of a sedentary lifestyle, many people are searching in all the wrong places for the benefits that are associated with play. For example,



play activates the brain's reward circuitry (including the body's primary pleasure and reward currency, dopamine), and it also acts as a healthy outlet for stress management. In the absence of play, many folks may turn to less healthy outlets to get their dopamine hit and reduce stress, such as junk food, social media, alcohol, drugs, gambling, pornography and the list goes on.

The movements used in gyms tend to happen predominantly in one plane of motion with very little change in base of support or points of contact. Compared to play, the movements used in traditional forms of training are like bland, starchy food. This has led to the junk-movement culture. I am not saying that traditional exercise is unhealthy for you on the whole. But do your training sessions fit this description:²⁰

- You "desire to keep doing it and the pleasure of the experience drives that desire."
- You find ways to "keep it going."
- If "something threatens to stop the fun" you "improvise new rules or conditions" so that the workout does not have to end.
- When your training session is over you want to do it again.

This description is one of *play* offered by Dr. Stuart Brown.²⁰ Do your workouts feel like that? Are they infused with mindfulness, curiosity and the pleasure of play? Or:

- Do they feel obligatory and routine?
- Are you glad or even relieved when they are done?
- Do you rely on a sense of "accomplishment" and look for body composition changes to motivate you to do it again tomorrow or the next day?

For most people, gym workouts fit in the latter category, not the former. The good news, though, is that you can change that for yourself! You can learn to play again. Start by considering a break from the gym. This could mean taking one day a week off or suspending your training for longer. There are many reasons for breaks like this. The need for rest is a primary one.²¹

So, how do you incorporate more play, even if you're a grown up? A playful mindset is at the heart of any good movement practice. Progressive, elite athletes and artists who move for a living train and perform playfully. Even work can become playful if we can harness a play mindset. There is tremendous power available through play.²⁰

One of the best ways to incorporate more play into your life is through natural movement training, which will equip you with real skills you can use in nature and in the more physical aspects of good living. One of its main goals is to train yourself to be useful. This means you'll learn skills that will enable you to be helpful in emergency situations, as an example. The training is both practical and fun, teaching you to help others around you and to take care of your environment. There is strong emphasis



on “un-specialization” that diversifies your movement repertoire, a very good thing that will protect you when life requires adaptability.

Natural movement training is often labeled as “integrative” because it is a holistic approach to motor learning. When teaching natural movement, a trainer will usually help you maintain a big picture focus. That doesn’t mean unspecific. It just means the trainer may help you lock onto the feeling of safe play rather than getting lost in the details of scapular rhythm, joint tracking, when and how to switch on transverse abdominis or other corrective details. In other words, natural movement training builds upon foundational movement skills, helping you put them to *use*. Here are the motor skill categories used in natural movement training:



Graphic M

When you engage in these movements and all their varieties, your body will remember “we used to do this!” It’s true. You “used to do this” as a kid. And your ancestors definitely used to do this. The movements vary in complexity, and there are loads of modifications and progressions in each category. Like any other good training, the idea is to learn the basics really well and then continue on a path of refining and challenging. It’s a blast!

Rather than give you a specific drill, I encourage you to go to a park or trail, patch of forest or even your backyard and try to walk on as many different surfaces as you safely can: grass, rocks, large stones, tree roots, ditches, hills, curbs, benches, stumps, gullies, puddles, stream beds, bridges, banks, pipes, fallen trees and so on.

Can you safely jump onto or off any of those surfaces? Can you step over them? Are there opportunities for ducking or even crawling under something? Play safe. But do play! To some, this may not sound like much of a workout, but that’s the



point! It's not about working out so much as it is playing, exploring and growing, as a whole new world of movement puzzles will be revealed to you.

If you'd like to work with an expert, the two most established schools for training natural movement teachers are:

- **Méthode Naturelle:** This method/school was created by George Hébert and is carried on by his grandson Jaques Hébert.
- **MovNat:** Developed by Erwan Le Corre
- Two other movement teaching systems worth looking into for their integrative qualities are **Animal Flow**, created by Mike Fitch, and the teachings of **Ido Portal**. Though these modalities are not necessarily natural movement training, I mention them because of their integrative benefits. Both systems are highly playful. Taking time to learn from a teacher certified in one of these methods will not disappoint.

More Breaks That Can Save Your Life

Besides incorporating more movement into your day to break up longer periods of sitting and inactivity, here are some other important "breaks" to consider taking...

- **Take a "diet" break.** If you've been "dieting" (which, by the way, is not one of my favorite terms) or "cutting" for any period of time, it's not just "okay" for you to take your foot off the accelerator, it may very well do your body (and mind) good. There's a growing body of research supporting what many physique athletes have been practicing "in the trenches" for many years: Occasional diet "breaks" may help combat the psychological and physiological rigors of calorie restriction, leading to more efficient fat loss, better muscle retention, better weight maintenance and an overall more tolerable, if not enjoyable, experience. Depending on the degree of restriction, you might consider planning a strategic "diet break" once every one to four weeks, ranging in duration from two days to two weeks. Of course, there are many factors to consider, and that's just a general guideline. But whatever you do, just be sure to plan your break to avoid what researchers refer to the "what-the-hell effect", which is pretty self-explanatory and more common with spontaneous "cheating".
- **Take a nature break.** There are few antidotes for stress and well-being as powerful as nature. Studies have shown that time spent in nature -- as long as you feel safe -- can lower blood pressure and stress hormones, reduce nervous system arousal, enhance immune system function, increase self-esteem, reduce anxiety, improve mood, boost energy levels, increase creativity and enhance cognitive function. For this laundry list of reasons, I recommend spending time outdoors -- preferably immersing yourself in nature, and in particular, green spaces, parks or other natural environments -- for at least 20 minutes a day. And if you really want to step up your game while you're



outdoors, slip off your shoes and socks and plug your bare feet into the Earth, a practice known as grounding, or as I like to call it, Vitamin G. You see, the Earth is beaming with an endless supply of energy (free electrons), which we can absorb in our bodies when we reconnect to the Earth's surface (via grounding). This charge of energy can neutralize free radicals, reduce inflammation, increase parasympathetic tone, normalize circadian rhythms, enhance circulation and more. Ultimately, grounding can lead to impressive improvements in stiffness, sleep, blood flow, blood pressure, stress, energy levels and more.

- **Take a gratitude break.** Because gratitude is so incredibly powerful and transformative, I can't more highly recommend that you pause at least once a day to appreciate who and what you have in life -- from your family and friends to your senses to your mind, body and spirit to your emotions to Mother Nature and technology and beyond. Cultivating a gratitude practice is a very personal endeavor, and it can range from a 5-minute journaling session in the morning or evening to giving thanks with family at dinner or bed time to counting your blessings throughout the day to writing hand-written thank-you notes. Simply put, there's no wrong or bad time to be grateful; in fact, I've yet to meet a person who's practiced too much gratitude. The most common ways to practice gratitude are through journaling and writing letters of gratitude to others.
- **Take a break to breathe.** STOP. Seriously. Stop reading and take a moment to tune into your breathing. Are you taking short, shallow breaths into your chest (or maybe holding your breath altogether)? Or, are you taking long, deep breaths that fill your lungs, then your chest, and finally your head with oxygen-rich air? My guess is the former, which is unfortunate because, according to the American Institute of Stress (AIS), deep breathing facilitates the body's "relaxation response," eliciting:
 - Increased parasympathetic nervous system activity
 - Reduced heart rate and blood pressure
 - Muscle relaxation
 - Increased levels of nitric oxide
 - Reduced feelings of stress and levels of cortisol
 - Increased feelings of calmness
 - Increased feelings of connectedness to your mind and body

While breathing exercises are particularly useful when you're feeling anxious, I like to schedule brief pauses during the day for breathwork to help manage stress and to help remain calm, cool, collected and focused. Although there are many techniques, I've got three regular breathwork practices in my arsenal. These are the three that I found to be the very best for lowering cortisol and for lowering stress.



One would be box breathing, which involves a four-count inhale followed by a four-count hold, then a four-count exhale, and finally, a four-count hold. So, four, four, four, four, four. The next one is alternate-nostril breathing, which involves breathing in through the left nostril (while covering the right nostril) and out through the right nostril (while covering the left nostril), and then breathing in through the right nostril and out through the left nostril.

That one is also very good at activating your parasympathetic nervous system. And then the last one, which I especially at night time before bed, is 4-8 breathing, which involves a four-count inhale, followed by an eight-count exhale. That's four seconds in and eight seconds out, over and over and over again.

- **Take a break from work.** Believe it or not, taking breaks -- both routine, shorter breaks within days and occasional, more meaningful breaks over time -- can be very beneficial for you and your work. Studies have shown that breaks can reduce or prevent stress, help maintain performance throughout the day and reduce the need for a long recovery at the end of the day. One study, for example, found that lunchtime breaks, and detaching from work, increase energy levels at work and decrease feelings of exhaustion. And after a year, this strategy proved to increase vigor and energy levels over time.²² Taking breaks can also help avert "decision fatigue" while increasing productivity and creativity. Studies have shown that "aha moments" are more likely to come to those who take breaks, and the "eureka effect" -- the common human experience of suddenly understanding a previously incomprehensible problem or concept -- may be more likely to strike when you've stepped away from your work. Here are some tips to prompt you to regularly step away from your work, replenish your energy, ignite your creativity and boost your productivity:
 - Schedule break times.
 - Set an alarm on your phone to prompt you.
 - Plan to do something in your break that you enjoy. Combine it with some of the concepts discussed above, such as exercise snacks, taking a walk or spending time in nature.
 - Pay attention to any benefits you experience when you take a break; this will provide positive reinforcement to take future breaks.
- **Take a break from screens.** Spending long hours staring into our digital devices and exposed to energy-efficient lighting is presenting new challenges to visual health that goes beyond eye fatigue. It's a growing concern and few people realize the full impact on visual health. The good news is that there are steps we can take to protect ourselves from this growing problem. What's more, the blue light from screens suppresses melatonin production, delaying feelings of sleepiness and the onset of the night-time cycle, disrupting circadian rhythms and sleep.²³ Perhaps the trendiest and one of the most effective strategies to combat the blue light from screens (besides avoiding them altogether) is to wear amber-tinted, blue-light-blocking glasses at night.



Research has shown that wearing blue light-blocking glasses can attenuate LED-induced melatonin suppression in the evening.²⁴ One of the most powerful things that you can do is, you guessed it, take mini-breaks from screens throughout the day. A simple strategy recommended by many optometrists is the “20-20-20” rule, which goes like this: Every 20 minutes (when using your computer, television, gaming system, smartphone or tablet), take a 20-second break and focus your eyes on something at least 20 feet away.



Resource Hacks

Nasal Breathing/Mouth Taping. Multiple times, I hinted at the importance of breathing through the nose (i.e., nasal/nostril breathing), and it bears repetition. Nasal breathing filters and moisturizes inhaled air, lowers breath rate, promotes fuller breaths, releases nitric oxide, increases oxygenation, enhances energy, improves acid-base balance, activates parasympathetic nervous system, promotes creativity, focus and concentration and helps lower cortisol. While nasal breathing should be as simple as shutting your mouth, for some, it can be quite difficult to get away from rapid, shallow mouth over-breathing, which is connected to all sorts of problems. Many of those problems center around a reduction in carbon dioxide, which, in turn, leads to reduced oxygen delivery to the brain and other tissues of the body as well as changes in the acid-base balance. Along these lines, mouth taping (e.g., **Somnifix Strips**) and **Breathe Right Strips** may be particularly useful, especially during sleep.

Earthing Products. I mentioned how important “Vitamin G” is for the body, and how you can tap into this amazing resource by “grounding”; that is, connecting your bare feet to the Earth. While plugging directly into the Earth’s surface may be the best way to charge your body with free electrons, there’s also an array of grounding products -- ranging from straps you put on your shoes to a mat that you put under your desk to pillows and mattress covers that turn your bed into the equivalent of an outdoor campsite -- that you can use to get a similar effect. Check out the **Earthing Institute** for a full array of options.

Gratitude Journal. A regular gratitude practice can have profound health benefits, including general well-being, better sleep, more generosity and less depression. Gratitude can also help people cope with stress and build stronger relationships.



People who are grateful get less triggered or angry, they have more positive feelings, and in some ways, that attracts other people. When you feel these positive emotions and relish good experiences with others, there's a bonding in that, and it tends to build stronger relationships. The bottom line is that having an attitude of gratitude can have an enormously positive impact on the type of person you are and the life you lead. To make it a regular practice, a gratitude journal can be very helpful. Some of my favorites are Ben Greenfield's **Christian Gratitude Journal** and Craig Ballantyne's **Perfect Day Formula Gratitude Journal**.

Meditation Apps. Meditation can be an incredibly powerful tool, but it can be a very difficult practice to cultivate. Part of the challenge, I think, is the vision that many of us have about what meditation "should" look like, and another important hurdle is that many people don't know where or how to begin. The good news is that there are some amazing apps out there that can help tremendously and make all the difference. Some that I've used and enjoyed include **Pause, Headspace** and **Calm**.

Blue-Light Blocking Glasses. In an indoor world flooded with artificial blue light, blue-blocking glasses may be one of the most beneficial tools in the biohacker's toolbox. Okay, that may be a bit hyperbolic, but the reality is that blue-blocking glasses have been shown to improve mood and help regulate sleep and circadian rhythms by "tricking" the body's clock into believing it's nighttime regardless of blue light in the environment. Blue-blocking glasses can help create "virtual darkness", that is, amid a pervasive blue-lit environment. Thanks to better sleep and more of it, blue-light blocking glasses may also improve productivity, energy levels and behavior. There's no shortage of choices out there, and I've tried quite a few different brands. Some of my favorites include **Swanwick** and **TrueDark**.

Time to...

I know there's an awful lot to sift through here but let me boil it down for you: It's time to take a break. As much as the human body strives to maintain homeostasis, it does not like being static, especially when those fixed states involve being intoxicated with potentially pernicious results.

We all "know" that "too much" stress is unhealthy for the mind, body and soul. That is, when stress is persistent, chronic and exceeds our recuperative abilities, it poses a tremendous threat. While we "know" that applies to areas of life like relationships, finances and such, we often overlook the fact that sitting for too long can be physically, mentally and emotionally stressful...so can "dieting" ...so can work...so can spending the majority of our waking hours in front of screens. ...so, can spending too much time in the gym or engaging in traditional, non-playful training methods.



On the other hand, movement, enjoying all that life has to offer, basking in nature and taking the time to connect the mind and body through breath can all be incredibly nourishing, physically, cognitively and spiritually. I've provided many ideas for you to weave these into your day and lifestyle, and they're not mutually exclusive. For example, during a break from work, you can also take a break from screens by spending time outdoors doing a movement break or practicing some breathwork.

There's no right or wrong way to take a break...the point is simply to break the mold -- those patterns of stagnation that may be zapping your energy, fogging your brain, making you fat, and quite literally, killing you.

"All that is important is this one moment in movement. Make the moment important, vital, and worth living. Do not let it slip away unnoticed and unused."

~ Martha Graham



Formulator's Corner

Obviously, an overriding theme of this chapter is that we need to move more. Yet, as simple and straightforward as it sounds, chances are you know as well as I that it's not that easy.

Yes, time is a limiting factor, but let's be honest, so is *Father Time*. In other words, as we blow out more candles on our birthdays, we have to take even better care of our bodies -- for example, our joints, muscles, bones, fascia and other soft tissues -- so that we can move often *and* move well.

As someone who's had multiple orthopedic surgeries, struggled with chronic back pains and subjected my body to profuse wear and tear, I'm no stranger to aches, strains, soreness, fatigue and discomfort. I've tried more than my fair share of remedies in search for solutions to promote recovery, comfort and mobility.

Here are some of the most effective hacks I know to optimally hydrate the body, to support joints that move freely and comfortably and to help relieve sore, tired and achy muscles.

- **Glycerol.** When consumed orally, glycerol is rapidly absorbed and distributed between body fluid compartments where it increases osmotic pressure and the total volume of water in the body. When glycerol is consumed with fluid (e.g., water), the osmotic pressure enhances the retention of the fluid. In other



words, glycerol results in the retention of large quantities of water, which would be otherwise eliminated by the kidneys. In short, glycerol is an effective hyperhydrating agent, and considering the detrimental effects that dehydration (which is shockingly common), it can have on energy levels, cognitive function, circulatory function and physical performance. Glycerol has gained considerable attention for athletic performance, recovery, thermal stress and mental performance. Two grams per day of GlycerDrive can help support optimal hydration.

- **Electrolytes.** Electrolytes, such as sodium, potassium and magnesium, are naturally present in our bodies, and they assist with proper hydration and fluid balance. Sodium, in particular, tells your body to hang on to the water it has, rather than dumping it overboard. It also helps to maintain blood pressure and electrolyte balance, and it allows organs, muscles and nerves to work properly. If you're drinking a lot of water, you're active/exercising regularly and eating a healthy diet, it's a good idea to add electrolytes. And if you consume caffeine (e.g., coffee, tea) and/or follow a lower-carbohydrate diet, you may also need more electrolytes. Here are some general recommendations for electrolytes: Sodium: 3,000 - 5,000mg per day; Potassium: 2,000 - 3,000mg per day; Magnesium: 300 - 500mg per day; and Calcium: 1,000 - 2,000mg per day.
- **Curcumin.** While curcumin is associated with a variety of health benefits, it is perhaps most well-known for its capacity to ease joint discomfort and stiffness, which are thought to be precipitated by a number of factors, including oxidative and inflammatory stress. Given that curcumin is highly regarded for its powerful antioxidant and anti-inflammatory properties, it makes sense to have curcumin in your arsenal if you're looking to combat muscle soreness and fatigue and/or joint discomfort. While there's no shortage of curcumin on market, I prefer CurcuWIN (at a dose of 250 - 1,000mg per day), a highly bioavailable turmeric extract, or CurcuPrime, which features tetrahydrocurcumin (THU), the major bioactive metabolite of curcumin albeit with a higher bioavailability and biological activity. In other words, THU appears to have better absorption, better stability and stronger effects than curcumin. The recommended dosing for THU is 900mg per day.
- **Proteases.** Proteolytic enzymes (i.e., enzymes that break down proteins) are highly regarded for their anti-inflammatory properties. They have been deemed "vital for the control of inflammation by clearing inflammatory debris", as well as for promoting reductions in edema/swelling and immune complexes. That ultimately leads to a reduction in pain. Along those lines, proteolytic enzymes -- such as bromelain, papain, nattokinase and serratiopeptidase -- are often used for the treatment inflammatory disorders, including those involving joint pain. Additionally, an accumulation of scar tissue in joints can hinder optimal joint function, mobility and range of motion. Proteolytic enzymes help the body degrade excess scar tissue (which is



composed of proteins), and therefore, support healthy joint function and mobility. Overall, supplemental proteolytic enzymes may hold promise for helping those with inflammatory conditions, particularly those associated with edema or buildup of scar tissue. When used in combination with conventional pharmaceutical treatments (e.g., NSAIDs), proteolytic enzymes may allow for lower doses of the drugs, potentially reducing the risk for undesirable effects. Generally speaking, proteolytic enzymes are most effective for inflammation when taken on an empty stomach (i.e., without food).

- **Boswellia.** The *Boswellia serrata* tree produces a highly scented sap that has been a prized substance since ancient times. In particular, the boswellic acids -- and more specifically, AKBA -- may help with occasional joint flare-ups by uniquely targeting and inhibiting the collagen-degrading enzymes MMP-3 and 5-LOX. By supporting normal, healthy levels of these mediators, *Boswellia* helps protect against excessive collagen degradation, and as a result, it promotes joint health and comfort. While there are various forms of *Boswellia*, I prefer AprèsFlex, a highly bioavailable source of AKBA that has been shown in multiple clinical studies (7 pre-clinical and 3 human clinical trials) to be highly effective in as little as 5 days -- at a low dose of 100mg per day.
- **Hyaluronic Acid.** Hyaluronic acid, which is present in every connective tissue and organ, is a substance produced by the body that lubricates the joints and facilitates movement. However, the hyaluronic acid in our bodies reduces in quality and quantity with age and overuse of joints. The good news is that supplementation with hyaluronic acid can stimulate the body's natural production of hyaluronic acid, producing a potent lubricant effect and reducing friction between joints. I use Mobilee, which is a rooster comb extract naturally rich in hyaluronic acid, collagen and other polysaccharides. Mobilee, which has been tested in over 10 scientific and clinical studies, has been shown to be 5 times more powerful and effective than other forms of hyaluronic acid, and research has shown that it helps relieve joint discomfort and reinforces muscles. The recommended dose is 80mg per day.
- **Undenatured Type II Collagen.** Undenatured (native) type II collagen is a very unique form of collagen that is particularly effective for joint health support. Unlike other collagen supplements, which provide the building blocks (i.e., amino acids) for the collagenous structures (such as joint cartilage), undenatured type II collagen is believed to work by inducing a process known as "oral tolerance" that ultimately engages the immune system in the repair of its own joint cartilage. Undenatured type II collagen triggers an anti-inflammatory "repair" cascade, which in turn upregulates enzymes that "clean up" damaged cartilage that results from everyday wear and tear. Practically speaking, undenatured type II collagen has been shown to work nothing short of wonders for joint health, comfort and mobility. In addition, unlike other common joint health ingredients, it's highly effective in small amounts (e.g., 40mg per day). Look specifically for UC-II® branded undenatured type II



collagen, which has been put to the test in several randomized controlled clinical trials.

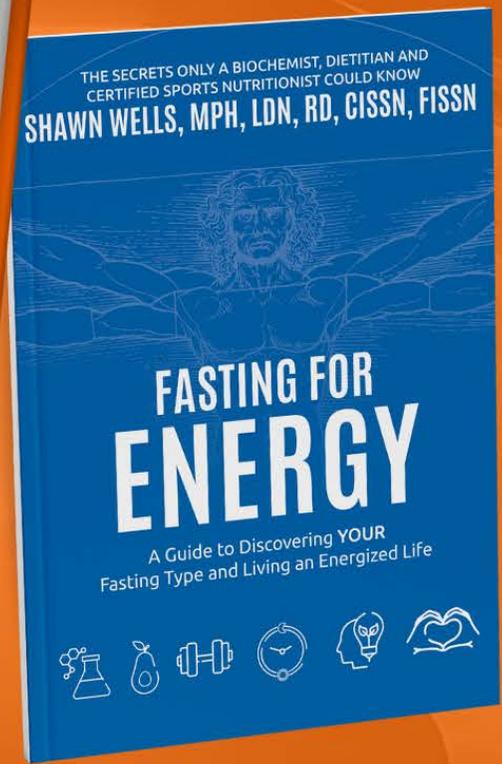
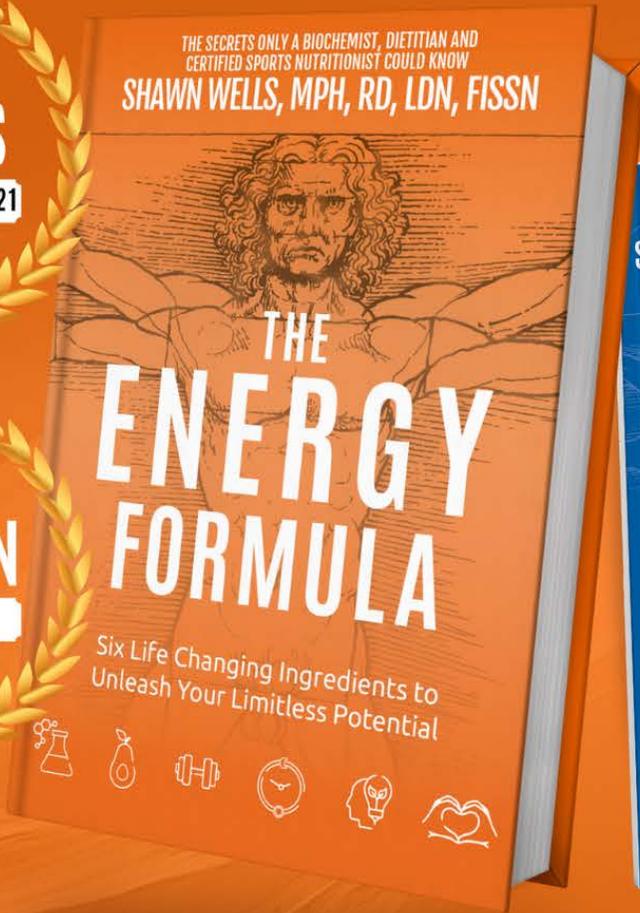
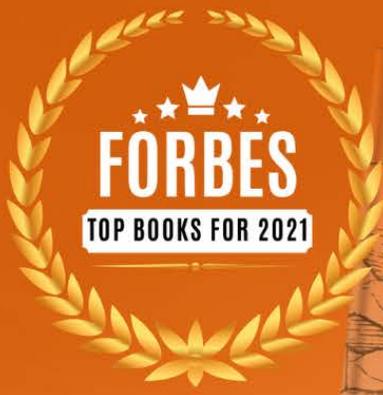
- **Collagen Peptides.** While UC-II undenatured type II collagen is one of the best things you can take when it comes to providing support for optimal joint health, collagen peptides are another non-negotiable, which work in a highly complementary manner. While UC-II works by engaging the immune system (to promote clean-up and repair), collagen peptides provide the literal building blocks for healthy joint cartilage. In particular, collagen protein (from of the amino acids glycine, proline and hydroxyproline), serve as the foundation of your very own collagen-rich tissues. To take it a step further, collagen peptides are especially important for a couple reasons. First, they are highly digestible, easily absorbed and readily distributed in the human body. On top of that, when you consume hydrolyzed collagen peptides, they serve as signaling molecules that stimulate the body's production of new collagen (as well as elastin and hyaluronic acid). In other words, collagen peptides tell the body to produce new, healthy collagen *and* provide the very raw materials needed to do so. That's a win-win. I have found the most success supplementing with 10 - 40 grams of collagen peptides daily. There are many great brands out there, such as BioTRUST Ageless Multi-Collagen, which provides 5 different types of collagen, providing support for a robust array of full-body benefits.
- **Whey Protein.** When it comes to nutritional support for recovery from intense exercise and strenuous physical activity, whey reigns as king of proteins. Whey protein is an abundant source of essential amino acids (particularly leucine), the "building blocks" of muscle, and it is rapidly digested, making it an excellent protein source for enhancing muscle protein synthesis (MPS) and reducing muscle damage. Numerous studies have confirmed that whey protein is effective at increasing muscle mass, increasing strength and optimizing recovery. A good rule of thumb is to consume 20 - 40 grams of high-quality whey protein isolate within an hour or two before and/or after exercise/activity. I look for cold-processed whey protein isolate that comes from grass-fed, pasture-grazing, humanely-raised cows not treated with antibiotics or synthetic growth hormones.
- **CBD.** One of the most common reasons people turn to the hemp-derived phytocannabinoid cannabidiol (CBD) is to help with pain, and as it turns out, it's pretty darn effective at getting the job done. While it's not yet fully understood exactly how or why CBD improves pain, the evidence suggests CBD is a "multi-target" compound that acts on a variety of enzymes, transporters, channels and receptors, including 5-HT1a (i.e., serotonin receptor), TRPV1 (a primary target for pain modulation) and adenosine (i.e., anti-inflammatory analgesic effects). Because other phytocannabinoids and terpenes from the hemp plant may offer synergistic pain management properties, I like a full-spectrum CBD when it comes to reducing pain. Both



oral and topical products can be effective. Transdermals and topicals, for example, may have a higher bioavailability, and they may also be ideal for localized symptoms and targeted relief.

- **Emu Oil.** Emu oil, which comes from the flightless bird native to Australia, has been shown to have potent anti-inflammatory activity, as it can help decrease levels of pro-inflammatory cytokines in tissues. Topical application of Emu oil has been shown to promote wound healing, to improve recovery of damaged skin and to reduce joint inflammation. Emu oil also has transdermal penetration-enhancing activity, which essentially means that it could potentially increase the absorption/bioavailability of other compounds that it's combined with both orally (e.g., curcumin) and topically (e.g., CBD).
- **Tiger Balm.** "Works where it hurts." That pretty much sums it up for this "legend from a jar". Marketing hype aside, there's a good reason Tiger Balm is the world's leading analgesic remedy: It really does work for sore, tired and achy muscles, joint pain, strains, sprains and more. And it works quickly. While there's a number of ingredients in Tiger Balm, the majority of the fast, warm, comforting relief stems from camphor and menthol, two well-known topical analgesics. Camphor, for example, activates and strongly desensitizes TRPV1, also known as the capsaicin receptor thanks to that principal pungent constituent of hot peppers well-known pain-diminishing effects.
- **Biofreeze.** Biofreeze is another topical with a history of pain relief for sore muscles, backaches, achy joints and arthritis. Thanks to its easy application and quick penetration, Biofreeze is trusted by medical professionals, physical therapists, chiropractors, massage therapists, athletic trainers and athletes alike for fast, targeted relief in areas like the back, neck, shoulder, knee, hand, wrist, elbow, foot and ankle. Unlike many other unproven options, clinical studies have shown that those who use the menthol-based Biofreeze decrease their pain twice as much as those who don't.





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REFERENCES:

1. Diaz KM, Howard VJ, Hutto B, Colabianchi N, Vena JE, Safford MM, et al. Patterns of Sedentary Behavior and Mortality in U.S. Middle-Aged and Older Adults: A National Cohort Study. *Ann Intern Med.* 2017;167:465.
2. Chau JY, Grunseit AC, Chey T, Stamatakis E, Brown WJ, Matthews CE, et al. Daily Sitting Time and All-Cause Mortality: A Meta-Analysis. *PLOS ONE.* 2013;8:e80000.
3. Chaput J-P, Carson V, Gray CE, Tremblay MS. Importance of all movement behaviors in a 24 hour period for overall health. *Int J Environ Res Public Health.* 2014;11:12575–81.
4. Stecco C, Hammer WI. *Functional atlas of the human fascial system.* Edinburgh: Elsevier Ltd; 2015.
5. Ellingson LD, Meyer JD, Shook RP, Dixon PM, Hand GA, Wirth MD, et al. Changes in sedentary time are associated with changes in mental wellbeing over 1 year in young adults. *Prev Med Rep.* 2018;11:274–81.
6. Schuch FB, Vancampfort D, Richards J, Rosenbaum S, Ward PB, Stubbs B. Exercise as a treatment for depression: A meta-analysis adjusting for publication bias. *J Psychiatr Res.* 2016;77:42–51.
7. Al-Qahtani AM, Shaikh MAK, Shaikh IA. Exercise as a treatment modality for depression: A narrative review. *Alex J Med.* 2018;54:429–35.
8. Craig AD. *How do you feel? an interoceptive moment with your neurobiological self.* Princeton: Princeton University Press; 2015. 343 p.
9. Vincent GE, Jay SM, Vandelanotte C, Ferguson SA. Breaking Up Sitting with Light-Intensity Physical Activity: Implications for Shift-Workers. *Int J Environ Res Public Health* [Internet]. 2017 [cited 2021 Apr 9];14. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5664734/>
10. Jenkins EM, Nairn LN, Skelly LE, Little JP, Gibala MJ. Do stair climbing exercise “snacks” improve cardiorespiratory fitness? *Appl Physiol Nutr Metab* [Internet]. 2019 [cited 2021 Apr 9]; Available from: <https://cdnsiencepub.com/doi/abs/10.1139/apnm-2018-0675>
11. Wolfe AS, Burton HM, Vardarli E, Coyle EF. Hourly 4-s Sprints Prevent Impairment of Postprandial Fat Metabolism from Inactivity. *Med Sci Sports Exerc.* 2020;52:2262–9.
12. Kim I-Y, Park S, Chou T-H, Trombold JR, Coyle EF. Prolonged sitting negatively affects the postprandial plasma triglyceride-lowering effect of acute exercise. *Am J Physiol-Endocrinol Metab.* 2016;311:E891–8.
13. Akins JD, Crawford CK, Burton HM, Wolfe AS, Vardarli E, Coyle EF. Inactivity induces resistance to the metabolic benefits following acute exercise. *J Appl Physiol Bethesda Md* 1985. 2019;126:1088–94.
14. Thorp AA, Kingwell BA, Owen N, Dunstan DW. Breaking up workplace sitting time with intermittent standing bouts improves fatigue and musculoskeletal



discomfort in overweight/obese office workers. *Occup Environ Med.* 2014;71:765–71.

15. Kowalsky RJ, Perdomo SJ, Taormina JM, Kline CE, Hergenroeder AL, Balzer JR, et al. Effect of Using a Sit-Stand Desk on Ratings of Discomfort, Fatigue, and Sleepiness across a Simulated Work Day in Overweight and Obese Adults. *J Phys Act Health.* 2018;15:788–94.

16. Hewes GW. World Distribution of Certain Postural Habits*. *Am Anthropol.* 1955;57:231–44.

17. Bowman K, Lewis J. Move your DNA: restore your health through natural movement. Carlsborg, WA: Propriometrics Press; 2014. 243 p.

18. Carter SE, Draijer R, Holder SM, Brown L, Thijssen DHJ, Hopkins ND. Regular walking breaks prevent the decline in cerebral blood flow associated with prolonged sitting. *J Appl Physiol Bethesda Md* 1985. 2018;125:790–8.

19. Louv R. Last child in the woods: saving our children from nature-deficit disorder. Updated and expanded. Chapel Hill, N.C: Algonquin Books of Chapel Hill; 2008. 390 p.

20. Brown SL, Vaughan CC. Play: how it shapes the brain, opens the imagination, and invigorates the soul. 1. paperback ed. New York: Avery; 2010. 229 p.

21. Pang AS-K. Rest: why you get more done when you work less. New York: Basic Books; 2016. 310 p.

22. Sianoja M, Kinnunen U, Bloom J de, Korpela K, Geurts S. Recovery during Lunch Breaks: Testing Long-Term Relations with Energy Levels at Work. *Scand J Work Organ Psychol.* 2016;1:7.

23. Tosini G, Ferguson I, Tsubota K. Effects of blue light on the circadian system and eye physiology. *Mol Vis.* 2016;22:61–72.

24. Helwick C. Blue Light-Blocking Glasses May Help With Sleep, Cognition [Internet]. Medscape. [cited 2021 Apr 10]. Available from: <http://www.medscape.com/viewarticle/887048>

