

INTENTIONAL MOVEMENT:

The Path to Restoring
Your Vital Self



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INTENTIONAL MOVEMENT: THE PATH TO RESTORING YOUR VITAL SELF

By GreenMedInfo Research Group

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INTENTIONAL MOVEMENT: THE PATH TO RESTORING YOUR VITAL SELF

Intentional movement, once a mainstay of daily life, has disappeared, taking away your vitality and well-being in the process. By honoring your body's need for physical activity, and doing it interspersed with nature and meditation, you can reawaken a healthier, happier part of yourself that's just waiting to be let out.

BY SAYER JI

How much have you moved today? For most, the answer is probably far less than the amount of time spent *not* moving, and that's a problem. Modern society, with its automobiles, offices and comfortable couches, is designed for sitting, but your body is not. The act of keeping your body, which thrives on intentional movement, confined to a chair for much of the day is causing an epidemic of chronic diseases and could be cutting your life short.¹

Moving more in a world designed to encourage inactivity takes proactive effort, but once you get into the habit, it's one of the most straightforward steps you can take to support your vitality. You'll find, too, that it's one of those practices that just feels good – the more you do it, the more you'll want to keep moving.

This is why Phase 4 of Regenerate Rx, my program for triggering your body's inherent mechanisms for resilience, involves intentional movement as a key tenet of mind and body healing.

At this point, if you've gone through the program you've established a healthy base to support your physical health and regeneration, and you've removed many of the toxins and pollutants that might otherwise hold you back from unlocking your body's true healing potential.

Now is the time to introduce intentional movement practices and meditation to connect you with the rhythms of nature and nurture your subconscious self and emotional wellness. Bear in mind, however, that the tips that follow are useful for everyone – including those of you who haven't started the Regenerate Rx program.

Doing so is certainly not a prerequisite to adding intentional movement and meditation to your life, so get reading – and then, more importantly, get moving.

WHAT'S WRONG WITH SITTING?

Sitting isn't inherently dangerous but, like many things in life, is best enjoyed in moderation. The problem with sitting is that you're probably doing far too much of it. In an analysis of 5,923 adults, about 1 in 4 reported sitting for more than eight hours a day, 4 in 10 said they're physically inactive and 1 in 10 reported both sitting for more than eight hours daily and being inactive.²



Why does this matter? Sitting for more than three hours a day was found to be responsible for 3.8% of deaths in 54 countries, which amounts to 433,000 deaths a year that could have been prevented.³ What's more, it's been found that for each extra hour you spend sitting beyond seven hours a day, your risk of mortality from all causes goes up by 5% – even after accounting for moderate to vigorous physical activity.⁴

When you sit, your body has a lower expression of nitric oxide, which is related to increased vascular oxidative stress and impaired endothelial function. Endothelial cells, which line your blood vessels, play an important role in vascular relaxation and contraction, blood clotting and immune function.

Endothelial dysfunction has been linked to heart attack and stroke, and may precede the development of atherosclerosis, or hardening of the arteries.⁵ Excess sitting also affects lipase lipoprotein, which breaks down triglycerides, and glucose uptake.⁶

As such, sitting time is correlated with increased risks of metabolic syndrome, Type 2 diabetes, heart disease and some cancers as well. Importantly, making even small changes in how long you sit may have a marked role in extending your lifespan. Researchers wrote in the American Journal of Preventive Medicine:

“It was observed that even modest reductions, such as a 10% reduction in the mean sitting time or a 30-minute absolute decrease of sitting time per day, could have an instant impact in all-cause mortality (0.6%) in the 54 evaluated countries, whereas bolder changes (for instance, 50% decrease or 2 hours fewer) would represent at least three times fewer deaths versus the 10% or 30-minute reduction scenarios.”⁷

So if you feel overwhelmed by the need to reduce your sitting, this is a manageable place to start – sit for 30 minutes less a day, gradually increasing this to two hours less daily.

THE GLOBAL INACTIVITY PANDEMIC

Researchers labeled physical inactivity as a global pandemic in 2012, stating that it was the fourth leading cause of death worldwide at the time.⁸ In an update published in 2016, physical activity is again cited as key in the prevention of non-communicable diseases (NCDs), including dementia, yet one that still wasn't getting the attention it deserves.

“There is still a long way to go before physical activity is an equal partner in recommended preventive strategies for NCDs – from the government level down to the physician's practice,” they wrote.⁹ If you've never heard about the importance of intentional movement from your physician, you're in good company.

Due to the lack of time and lack of training about physical activity, most primary care physicians do not regularly assess their patients' physical activity levels, nor do they prescribe exercise as a treatment.¹⁰

The end result is a pandemic of people not taking advantage of this powerful healing strategy, with their health suffering in response. It's estimated that physical inactivity racked up global costs to health care systems of about \$53.8 billion in 2013 – and that's a conservative estimate.¹¹

In 2019, Dr. Abraham Haileamlak, professor of pediatrics and child health at Ethiopia's Jimma University pointed out that non-communicable diseases cause two-thirds of deaths worldwide, and physical inactivity alone may be responsible for 9% of deaths globally. He believes that physical inactivity is “the major risk factor” for NCDs, making it a matter of urgent public health, as 1 in 4 adults and 81% of adolescents are not active enough.¹²

In addition to increasing physical activity, awareness should be centered on reducing daily sedentary time as well, and this is something you can achieve by taking time for intentional movement. As Dr. Robert Sallis, co-director of sports medicine at Kaiser Permanente Fontana Medical Center put it, “Exercise is medicine.”¹³

He's now the chairman of the Exercise Is Medicine initiative of the American College of Medicine, which is calling on health care providers to include physical activity as a standard part of their treatment plans and refer patients to exercise programs when necessary.¹⁴

He states that exercise is “the best medicine we know of,”¹⁵ and it also happens to be one that's free and readily accessible to everyone, so are you ready to reap its many benefits?

WHAT IS INTENTIONAL MOVEMENT, AND WHY DOES IT MATTER?

When you're not sitting, you may be standing or engaging in intentional movement. I like this phrase better than exercise, because some forms of intentional movement, like dancing or gardening, may be things you wouldn't normally equate with "exercise," although they yield many of the same benefits.



That being said, exercise in the conventional sense of the word is also a form of intentional movement, as is walking, yoga, climbing stairs, raking leaves or playing a game of tag with your children. Any time your body is in motion, as opposed to remaining sedentary, it provides an opportunity for your lymphatic system to function more effectively, ridding your body of waste.

Your lymphatic system is made up of lymphatic vessels, tiny tubes that collect lymph fluid through your lymph nodes, which contain immune cells. As part of your immune system, your lymphatic system helps attack and remove bacteria, viruses and abnormal cells, including those that may turn into cancer, from your body.¹⁶

This effective waste removal system has no built-in pump to keep lymph fluid flowing, so it relies on movement instead. When your muscles move, the contractions act as a pump to move lymph fluid throughout your body, through your bloodstream and kidneys so waste products can be removed via your urine.¹⁷

It's been found that lymph flow increases two- to three-fold during exercise compared to when you're at rest.¹⁸ If you're obese, it can cause dysfunction in this important system, but here again staying active improves lymphatic function even in cases of obesity-induced lymphatic dysfunction – and this benefit occurs even without associated weight loss.¹⁹

Activity also supports regular bowel movements. In fact, exercise may be an effective treatment option for constipation²⁰ which is just one more way that it keeps homeostasis in your body. Oftentimes, intentional movement also causes you to work up a sweat, something that's viewed in the modern day as undesirable but traditionally has been regarded as cleansing for the body.

When you sweat, toxins like arsenic, cadmium, lead and mercury are excreted in appreciable quantities via your skin.²¹ So physical activity that induces sweating is an important tool for removing toxic elements from your body.

INACTIVITY AFFECTS ‘ALMOST EVERY CELL’ IN YOUR BODY

The public health message related to inactivity is often tied with weight gain and obesity. While it's true that your weight is affected by your activity levels, intentional movement is about so much more than a number on your scale.

“The comprehensive evidence herein clearly establishes that lack of physical activity affects almost every cell, organ, and system in the body causing sedentary dysfunction and accelerated death,” researchers wrote in *Comprehensive Physiology*.²² They found that physical activity could prevent, reduce the risk of or improve 32 chronic conditions:

- Accelerated biological aging/premature death
- Metabolic syndrome
- Prediabetes
- Coronary heart disease
- Stroke
- Arterial dyslipidemia
- Cognitive dysfunction
- Balance
- Colon cancer
- Endometrial cancer
- Diverticulitis
- Sarcopenia
- Non-alcoholic fatty liver disease
- Endothelial dysfunction
- Osteoporosis
- Breast cancer
- Low cardiorespiratory fitness (VO₂max)
- Obesity
- Type 2 diabetes
- Peripheral artery disease
- Congestive heart failure
- Hemostasis
- Depression and anxiety
- Gallbladder diseases
- Constipation
- Gestational diabetes
- Erectile dysfunction
- Insulin resistance
- High blood pressure
- Deep vein thrombosis
- Bone fracture/falls
- Preeclampsia

Lack of physical activity emerged as one of the most important causes of chronic disease, and because getting active prevents or delays so many chronic diseases, they concluded “chronic disease need not be an inevitable outcome during life.”²³ Further, intentional movement effectively slows signs of aging.

Maximal aerobic capacity, or VO₂ max, is a measure of your cardiovascular fitness. In one study, women who are 80 years old and physically active had VO₂ max's that were equivalent to 50-year-old women who were physically inactive.²⁴

Cardiorespiratory fitness also equates to all-cause mortality, with the least fit men having a 75% increased risk of all-cause death compared to the fittest. Among women, the risk increased by 113% for the least fit.²⁵



Poor muscle strength, another inevitable outcome of inactivity, is also linked with premature death, while a sedentary lifestyle may speed the aging of skeletal muscle power by 24 years.²⁶ In your brain, six months of physical activity may increase grey matter volume, reductions in which are linked to declining memory performance, and it's also suggested that physical activity may prevent 20% to 30% of depression cases.²⁷

If a drug could yield this many remarkable benefits, it would be a blockbuster of unprecedented success. But no drug can do what physical activity can. As the Comprehensive Physiology researchers noted:

“The natural adaptations to exercise provide a higher therapeutic index (benefits/ side effects) than any drug therapy could exceed. The high therapeutic index of exercise is in part due to its systemic complexity. It requires the integration of almost every physiological system (brain, neural, vascular, liver, adipose, muscle, etc.) to accomplish several basic physiological tasks such as movement and energy utilization.

Since physical activity results in the whole body disruption of homeostasis in multiple organ systems, a drug therapy alone cannot replicate the entire ensemble its effects, without actually increasing physical activity.”²⁸

TEN MINUTES OF MOVEMENT ALTERS 9,815 MOLECULES IN YOUR BODY

How powerful is intentional movement? So powerful that when 36 volunteers between the ages of 40 and 75 ran on a treadmill until they couldn't run any longer – which amounted to between eight and 12 minutes for most of the runners – changes were observed in 9,815 molecules.^{29,30}

The observed changes, which occurred anywhere from two to 60 minutes after the exercise session, represent “an orchestrated choreography of biological processes,” including those related to energy metabolism, oxidative stress, inflammation, tissue repair, growth factor response and regulatory pathways.³¹

In a similar study, researchers measured 588 metabolites, or small molecules in cells and tissues, of adults both at rest and after exercising to their peak.³² Changes occurred in 502 of them in response to the workout, including reductions in metabolites linked to insulin resistance and increases in metabolites associated with lipolysis, nitric oxide bioavailability and adipose browning, which has beneficial metabolic effects.³³

Exercise also sensitizes your body's autophagic system,³⁴ stimulating autophagy, your body's way of clearing out damaged cells and making room for new ones.³⁵ The very definition of cellular aging is an accumulation of misfolded proteins and disabled organelles, leading to progressive degeneration and cell death.

Aging is associated with reduced autophagy and inhibition of this process may cause premature aging, as during autophagy, nonfunctional proteins, intracellular pathogens and damaged organelles are eliminated.³⁶ Exercise may induce autophagy in your muscle, liver, pancreas and fat tissue, all organs involved in metabolic regulation.³⁷

INCREASING MOVEMENT MATTERS AT ALL LIFE STAGES

The simple fact is, movement goes hand-in-hand with wellness and this is true at all life stages. Children who are active have better bone health and improvements in cognitive function, heart health and mental health. In adulthood, you can enjoy a lower risk of dying from all causes, along with a lower risk of chronic diseases ranging from Type 2 diabetes and cancer to dementia and depression.

In your later years, regular physical activity lowers the risk of disability by reducing falls and fall-related injuries. It improves your ability to function on a daily basis. Even those with pre-existing medical conditions can benefit from moving more:³⁸

HEALTH CONDITION	ADDING MORE PHYSICAL ACTIVITY MAY:
Breast, colorectal and prostate cancers	Lower your risk of mortality
Osteoarthritis	Decrease pain and improve your function and quality of life
High blood pressure	Reduce your risk of progression of heart disease and keep your blood pressure from increasing further over time
Type 2 diabetes	Reduce your risk of cardiovascular mortality and improve blood pressure, blood lipids and hemoglobin A1c
Multiple sclerosis	Improve your ability to walk and improve physical fitness
Dementia	Boost your cognition

YOUR BODY IS MADE TO MOVE

You're living in a time unlike any before it. One in which you don't have to be physically active to survive. Genetically speaking, little has changed in humans over the last 10,000 years. Your body, then, is still programmed for a preagricultural hunter-gatherer lifestyle, during which daily physical activity, likely for more than 30 minutes, was essential to find food, water and shelter.



It's been suggested that hunter-gatherers may have followed what's been dubbed a "Paleolithic rhythm," which included days of relatively intense physical activity alternated with days of rest and light activity. Men, according to a review published in the *Journal of Applied Physiology*, may have hunted for one to four days a week, but interspersed them with days of rest. Women likely gathered every two or three days.³⁹

Other activities of ancient ancestors included making tools, butchering and food preparation, making clothing, carrying wood and water, and moving to new campsites. "Dances," they wrote, "(often lasting hours) were a major recreational activity in many cultures, often taking place several nights per week."⁴⁰ This ongoing mix of physical movement, exertion and rest made hunter-gatherers more muscular and stronger than humans living in today's postagricultural society.

"Today, most Americans are quite weak relative to our ancestors, possibly contributing to the premature onset of physical disability," they noted.⁴¹ It's interesting to note, too, that some researchers speculate hunter-gatherers may have had more sedentary time than is often suggested, even on par with the sedentary time in industrialized populations.

There's a major caveat, though, which is how they spent their sedentary time – mostly squatting instead of sitting in chairs. While sitting in a chair is truly a sedentary activity, squatting is a form of "active rest," which requires higher levels of muscle activity that provides related health benefits and avoids many of the health risks associated with sitting.

"Thus, human physiology was likely not presented with long periods of muscular inactivity until relatively recently in our evolutionary history," the scientists wrote in *PNAS*. "It seems probable that our bodies are simply not well-built for spending much of our day with muscular inactivity."⁴²

You can reap some of these benefits by swapping out your chair for an exercise ball, which requires you to engage muscles to keep it balanced. Squatting is also something you can work into your day – try it instead of sitting on your couch.

A DEPARTURE FROM NATURAL RHYTHMS

As it stands, most modern-day humans are living at odds with their inherent needs and rhythms, movement included.

“Adults in the present United States have Late Paleolithic preagricultural hunter-gatherer genes but live in a sedentary, food-abundant society whose appearance as a culture is less than 200 years old ... there is now a mismatch between our ancient, genetically controlled biology and certain aspects of our daily lives,” scientists wrote in the *Journal of Applied Physiology* review.⁴³

Aside from being sedentary, many engage in limited repetitive movements that are problematic in their own right. Most sedentary time is spent indoors, further disconnecting you from the cycles of light and dark found in nature. Environmental lighting conditions even influence the benefits you can derive from exercise,⁴⁴ and exercise is closely intertwined with your body’s circadian rhythms as well.⁴⁵

In fact, exercise is a zeitgeber, or a cue that helps synchronize your body with its biological rhythms, which are in turn linked to the Earth’s 24-hour cycle of light and dark. Exercise is a particularly robust zeitgeber of the clocks in your skeletal muscle, and can reset your molecular circadian clock, helping to offset some of the health risks caused by shift work or disrupted sleep patterns, according to researchers with the Karolinska Institutet in Stockholm, Sweden.⁴⁶

Quite simply, movement is natural while inactivity is not, and remaining sedentary is just one more way that your body and psyche are becoming disconnected from the natural world around you, instead of moving in concert with it.

TYPES OF INTENTIONAL MOVEMENT

There are no rules when it comes to moving your body. Do what feels good for you, while also pushing yourself to try new activities and forms of movement, even if they may at first seem unfamiliar. I surprised myself at the age of 44, when I unexpectedly took up running. I’d never been particularly athletic, but once I tried it, I fell in love. There’s some discomfort, yes, but it’s balanced by the high I experience afterward.

You will find that intentional movement such as this speaks to both your physical and spiritual hearts in a primal way. I encourage you to try many types of movement, including those “natural movements” that many shy away from, things like walking, running, crawling, climbing, jumping, swimming and dancing – these are the activities your body was made for.

In The American Journal of Medicine, Dr. James O’Keefe and Loren Cordain, a professor at Colorado State University, devised a hunter-gatherer fitness program that includes many natural movements that mimic those of your ancient ancestors. You can incorporate many of these as part of your daily intentional movements.⁴⁷

HUNTER-GATHERER ACTIVITY	WHAT YOU CAN DO TODAY
Carrying logs	Carrying groceries, luggage, firewood
Running and walking	Running and walking, outdoors on natural trails or grass
Carrying meat back to camp	Wearing a backpack while walking
Carrying young child	Carrying young child
Hunting, stalking animals	Interval exercise training
Digging for tubers	Gardening
Dancing	Dancing
Carrying and stacking rock	Lifting weights
Butchering a large animal	Splitting wood with an axe
Gathering plants	Weed your garden
Build shelter	Carpentry
Tool construction	Vigorous housework

To get in touch with your spiritual side, yoga is another highly recommended form of intentional movement that’s been enjoyed since ancient times. With the added benefit of breathing exercises, relaxation and meditation, yoga represents a comprehensive form of movement that’s appropriate even for those who have been largely inactive.

In the elderly, yoga has even been found to lead to greater improvements in physical functioning than typical physical activity,⁴⁸ although all ages can benefit. You may also find that physical activity is more enjoyable when you do it with friends, and certainly joining a walking or jogging club, dance group or sporting team will provide the added benefits of increased motivation and social support.

MOVE YOUR MOVEMENT OUTDOORS

What's better than daily intentional movement? Daily intentional movement done outdoors. The combination of physical activity with exposure to sunlight, fresh air and green spaces is unmatched in its ability to restore your physical and mental states. Sometimes referred to as "green exercise," the same workout done outside may yield greater benefits than if done indoors, including offering:⁴⁹



- Greater feelings of revitalization and positive engagement
- Decreases in tension, confusion, anger and depression
- Increased energy

The boost to mood and self-esteem when you engage in intentional movement outdoors is significant and immediate, occurring within the first five minutes,⁵⁰ so keep that in mind if you ever need a quick way to unwind or destress. Movement outdoors also provides you an opportunity for sunlight exposure, another health-promoting tool that's underappreciated in the modern world.

The most well-known benefit of sun exposure is that it boosts your body's production of vitamin D, which many are deficient in, but there are other benefits as well. Exposure to sunlight affects your body's production of the hormones melatonin and serotonin. Melatonin is essential for restful sleep and plays a role in combatting inflammation, infection and cancer, while serotonin is linked to positive mood and increased focus.

Your body also has other sun-dependent pathways that may help prevent autoimmune diseases, reduce melanoma risk by increasing gene repair and benefit skin disorders such as psoriasis. And if you've ever noticed that spending some time in the sun just feels good, it's partly because exposure to the sun increases endorphins, your body's natural pain and stress relievers.⁵¹

KICK OFF YOUR SHOES AND ENJOY NATURE

While you're outside, kick off your shoes and let your bare feet come in contact with the natural Earth – grass, sand, dirt, it doesn't matter, as long as it's natural. This phenomenon, known as grounding or Earthing, allows your body to reconnect to the electrons on the surface of the Earth, which helps reduce inflammation, pain and stress while supporting restful sleep and heart health.⁵²

It's not necessary to get bogged down with the details, though. Just enjoy the sublime feeling of walking, dancing or doing whatever movement you choose outdoors with no shoes – children do it all the time, maybe they know something we adults have forgotten.

Considering that modern humans suffer from a nature deficit just as much as they do an activity deficit, intentional movement outdoors, such as a hike in a forest preserve, allows you to do double-duty, wrapping up time in nature and time spent being active into one. By the way, this time spent in nature offers even more health benefits of its own:⁵³

- Reduced stress
- Reduced depression and anxiety
- Greater happiness, well-being and life satisfaction
- Reduced ADHD symptoms
- Lower blood pressure
- Improved birth outcomes
- Improved child development
- Reduced obesity
- Better eyesight
- Improved general health for adults, children and cancer survivors
- Better sleep
- Improved immune function
- Reduced aggression
- Increased prosocial behavior and social connectedness
- Improved postoperative recovery
- Improved congestive heart failure
- Improved pain control
- Reduced diabetes
- Improvements in asthma and/or allergies
- Reduced mortality

INCORPORATE TIME FOR REST AND MEDITATION

After strenuous exertion, your body needs time for rest and recovery. Overdoing physical activity can offset many of the health gains you're after, so listen to your body and keep high-intensity activities brief followed by a period of recovery. Even on rest days, you can engage in gentle intentional movement, such as squatting instead of sitting and certain types of yoga.



Meditation is also a natural partner to intentional movement, one that will support its mind-body benefits. I especially enjoy early morning meditation or prayer, which will stabilize your nervous system and provide increased resilience throughout the day. Meditation influences the way physical sensations, emotions and thoughts are processed in your brain, so if you have an aversion to physical activity, meditation could help you to assuage it.

“It is hypothesized that the psychological, physiological, and psychophysiological benefits of exercise could be maximized when performed in combination with meditation routines,” according to researchers with the University of São Paulo, Brazil. “Also, there is the possibility of an additional effect where meditation practices might have the potential to facilitate execution of movements and enhance task performance.”⁵⁴

The synergistic effects of physical exercise, yoga and mindfulness meditation were also explored, revealing significant improvements among a group of overstressed, burned out employees. Anxiety, depression and stress declined while sleep quality and functioning at work improved.⁵⁵ In a 2020 follow-up study, substantial and long-lasting improvements were noted, especially in the areas of stress relief and personal goals.⁵⁶

You can start meditating by committing 10 minutes a day to focusing your attention on your breath. As you breathe in and out of your nose, let go of distracting thoughts and focus your mind on the air you're breathing as a fuel for your exercise, providing oxygen to your muscles to engage in intentional movement.⁵⁷

MOVEMENT IS EMPOWERMENT

There's a chance that many of you reading this may have fallen into a rut of inactivity and are struggling to find your way out. You can do it, literally, one step at a time, and you'll find that when you honor your body's need for regular, intentional movement you'll be rewarded with a sense of deep empowerment and self-efficacy.

“Humans now have a choice not to be physically active,” the Comprehensive Physiology researchers noted, but you can also make the opposite choice – the only one that matters if you value your own well-being:

“Conclusive and overwhelming scientific evidence, largely ignored and prioritized as low, exists for physical inactivity as a primary and actual cause of most chronic diseases. Thus, longer-term health was also engineered out with the successful removal of physical activity as a necessity for immediate survival.

The massive multifactorial nature of dysfunction caused by sedentarism means that just as food and reproduction remain as requirements for long-term continued human existence, physical activity is also a requirement to maximize health span and lifespan. The only valid scientific therapeutic approach to completely counter sedentary dysfunction is primary prevention with physical activity itself.”

No matter your age or fitness level, make daily intentional movement part of your life. You have no limitations – only those you impose on yourself – and you deserve to let your vital self out. Gather up your self-determination, self-esteem and, mostly, your self-compassion and get moving, however it feels right.

REFERENCES

- 1 Diabetes Res Clin Pract. 2012 Sep;97(3):368-76. doi: 10.1016/j.diabres.2012.05.020. Epub 2012 Jun 9. <https://pubmed.ncbi.nlm.nih.gov/22682948/>
- 2 JAMA. 2018;320(19):2036-2038. doi:10.1001/jama.2018.17797 <https://jamanetwork.com/journals/jama/fullarticle/10.1001/jama.2018.17797>
- 3 American Journal of Preventive Medicine March 23, 2016 [https://www.ajpmonline.org/article/S0749-3797\(16\)00048-9/fulltext](https://www.ajpmonline.org/article/S0749-3797(16)00048-9/fulltext)
- 4 JAMA. 2018;320(19):2036-2038. doi:10.1001/jama.2018.17797 <https://jamanetwork.com/journals/jama/fullarticle/10.1001/jama.2018.17797>
- 5 Cedars Sinai, Endothelial Function Testing <https://www.cedars-sinai.org/programs/heart/clinical/womens-heart/services/endothelialfunction-testing.html>
- 6 American Journal of Preventive Medicine March 23, 2016 [https://www.ajpmonline.org/article/S0749-3797\(16\)00048-9/fulltext](https://www.ajpmonline.org/article/S0749-3797(16)00048-9/fulltext)
- 7 American Journal of Preventive Medicine March 23, 2016 [https://www.ajpmonline.org/article/S0749-3797\(16\)00048-9/fulltext](https://www.ajpmonline.org/article/S0749-3797(16)00048-9/fulltext)
- 8 The Lancet July 21, 2012, Volume 380, Issue 9838, P294-305 [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(12\)60898-8/fulltext#%20](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(12)60898-8/fulltext#%20)
- 9 The Lancet July 21, 2012, Volume 380, Issue 9838, P294-305 [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(12\)60898-8/fulltext#%20](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(12)60898-8/fulltext#%20)
- 10 Can Fam Physician. 2019 Sep; 65(9): e411–e419. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6741803/>
- 11 The Lancet July 27, 2016 https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjz94LlwbrtAhWRVs0KHQd7BPMQFjANegQIHRAC&url=https%3A%2F%2Fwww.icsspe.org%2Fsystem%2Ffiles%2FBo%2520Andersen%2520et%2520al.%2520-%2520Update-on-the-global-pandemic-of-physical-inactivity_2016_The-Lancet.pdf&usg=AOvVaw2di-WoscYKGuAm9BBTVHSY
- 12 WHO, Physical Activity https://www.who.int/health-topics/physical-activity#tab=tab_1
- 13 The Physician and Sports Medicine February 14, 2015 <https://www.tandfonline.com/doi/full/10.1080/00913847.2015.1001938>
- 14 Exercise Is Medicine: A Global Health Initiative <https://www.exerciseismedicine.org/>
- 15 Permanente Medicine November 25, 2019 <https://permanente.org/robert-sallis-md-joins-sports-medicine-experts-offering-fitness-tips-for-the-holidays/MD> Anderson Cancer Center, November 2019, Exercise
- 16 and the Lymphatic System <https://www.mdanderson.org/publications/focused-on-health/exercise-and-the-lymphaticsystem.h20-1592991.html>
- 17 MD Anderson Cancer Center, November 2019, Exercise and the Lymphatic System <https://www.mdanderson.org/publications/focused-on-health/exercise-and-the-lymphaticsystem.h20-1592991.html>
- 18 Sports Med. 2005;35(6):461-71. doi: 10.2165/00007256-200535060-00001. <https://pubmed.ncbi.nlm.nih.gov/15974632/>

- 19 J Physiol. 2016 Aug 1;594(15):4267-82. doi: 10.1113/JP271757. Epub 2016 Apr 9. <https://pubmed.ncbi.nlm.nih.gov/26931178/>
- 20 Scand J Gastroenterol. 2019 Feb;54(2):169-177. <https://pubmed.ncbi.nlm.nih.gov/30843436/>
- 21 Journal of Environmental and Public Health February 22, 2012 <https://www.hindawi.com/journals/jeph/2012/184745/>
- 22 Compr Physiol. 2012 Apr; 2(2): 1143–1211.
- 23 Compr Physiol. 2012 Apr; 2(2): 1143–1211.
- 24 Compr Physiol. 2012 Apr; 2(2): 1143–1211.
- 25 Compr Physiol. 2012 Apr; 2(2): 1143–1211.
- 26 Compr Physiol. 2012 Apr; 2(2): 1143–1211.
- 27 Compr Physiol. 2012 Apr; 2(2): 1143–1211.
- 28 Compr Physiol. 2012 Apr; 2(2): 1143–1211.

- 29 The New York Times June 10, 2020 <https://www.nytimes.com/2020/06/10/well/move/a-single-session-of-exercise-alters-9815-molecules-in-our-blood.html>
- 30 Cell. 2020 May 28;181(5):1112-1130.e16. doi: 10.1016/j.cell.2020.04.043. <https://sci-hub.tw/10.1016/j.cell.2020.04.043>
- 31 Cell. 2020 May 28;181(5):1112-1130.e16. doi: 10.1016/j.cell.2020.04.043. <https://sci-hub.tw/10.1016/j.cell.2020.04.043>
- 32 The New York Times November 25, 2020 <https://www.nytimes.com/2020/11/25/well/move/exercise-omics.html>
- 33 Circulation. 2020;142:1905–1924 <https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.120.050281>
Scientific Reports
- 34 volume 8, Article number: 11818 (2018) <https://www.nature.com/articles/s41598-018-30365-1>
- 35 Exp Gerontol. 2016 Dec 1;85:41-47. doi: 10.1016/j.exger.2016.09.016. Epub 2016 Sep 22.
- 36 Frontiers in Nutrition July 28, 2020 <https://www.frontiersin.org/articles/10.3389/fnut.2020.00094/full>
- 37 Autophagy. 2012 Oct 1; 8(10): 1548–1551. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3463459/>
- 38 Exercise is Medicine, The Power of Physical Activity https://www.exerciseismedicine.org/support_page.php/physical-activity-health-impact/
- 39 Journal of Applied Physiology July 1, 2002 <https://journals.physiology.org/doi/full/10.1152/jappphysiol.00073.2002>
- 40 Journal of Applied Physiology July 1, 2002 <https://journals.physiology.org/doi/full/10.1152/jappphysiol.00073.2002>
- 41 Journal of Applied Physiology July 1, 2002 <https://journals.physiology.org/doi/full/10.1152/jappphysiol.00073.2002>

- 42 PNAS March 31, 2020 117 (13) 7115-7121; first published March 9, 2020; <https://doi.org/10.1073/pnas.1911868117> <https://www.pnas.org/content/117/13/7115#sec-2>
- 43 Journal of Applied Physiology July 1, 2002 <https://journals.physiology.org/doi/full/10.1152/jappphysiol.00073.2002>
- 44 J Clin Med. 2019 Nov; 8(11): 1855. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6912430/>
- 45 Current Opinion in Physiology August 2019, Volume 10, Pages 64-69 <https://www.sciencedirect.com/science/article/pii/S2468867319300793>
- 46 Nature Reviews Endocrinology volume 15, pages197–206(2019) <https://www.nature.com/articles/s41574-018-0150-x>
- 47 The American Journal of Medicine 2010, 123, 1082-1086 [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjmulv0iL3tA hXQWcOKHRawACUQFjAHegQIDBAC&url=https%3A%2F%2Fwww.amjmed.com%2Farticle%2FS0002-9343\(10\)00463-8%2Fpdf&usg=AOvVaw2WXNIAOaAw0I_J5FkDXKnD](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewjmulv0iL3tA hXQWcOKHRawACUQFjAHegQIDBAC&url=https%3A%2F%2Fwww.amjmed.com%2Farticle%2FS0002-9343(10)00463-8%2Fpdf&usg=AOvVaw2WXNIAOaAw0I_J5FkDXKnD)
- 48 BMC Geriatr. 2017; 17: 131. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5481961/> Environ Sci Technol. 2011 Mar 1;45(5):1761-72. doi: 10.1021/es102947t. Epub 2011 Feb 3. <https://pubmed.ncbi.nlm.nih.gov/21291246/>
- 49 Extrem Physiol Med. 2013; 2: 3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3710158/>
- 51 Environ Health Perspect. 2008 Apr; 116(4): A160–A167. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2290997/>
- 52 J Environ Public Health. 2012; 2012: 291541. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3265077/>
- 53 Environ Health Perspect. 2017 Jul; 125(7): 075001. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5744722/>
- 54 Front Psychol. 2020; 11: 299. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7052308/>
- 55 Mindfulness (N Y). 2017;8(1):204-217. doi: 10.1007/s12671-016-0593-x. Epub 2016 Aug 23. <https://pubmed.ncbi.nlm.nih.gov/28163797/>
- 56 Complement Ther Clin Pract. 2020 May;39:101137. doi: 10.1016/j.ctcp.2020.101137. Epub 2020 Mar 8. <https://pubmed.ncbi.nlm.nih.gov/32379672/>
- 57 Front Psychol. 2020; 11: 299. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7052308/>
- 58 Compr Physiol. 2012 Apr; 2(2): 1143–1211.
- 59 Compr Physiol. 2012 Apr; 2(2): 1143–1211.