

Longevity Fundamentals Handbook

How to become a badass old person and
add 12 highly productive years to your life!

Wonder Medicine™(wondermedicine.com)
Full Scope™(fullscope.org)



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Chapter 1: Why You Are Here

** The chapters in this Handbook can be read and referenced in any order. **

This handbook has 22 chapters each containing essential information for high performing individuals seeking health, longevity, and life fulfillment. In epidemiological studies, people who adopt and maintain healthy lifestyle behaviors enjoy 12 additional years of life (4,380 days). Moreover, every year leading up to these “bonus” 12 years will be more productive, fulfilling, and vibrant. If you want to become a badass old person, able to do the things that young people do, read every word of this book. The best version of yourself awaits.

Why Are You Reading the Longevity Fundamentals Handbook?

Only you can answer this. But it is imperative that you do answer this question of “why” in order to get the most out of the one body, mind, and spirit you will ever get. Making long term plans without clear goals and objectives is impossible. At Wonder medicine, the Longevity and Performance program starts with 2 things; life goals and health risks. This is how we start to build a plan. Whether you are in the program or not, start by assessing these 2 things. Where do you want to go and what type of shit might get in your way. Planning 101! The below questions will help.

- What do I hope to accomplish in my life?
- What type of things do I want to be able to do now and when I am elderly?
- Who are the people that depend on me? What things will these people need from me in the future?
- Am I prepared for the future?
- Is my health on a good trajectory or long term course?
- What is the purpose of my life and do my daily actions and routines support this purpose?
- Are my behaviors today increasing my chances of a longer, healthier, and more fulfilling life?

Life is all about “why.” When you know the “why,” goals and objectives become clear. When goals are clear, plans can be formulated. With the right plan, anything can be accomplished.

We Are All Going to Die

Life is finite. We will all die. But most people like to ignore this. Not only will we die, but something will kill us. That something is usually one of a few common diseases. The signs of these diseases are present and can be detectable decades before a formal diagnosis of disease is made. During these early stages prior to formal diagnosis, the disease process is often fully reversible and preventable. But to detect these early signs of disease, one must

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look. Sadly, our current model of healthcare starts looking and acting only when full-fledged disease is diagnosed. But this must change. Prevention must rise if diseases are to fall!

The Longevity Fundamentals handbook recommends that readers attempt to understand the things most likely to kill them, monitor for these things, and take action against them as early as possible. Understanding one's current health problems, risky behaviors, and the things that have killed family members is the best way to do this. How you might die and what things have killed your family members are not easy things to think about. But, if your goal is to live long and live well, you must think about these anxiety and grief provoking topics. In the game of longevity, our opponent is death. In order to make the right plan, we must know as much about our opponent as possible. If the reader would like professional help with this difficult topic, please consider Joining Wonder Medicine's Longevity and Performance Program (<https://www.wondermedicine.com/boise-longevity-medicine>).

What Kills Us

Cause of death is a very difficult thing to determine as deaths are most often multifactorial and diseases often run together. For example, diabetes mellitus predisposes people to both heart disease and cancer, the two leading causes of death. Additionally, reporting is often in-consistent. For example, most people with cancer actually die from infections like pneumonia. But, cancer is what usually gets listed as the cause of death. Finally, some causes of death are batched while others are more discrete. For example, heart disease and cancer encompass many different diseases, while Alzheimer dementia is presumably one discrete disease. Nevertheless, the below table is still very useful when trying to understand what kills most people.

Cause of Death, United States, 2019

Disease	Number (n)	Percent of Total Deaths (%)
all causes	2,854,838	100.0
heart disease	659,041	23.1
cancer	599,601	21.0
accidents	173,040	6.1
lung disease, chronic	156,979	5.5
stroke	150,005	5.3
Alzheimer dementia	121,499	4.3
diabetes mellitus	87,647	3.1
kidney disease	51,565	1.8
Influenza and pneumonia	49,784	1.7
suicide	47,511	1.7
liver disease	44,358	1.6
severe infection (sepsis)	38,431	1.3

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hypertension complications	36,524	1.3
Parkinson disease	35,311	1.2
lung disease, acute	19,184	0.7
all other causes	584,359	20.5

Xu et al (2021)

In medicine we often talk about risk and risk factors for disease. Each of the above diseases has a list of risk factors associated with them. But one risk, dwarfs all others.

That risk is age. The more years you have, the more likely you are to develop all of the above problems. As such, increasing age is the number one risk factor for nearly all chronic diseases and death. For this reason, many doctors and scientists have proposed a paradigm shift in the way we prevent and treat disease. Currently, we target diseases individually. But, by targeting the biology of aging and making people functionally younger, all diseases could be effectively prevented simultaneously. This is the scientific framework that Wonder Medicine and Full Scope operate under. By making people functionally younger, diseases are prevented, life is prolonged, and performance is optimized.

This field of medicine is called Longevity Medicine. The field is in its early stages, but research, knowledge, and available treatments are rapidly expanding. What looked like science fiction just a decade ago is now becoming reality. Congratulations! You are an early adopter of this new and exciting Longevity field. With hard work, discipline, and commitment, a long and healthy life can be yours.

Definitions

The below words are used commonly in the Longevity and Performance Program. It is important that all readers understand what these words mean.

Badass Old Person - A person that is elderly (generally > 70 years old) that can do the things that a young person can do.

Epidemiology - The study of disease and health in populations of people

work - activity that a person engages in regularly

Lifespan - how many total years you are alive.

Healthspan - how many years you are alive and healthy enough to do the things that make life worth living.

Health Trajectory - where your health is heading in the future.

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Chronological Age – how many years old you are.

Biological Age – how old you are biologically and functionally. This may be older, younger, or the same as chronological age.

Longevity – long existence or service.

Longevity Medicine – A discipline of medicine focused on extending the length and quality of life through lifestyle, pharmaceutical, and regenerative medicine techniques.

Longevity Score – A score calculated by Wonder Medicine every year based on health metrics obtained and then used to calculate a Program Members Biological Age and predicted death age.

Performance – the action of carrying out or accomplishing an action, task, or function.

Program – a set of related measures or activities with a particular long-term aim.

Longevity and Performance Program – a health tracking and treatment program aimed at extending the length of your life and quality of each day.

Program Member – Any person currently enrolled in the Wonder Medicine Longevity and Performance Program.

Health Metrics – data about you that defines your health. This includes lab tests, physical testing, imaging, exam findings, vital signs, body composition metrics, and more.

Why Health is so Important

Without health, nothing else matters. Time, money, and resources all become useless if we do not have the body and mental capacity needed to use these things. As such, our bodies are the most valuable assets any of us will ever have. Love and cherish your body as the beautiful machine that it is.

Most of us think of health as the absence of diagnosable disease or illness. As such, many people believe they are healthy. But sadly, most of these people are mistaken. True health is more than just the absence of disease. True health brings a level of performance that few people are able to enjoy consistently throughout life. So, what things can true health bring:

1. *Healthy Mind.*

The ability to learn things, remember things, and create things.

(If your brain and thoughts are foggy this is a clear sign that something is wrong with your health and/or that you are not challenging your brain.)

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2. *Healthy Body*

The ability to do the things we want to do. Climb the mountain, sail the seas, play with the grandkids, travel internationally, or whatever else you need your body to do. Get out of the chair and experience life. When the car breaks down, the road trip is over. When our bodies fail, life is over.

3. *Emotional Wellness*

Balanced emotions, clear headspace, and life fulfillment. Health gives us an emotional maturity needed to make connections with people and contribute to society in productive ways.

4. *Security*

Health provides us with security from physical, biological, and resource threats. If someone attacks you or a loved one, wouldn't it be nice to mount a defense? If you fall, don't you want to be able to get back up? Additionally, our health allows us to fight off and recover from infections and toxic exposures. The unhealthier a person is, the more likely they are to have a severe, life-threatening infection. However, this security is not limited to physical or biological threats. Think about all the scammers out there. Why do you think older people are targeted by scams? Age is the greatest risk factor for poor health. Poor health leads to minds that don't work. Minds that don't work are easy to take advantage of.

5. *Transfer of Knowledge and Culture*

With age comes wisdom. As we get older, other members of our families, our social groups, and society depend on us more and more. Being able to help others and transfer our knowledge to them for as long as possible is an essential part of human consciousness. Health allows us to be there for the people that need us.

6. *Assign Value Appropriately*

Being healthy allows us to assign value to things appropriately and thoughtfully. Think about this scenario. A smoker is at dinner with a loved one they haven't seen in years. A cigarette is on their mind all dinner. This person struggles to concentrate and leaves 30 minutes early just for a smoke. This person has erroneously assigned more value to a cigarette than their loved one. Assigning value appropriately takes a clear and clean mind. Right now, we are not assigning enough value to our planet, our communities, our loved ones, and to our own bodies. Our unwellness at an individual level has led to a society that is not well. Sadly, unwell societies drive individuals to be unwell. We must exit this vicious and unsustainable cycle.

The World is Sick

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The benefits of health are usually something most people can agree on. Finding out what actions or behaviors lead to health, and regularly performing these behaviors is the challenging part. Particularly in the modern era where so many different and often contradictory opinions exist.

There is so much noise in the health and longevity space. This noise makes the truth very hard to find. Moreover, the world is becoming increasingly toxic. Real chemicals and harmful pollutants are present in our food, air, water, and even thoughts. Huge companies, social media, and everyone else trying to sell us things competes for our attention aggressively, often targeting our hedonic reward systems (pleasure centers), poisoning our minds. We have formed a culture that devalues sleep, doesn't move, and has forgotten the value of hard work, and community. We are also increasingly selfish. This selfishness leads to isolation, grief, and pain. Additionally, humans are destroying the natural world and gobbling up resources in unsustainable ways. I believe this last toxic piece is traumatizing most of us more than we realize. Society, healthcare, and the environments we have created for ourselves have not been optimized for health.

As such, I am not surprised that so few people are truly healthy and fulfilled in their lives. In 2023 the average life expectancy is declining, maternal mortality is rising, 90% of adults have signs of metabolic disease, our physical capacity has never been worse, and mental health problems and addiction are soaring out of control. These problems are killing us and they are undermining the society we all depend on. Sadly, all the money in the world cannot make up for a bad plan and unhealthy environments (as demonstrated by the United States healthcare system).

Optimizing one's body and mind for wellness and longevity in this new and challenging world can be very difficult. The Longevity and Performance Program would like to be your guide. We have the right plan for you!

Hard Work, Discipline, and Commitment

The largest driver of human health is our environment and how we interact with this environment. Put simply, the way you live your life, the environment you are in, and the people around you are the biggest drivers of both health and disease.

Congratulations on making a commitment to your health and longevity. Wonder Medicine is committed to helping you achieve the body, mind, and spirit necessary to live the life you want.

However, a long and healthy life is not something we can give to you. Being healthy and functioning optimally takes hard work, discipline, and commitment. Health is not a spectator sport. It is a goal that one must constantly work toward. You are the largest stakeholder in and should be the biggest advocate for your own health.

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Work

Changing your behavior and your environment is not easy. You must be ready to work hard to achieve the body and mind you desire.

Discipline

Giving 50% effort usually offers 50% improvement or less. You will get out of this program what you put into it. Give it your all and you will reap the benefits. Everyone has excuses. Do not focus on why you cannot do something. Instead, search for solutions to the problem. No problem is unsolvable.

Commitment

Positive change takes time. Do not expect to feel better in a week or even a month. Usually, it takes several months and even years to experience real improvement in your health, health trajectory, and the way that you feel. Those seeking a long lifespan and healthspan must play the long game. The best way to be healthier in the future is to optimize your health now.

Giving Back

By achieving health and wellness, you will become a positive influence on everyone around you. This is because healthy behaviors and good mindsets are contagious. Additionally, your performance will improve allowing you to achieve more than you ever thought was possible. What better gift could you give to society, the people you care about, and yourself. Health is truly contagious.

Chapter 2: Introduction to Longevity and Performance

What gets measured gets monitored and acted on.

Background

In the United States we have a sick care system. When someone gets sick or develops a disease, healthcare is utilized. However, no part of our healthcare system is designed to optimize health and performance and very few resources are directed toward disease prevention. This handbook and Wonder Medicine's Longevity and Performance Program flips this healthcare paradigm upside down by seeking to optimize health, improve emotional wellness, and prevent diseases decades before these problems develop.

Aims of the Longevity Fundamentals Handbook

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The Longevity and Performance Program has five aims listed below, in order of most importance. These are the value adds we offer to you, the Program Members. At Wonder Medicine we believe humans are society's most important assets. Society and healthcare have neglected the human asset. The Longevity and Performance Program seeks to change this.

1. Optimize Performance

Everyday we must perform in work, with family, on obligations, for projects, and dreams. Only the best version of yourself will be able to achieve, create, and share at the highest level. Society needs high performers now more than ever. Optimizing performance requires that health be optimized. Being healthy now is the best thing anyone can do to extend the length and quality of life.

2. Prioritize Emotional Wellness

A healthy person has a stable mind capable of handling emotions in mature ways and assigning value appropriately. By optimizing emotional wellness, life will be worth living and everyone you touch will benefit from your presence, demeanor, and attitude.

3. Healthspan Nearly Equal to Lifespan

Improvements in acute medical care and the rise of chronic diseases has led to a very alarming health trend. People are living with crippling disease and disability for years and even decades. As such, healthspan is decreasing relative to lifespan. Ideally, a person lives the vast majority of life healthy and productive. Only in the final months or years will this person succumb to disease, disability, and death. Expanding healthspan is much easier than lifespan. We have all the tools we need for this. But it takes work.

4. Prevent Chronic Diseases and Debility

Diseases and disabilities can ruin life. Luckily, both of these problems usually take years and sometimes even decades to develop. With the right questions, tests, and plan, the early signs of disease and disability can be discovered and reversed in their earliest stages. In those individuals already struggling with disease and disability, the program will seek to reverse and ideally cure these problems.

5. Extend Lifespan

Living longer is not science fiction. You can extend your lifespan today. This is possible through thought and behavioral changes backed by considerable research (see references). However, therapies that can target aging directly likely already exist and more such therapies are coming.

Most Longevity Clinics are Under-Performing at Best or an Outright Scam at Worst

Society is filled with big promises from governments, companies, and people that all too often under deliver or don't perform at all. Longevity Medicine clinics most often follow this

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unfortunate schema. This is because most Longevity Medicine clinics are not monitoring outcomes in any meaningful way. Participants pay thousands of dollars for stem cells, testing, or counseling. Then, as soon as the credit card is swiped, the monitoring stops. What a shame. If Longevity Medicine is to move forward as a real discipline and eventually deliver on its current inflated promises, it must start monitoring aggressively. We must learn from our mistakes and hone in on our successes. We need a tool to help with this. That tool is a well thought out program paired with big data, machine learning, artificial intelligence, and a team-based approach.

Value = Quality / Cost

United States healthcare offers the worst value in the world due to its poor-quality chronic disease care model and obscene cost. Additionally, our healthcare system offers nothing for those seeking longevity, performance, and health optimization. In this way, high performing individuals that want more than sick care are marginalized. This handbook and the Wonder Medicine Longevity and Performance Program seeks to change this.

Chapter 3: Lifestyle Medicine

Our thoughts, behaviors, environment, and the people around us are the drivers of both health and un-health. By optimizing these four things, a person can greatly extend their lifespan and healthspan. In fact, lifestyle changes are the only definitively proven way to extend the length of human life. From epidemiological studies, it appears that people who live a healthy lifestyle can live approximately twelve years longer than the average person. Death at 88 instead of 76 years, most often accompanied by many more healthy years. Twelve good years are worth going after. Especially considering that you will feel better and function much better every year of your life leading up to these additional twelve years.

At Wonder Medicine and Full Scope, we believe that the right inputs generate the most optimal outputs. For this reason, we have developed the Twelve Pillars of Health. By optimizing these twelve things, a person will greatly improve the probability of health, long life, high performance, and even life fulfillment.

12 Pillars of Health

1. Sleep

- Give yourself 8 hours of time to sleep every night.

2. Nutrition

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- Eat real food. Consume adequate protein to maintain strength and muscle mass.
3. Exercise and Movement
 - Move, perform restorative exercise, cardio, strength training, and avoid injury.
 4. Cognitive challenge
 - Acquire knowledge, change your mind, and learn new skills throughout life.
 5. Moderation and Addiction
 - Enjoy pleasures in moderation. Stop bad habits.
 6. Meaningful relationships
 - Invest in existing relationships. Make new relationships throughout life. Distance yourself from toxic relationships.
 7. Purpose, Spirituality, and Philanthropy
 - Find your why and your purpose. Add value to people, society, and the environment.
 8. Stress Reduction and Positive Thinking
 - Find healthy ways to manage and deal with life stressors. Think positively and constructively.
 9. Structure and balance
 - Seek balance in work, life, and play. Take on meaningful work and projects that contribute to the greater good.
 10. Earth and Exposure
 - Spend time in nature, contact the earth, expose yourself to the elements, feel the sun's rays, and protect Earth, our home.
 11. Environment, Safety, and Security
 - Surround yourself with good people in a healthy, toxin-free, safe, and secure environments.
 12. Resources
 - Obtain financial, medical, legal, human, and security resources for now and in the future. Plan ahead for the hard times to come.

Make Changes Methodically, Deliberatively, and Slowly *Methodically*

Make a plan to change the way you are living. Start by writing down all of the things about your life that you need to stop, start, or change in order to optimize the 12 Pillars of Health

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listed above. Number and order this list from most important to least important. Share this list with Wonder Medicine.

Decide what high level changes are needed to facilitate change. For instance:

- Is your living situation unhealthy, will you need to move?
- Are there people in your life that need to be more present or removed entirely. Get the bad people out and the good people in.
- Do you need a job or career change for your life to align with your purpose?
- Do you struggle from an addiction that is eroding all of the other 12 pillars and must be dealt with first to progress?

Start by making the high level changes. Move, change jobs, get the bad people out of your life, and stop the really bad behaviors. After this is done, start chipping away at the numbered list you have made. But do this deliberately and slowly.

Deliberately

Always make changes with intention. Think about what you will get and the life you will have. Never focus on what you are giving up. Additionally, try hard to avoid distorted reasoning. Distorted reasoning is when we bend the truth to fit our hedonic desires and current comfort zone.

For instance, sweets make me happy and happiness is important. Maybe. But if you suffer from debilitating metabolic syndrome, I would greatly question what you mean by happiness. In the moment, happiness is more aptly described as immediate pleasure. This is one reason Wonder Medicine never seeks to optimize happiness. Happiness is just too loaded of a term. We seek life fulfillment, but more on that later. Another example of distorted reasoning is, cannabis helps me sleep and helps me unwind. Sure cannabis makes you go to sleep, but is the sleep quality good? Are you getting enough REM sleep? Do you wake up with more brain fog in the morning after using cannabis? Are there other ways you could unwind that would not affect your memory? I am not saying that a healthy person can never eat sweets or use cannabis recreationally. But, these things must be done in moderation.

A good way to avoid distorted reasoning is to ask your closest friends, loved ones, and other outsiders what they think. One of my favorite things a recovered alcoholic patient told me is, "only one person in my town of 4,000 people did not realize I was an alcoholic. That one person was me".

Making life changes is really difficult. We are creatures of habit. Many people cannot change without help. Additionally, it can be very challenging to avoid distorted reasoning. Most people find data or information that fits the narrative they keep telling themselves. They build intricate webs of distorted thoughts, hollow justifications, unlimited excuses, and

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unhealthy defense mechanisms. This is why good friends, family, a good healthcare team, and sometimes even therapeutics that improve neuroplasticity such as ketamine, classic hallucinogens, and MDMA can be so valuable.

After you have removed biases and formed a plan that other people who love and support you agree with, then state your intentions. Tell everyone you know your plan to change. Ask them to hold you accountable. Additionally consider joining a support group of which there are many. Many of these groups are focused on an addiction, such as alcoholics anonymous. These specific groups are often very welcoming of other destructive life behaviors as well.

The longer you perform a behavior the more ingrained it becomes. Good behaviors can be just as addictive as bad behaviors over time. The first day is the hardest, things get much easier after three weeks, and in 3-12 months a new habit will become fully ingrained. But, old habits can come back very quickly if we let them. Old neuronal pathways can be quickly rebuilt.

- Think about what you will get, not what you are giving up
- Avoid distorted reasoning
- Tell your intentions to everyone you care about and ask them to hold you accountable.
- Change your thoughts (drivers) and environmental cues (triggers) to make the desired behavior most likely.
- Change becomes easier with each passing day

Slowly and Safely

Sometimes “cold turkey” or abruptly changing a behavior is the way to go. For instance, start giving yourself eight hours of protected sleep every night today. Stop using narcotic pain medications and tobacco as soon as you can. But many changes must be done slowly to assure safety.

Stopping some drugs, such as alcohol, can precipitate dangerous, sometimes life-threatening withdrawal and must be done very slowly or in a medical setting. Going from very little exercise, straight into a demanding workout will most often lead to injury. Aggressively trying to bring a loved one back into your life may end up pushing them away.

Change can be extremely stressful on our bodies. It can cause injury, precipitate illness, and mental health problems like depression and anxiety.

For the most part, make life changes slowly. If you are eating a diet of 90% ultra processed foods, start by eating just one or two servings of real vegetables a day. If you go from zero servings of vegetables to ten servings a day overnight, your gut may explode (figuratively). If

you are not exercising or want to increase your exercise capacity, start adding or increasing workouts very slowly and consistently.

Change is about the long-game. Abrupt changes are often unsustainable at best and dangerous for your health at worst. Change slowly, steadily, and safely.

Chapter 4: Sleep

Sleep is essential to human health, function, and the prevention of dementia. Without sleep a person will die. Prioritizing sleep is one of the most important things you can do for your health, longevity, and performance. Even if you can “get by” with less sleep, long term this can have devastating consequences.

Why Sleep is so Important

- Improves cognitive performance, memory, creativity, and learning capacity.
- Allows our minds and bodies time to grow, heal, and repair.
- Needed for proper immune system function and education. Without sleep our bodies cannot fight infections and cancer.
- Reduces appetite, helps control blood sugar, and improves insulin resistance.
- Regulates and builds hormones.
- Prevents a number of chronic diseases (likely all of them) including high blood pressure, heart disease, cancer, autoimmune diseases, dementia, Parkinson, and much more.

How Much Sleep Should I Get?

- Newborn babies, 16-18 hours
- Babies, 12-15 hours
- Kids, 10-14 hours (decreases with age)
- Teenagers, 9- 10 hours
- Adults, 8 hours (always try for at least 7 hours a night)

Sleep Stages and Cycles

Sleep has three main stages; light sleep, deep sleep, and REM sleep. We generally experience all three of these stages in 90 minute cycles throughout the entire night. In the first half of the night we have more deep sleep and in the second half we have more REM sleep.

Most adults spend half of the night in light sleep, 25% in deep sleep, and 25% in REM sleep. Deep sleep and REM sleep appear more important than light sleep. We make hormones,

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clean the garbage out of our brains, arm our immune system, and heal in deep sleep. In REM (rapid eye movement) sleep we have our most vivid, life-like dreams. REM sleep serves as a simulation for life. Ever try a skill, sleep, and wake up much better at it the next day? REM sleep also appears to be important for processing emotions.

Wearable devices are getting better and better at monitoring sleep and sleep stages.

Signs a Person is Not Getting Enough Sleep

- Feeling very tired by mid-morning or all throughout the day.
- Inability to function without caffeine or other stimulants.
- Experiencing brain fog or having symptoms of attention deficit hyperactivity disorder (ADHD, 50% of ADHD is believed to be due to sleep problems).
- Craving junk food, increased appetite, inability to lose weight.
- Hormone abnormalities and imbalances.
- Mood lability, depression, and other mental health problems.

Diseases and Sleep

A number of medical conditions can lead to impaired sleep. Below are just a few examples. At home sleep studies are inexpensive and should be considered to evaluate anyone experiencing poor sleep quality. Checking iron levels, other laboratories, nutrients, hormone, and toxin levels should also be considered.

- General insomnia
- Obstructive Sleep Apnea and other airway resistance diseases
- Central sleep apnea
- Narcolepsy
- Limb twitches, movements, and restless legs (may be due to iron deficiency)
- Somnambulism (sleep walking)
- Fatal Familial Insomnia (rare genetic disease)

Recommended Diagnostics

- Wearable sleep tracking devices (Oura ring, Whoop, Apple watch)
- Home sleep studies (e.g. Lofta.com)
- Polysomnography (Lab sleep study)
- Iron and nutrient levels (for restless legs)

Before trying supplements and medications for sleep, figure out if there is a bigger underlying problem (Disease of Sleep).

Sleep and Driving

At Least 20% of automobile accidents are due to a lack of sleep. Not sleeping for 24 hours causes an equivalent impairment in function to being of above the legal alcohol limit (0.08%).

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Light Exposure and Sleep

Light is our primary means of knowing what time of day it is and when to sleep. Living indoors and the use of artificial light often confuses our biological clock and can cause serious sleep problems.

- Get bright sunlight first thing in the morning. Spending 30 to 60 minutes outside as close to waking up in the morning will set your biological clock (circadian rhythm) and help you sleep the following evening.
- Spend as much time as you can outside during the day.
- Dim the lights in your home after 7 or 8 pm. Ideally screens should be turned off at this time.
- Switch telephones and computer screens to night mode and make the screen as warm as possible between 7pm and 7am.

Tip for Good Sleep

- Improve your fitness level. Regular exercise will help with sleep tremendously. Try to exercise in the morning or afternoon. Avoid exercise later in the day or after dinner (especially if you have problems sleeping). Exercising one day will not help with sleep, but a pattern of regular exercise will.
- Eat healthy balanced meals. Avoid eating for at least three hours before bedtime. Waking up hungry in the night is a sign of metabolic syndrome.
- Try to go to sleep at the same time and wake up at the same time every day. If you wake up early in the morning, try to go to sleep earlier. Most people experience their highest quality deep sleep between 10 pm and 2 am.
- Wind down at night. Avoid stressors. Things like sauna, meditation, pleasant conversation, reading, writing, and stretching are good activities prior to sleep.
- Temperature is important. Our body temperature drops as we sleep. Colder temperatures help facilitate sleep.
- Chronic diseases can be caused by and lead to bad sleep. If you are chronically unwell, sleeping will likely be difficult for you. Get healthy.
- Electromagnetic frequencies (EMF) can cause anxiety and sleep problems in some people. Smart meters, powerful wifi devices, and wearable monitors are prime targets. Consider turning your wifi off at night, moving your phone into another room, removing wearables or placing them on airplane mode to see if this improves sleep.

Drugs, Caffeine, Toxins, and Sleep

- Alcohol impairs sleep. Particularly in the early part of the night when we get most of our deep sleep. Night caps (alcoholic drinks before bed) do not really improve the quality of sleep. They just sedate us.
- It takes about 14 hours for 75% of caffeine to get out of your system. This is why people should avoid drinking coffee after noon.

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- Sleeping drugs like benzodiazepines (xanax, ativan, etc) and z drugs (ambien, lunesta, etc) are sedatives. They work very similarly to alcohol. These drugs make people feel like they sleep longer. But the sleep is of poor quality. These drugs are associated with dementia, multiple diseases, and a higher risk of dying. Avoid them.
- Toxins are everywhere these days. Eating clean-real food, drinking clean water, using toxin-free beauty and cleaning products, avoiding new carpets, mattresses, furniture, and cars, and limiting chemical exposures can sometimes improve sleep. Much easier said than done.

Sleep Hygiene

These tips can help people sleep.

- Use your bed only for sleep or sex.
- Go to bed at the same time each night.
- Remove TVs and other screens from the bedroom.
- Remove unnecessary lights and disturbing sounds (black out curtains can help).
- Use a mattress and bedding you find comfortable.
- Turn down the temperature.
- Avoid late night meals, exercise, or stress provoking activities.
- Avoid caffeine and nicotine in the afternoon and evening.
- Do not use alcohol or sleep pills to sleep.
- Dim the lights.
- Have a wind down routine.
- If you cannot sleep, get up out of bed and do a relaxing activity. Go back to bed when you feel tired again.

Grounding

Sleeping on a grounding mat can improve sleep, anxiety, inflammation, and muscle recovery. This should be considered as a first line treatment for sleeping problems. More about grounding in the Chapter 18, Earth, The Giver of Life.

Cognitive Behavioral Therapy

Mental health therapy directed at insomnia can be very helpful for many individuals.

Supplements for Sleep (talk to your healthcare provider first!)

A number of different supplements can help with sleep. Talk to your provider first. Add supplements one at a time.

- Magnesium 500 to 1000 mg
- Inositol 500 to 1000 mg, 1 hour before bedtime
- Melatonin (0.5 to 15 mg, 1 to 5 hours before bed)
- CBD (cannabidiol) 10 to 50 mg at bedtime
- 5-HTP

- GABA
- L-Threonine
- Tryptophan
- Glycine
- Valerian
- Chamomile
- Tart Cherries

Medications for Sleep (talk to your healthcare provider first!)

- Avoid benzodiazepine, barbiturates, and z drugs if able.
- Trazodone, Mirtazapine, TCAs (e.g. amitriptyline), and antipsychotics (e.g. Quetiapine) will help improve sleep. However they have considerable side effects that must be strongly considered.
- First generation antihistamines like diphenhydramine (benadryl), doxepin, and hydroxyzine can be utilized but also can cause side effects and morning drowsiness.
- Gabapentin (can be addictive and works at the same receptor as alcohol).
- Ramelteon binds to melatonin receptors in the brain.
- Orexin receptor antagonists like lemborexant and suvorexant.
- Treating pain may help sleep. Acetaminophen, NSAID creams, and lidocaine patches are usually the safest pharmaceutical options.

Chapter 5: Metabolic Syndrome

Metabolic syndrome is a medical condition characterized by unhealthy and markedly deranged energy production, tissue building, and breakdown. Over 50% of United States adults have metabolic syndrome and another 40% are at risk of developing it (90% of US adults!). Metabolic syndrome is the great killer of our time, a global epidemic, and the second leading risk factor for almost all major chronic diseases. The leading risk factor is of course increasing age.

As such, many of the health metrics obtained in the Longevity and Performance Program are designed to monitor metabolic health. If found in its early stages, reversing metabolic disease can be done fairly easily. After metabolic syndrome has developed reversal is much

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harder, though still very possible. If you want to improve your lifespan and healthspan, get your metabolic health in order.

Signs of Metabolic Syndrome

1. Insulin resistance and high blood sugar (elevated fasting insulin > 6 uIU/ml and/or hemoglobin a1c > 5.4%, or a fasting blood sugar > 99 mg/dL).
2. Cholesterol derangements (HDL < 50 mg/dL, Triglycerides > 150 mg/dL).
3. Enlarged waistline, being overweight, and obese.
4. High blood pressure (Systolic blood pressure > 120, Diastolic > 80).

If a person has two of the above signs, they have metabolic syndrome.

Other Symptoms of Metabolic Syndrome

- Fatigue and brain fog.
- Mental health problems such as depression and anxiety.
- Inability to lose weight.
- Generalized inflammation causing pain and discomfort.
- Irritable bowel syndrome and gut problems.
- Hormone imbalances and deficiencies.

Metabolic Syndrome Increases the Risk of Developing:

- Diabetes, hypertension, and hyperlipidemia (high cholesterol).
- Heart disease and heart attacks.
- Fatty liver disease, liver failure, and kidney failure.
- Vascular disease and strokes.
- Obstructive sleep apnea.
- Autoimmune diseases and polycystic ovarian syndrome.
- Cancer.
- Death (increased mortality).

Why Metabolic Syndrome is Rising

- 66% of the American diet is ultra-processed food (fake food-high calorie, low fiber, low nutrients, laboratory ingredients).
- Soda and sugar sweetened beverage consumption.
- Sugar addiction, even as children (coco puffs, fruit loops, or captain crunch anyone?).
- Sedentary lifestyle (lack of regular exercise and infrequent movement).
- Inadequate sleep (< 7 hours a night).
- Many of us deal with and process stress in unhealthy ways.
- Negative thought patterns.
- Numerous toxins are present in our environment and our food.
- Our environment's health is deteriorating, and we are a product of our environment.

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How to Treat Metabolic Syndrome

Changing one's thoughts and one's lifestyle habits are the way to cure metabolic syndrome. The 12 Pillars of Health are the cornerstone of a healthy lifestyle. To reverse metabolic syndrome, all 12 Pillars must be optimized.

- Optimize the 12 Pillars of Health in your life.
- Start strength training and move more.
- Stop eating ultra-processed foods.
- Stop eating sugar and consider a very low carb (ketogenic) diet.
- Develop healthy ways to manage stress and get adequate sleep.
- Take medications to reduce adverse health events while making the above changes.

Pharmaceutical medications can improve insulin resistance, help with weight loss, lower blood pressure, and reduce cholesterol. They can also help with behavioral changes. Medication can reduce the risks of adverse health events if taken regularly.

However, in order to cure metabolic syndrome, aggressive lifestyle changes will be needed.

Chapter 6: Nutrition

We have a big problem in the United States. Our food is poisoning us. Meanwhile, millions of people fight over dietary topics that probably don't matter. These fights cause confusion, tribalism, and allow our broken food system to continue. Big food loves a nice smokescreen. The right diet for humans is simple and can be achieved in five simple steps, numbered in order of most importance.

1. Real whole foods should be > 70% of any healthy diet.
2. Consume adequate protein to maintain muscle mass and satiety.
3. Eat a variety of foods and healthy fats to obtain adequate micronutrients and feed your gut microbiome.
4. Reduce sugar and carbohydrate intake if you have signs of metabolic disease.
5. Reduce calorie intake if you have metabolic syndrome.

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Eat Real Whole Foods

Whole foods are food items that have been minimally processed and remain as close to their original form as possible. They usually don't have nutrition labels and would be recognizable to your great-great grandparents as food.

Most Americans consume a diet extremely high in processed and ultra-processed food (> 66% of the standard American diet, SAD). These are foods that come in bags and boxes, have nutrition labels, and contain ingredients that sound like they belong in the laboratory. These foods are often stripped of fiber, laden with questionable ingredients like preservatives and synthetic dyes, and contain unbelievably high amounts of sugar, sodium, saturated, and trans fats.

Why Ultra-Processed Foods are so Harmful?

- Fiber is removed, causing these foods to spike our blood-glucose and set off a chain reaction of cravings for more ultra-processed food. They drive obesity and metabolic syndrome.
- Sugar, salt, and fat are added for ultra-palatability, causing addictiveness.
- Preservatives, dyes, and other chemicals are added to improve shelf life and appearance (a twinkie can sit on a shelf for 20 years and look and taste the exact same).

Why Whole Foods so Beneficial

- They are much richer in essential nutrients and our body is able to absorb those nutrients better.
- They make us feel amazing, increase lifespan, and healthspan! While it may be hard to break old habits of reaching for processed foods, over time you will *feel* the difference and cravings for processed foods decrease and eventually disappear. Eventually most people on a whole foods diet stop seeing ultra-processed food as food at all.
- They support satiety instead of over-eating. It's really hard to over-consume whole foods, particularly fresh fruits and vegetables.
- They support slower digestion, which is great for gastrointestinal disease prevention and even reversal.
- They provide much more fiber and support a healthy microbiome.

Whole Foods (Real Food)

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Ultra-Processed Food (Fake Food)



Whole Food Examples	Processed Food Examples (that might surprise you)
<p>Fresh Fruits:</p> <ul style="list-style-type: none"> ● Apple ● Banana ● Avocado ● Orange ● Pear ● strawberry ● raspberry ● Blackberry ● Blueberry ● Lemon 	<ul style="list-style-type: none"> ● Dried fruits ● Dehydrated fruits ● Canned fruits (if preservatives, syrup or seasoning added) ● Applesauce or fruit purees ● Fruit leather ● Canned veggies (if preservatives, syrup or seasoning added) ● Frozen veggies (if preservatives or seasoning added) ● Granola ● Cereal

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<ul style="list-style-type: none"> ● Lime ● Grapes <p>Fresh Veggies:</p> <ul style="list-style-type: none"> ● Tomato ● Peppers ● Asparagus ● Spinach ● Kale ● Arugula ● Cabbage ● Brussels sprouts ● Broccoli ● Cauliflower ● Zucchini <p>Grains:</p> <ul style="list-style-type: none"> ● Wild rice ● Quinoa ● Barley ● Oats ● Corn <p>Legumes:</p> <ul style="list-style-type: none"> ● Black beans ● Chickpeas ● Kidney beans ● White beans ● Peas ● Peanuts ● Soybeans ● Lentils <p>Animal Products:</p> <ol style="list-style-type: none"> 1. Eggs 2. Beef 3. Chicken 4. Pork 5. Turkey 6. Milk 	<ul style="list-style-type: none"> ● Flavored yogurt ● Brown and white rice (hull removed) ● Bread ● Tortillas ● Rice cakes ● Condiments ● Bottled salad dressings ● Flavored coffee creamer ● Cured meat (bacon, jerky, salami) ● Deli meat ● Candy ● Potato chips ● Tortilla chips ● Frozen prepared meals ● Pastries ● Cookies ● Cake ● Pie ● Soda ● Sports drinks ● Restaurant food ● Fast food <div style="text-align: center;">  </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>INGREDIENTS:</p> <p>Enriched Flour (Wheat Flour, Niacin, Reduced Iron, Thiamine Mononitrate, Riboflavin, Folic Acid), Sugar, High Fructose Corn Syrup, Dextrose, Soybean and Palm Oil (with TBHQ for Freshness), Corn Syrup, Whole Wheat Flour, Bleached Wheat Flour, Whey, Molasses, Cocoa Processed with Alkali, Cornstarch, Leavening (Baking Soda, Sodium Aluminum Phosphate), Milk Chocolate (Sugar, Milk, Cocoa Butter, Chocolate), Salt, Modified Corn Starch, Natural and Artificial Flavors, Soy Lecithin, Gelatin, Egg Whites, Color Added, Xanthan Gum</p> </div>
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<ol style="list-style-type: none"> 7. Plain yogurt and cheese 8. Bison 9. Venison 	 <p>The image shows a plastic bottle of Gatorade Fruit Punch next to its nutrition facts label. The bottle is red with a white and silver label featuring the Gatorade 'G' logo and the text 'GATORADE THIRST QUENCHER' and 'FRUIT PUNCH'. The nutrition facts label is blue and white, providing detailed information about the beverage's nutritional content.</p> <table border="1"> <thead> <tr> <th colspan="2">Nutrition Facts</th> </tr> <tr> <th colspan="2">Serving Size 1 Bottle (591 mL)</th> </tr> <tr> <th colspan="2">Amount Per Serving</th> </tr> </thead> <tbody> <tr> <td>Calories</td> <td>140</td> </tr> <tr> <td></td> <td style="text-align: right;">% Daily Value*</td> </tr> <tr> <td>Total Fat</td> <td>0g 0%</td> </tr> <tr> <td>Sodium</td> <td>270mg 11%</td> </tr> <tr> <td>Potassium</td> <td>75mg 2%</td> </tr> <tr> <td>Total Carbohydrate</td> <td>36g 12%</td> </tr> <tr> <td> Sugars</td> <td>34g</td> </tr> <tr> <td>Protein</td> <td>0g</td> </tr> </tbody> </table> <p>Not a significant source of calories from fat, saturated fat, trans fat, cholesterol, dietary fiber, vitamin A, vitamin C, calcium, and iron.</p> <p>*Percent Daily Values are based on a 2,000 calorie diet.</p> <p>WATER, SUGAR, DEXTROSE, CITRIC ACID, SALT, SODIUM CITRATE, MONOPOTASSIUM PHOSPHATE, MODIFIED FOOD STARCH, NATURAL FLAVOR, RED 40, GLYCEROL ESTER OF ROSIN, CARAMEL COLOR</p>	Nutrition Facts		Serving Size 1 Bottle (591 mL)		Amount Per Serving		Calories	140		% Daily Value*	Total Fat	0g 0%	Sodium	270mg 11%	Potassium	75mg 2%	Total Carbohydrate	36g 12%	Sugars	34g	Protein	0g
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Sugars	34g																						
Protein	0g																						

Organic vs Conventional Food

Food quality matters a lot. Organic food does have an advantage over conventional agriculture because it is relatively free of harmful chemicals like pesticides and herbicides. Chemical residues on food can predispose people to chronic disease like diabetes, hormone imbalances, and destroy the human microbiome.

For instance, glyphosate, the most used herbicide, is sprayed on wheat as well as “Round-Up” ready GMO crops. The problems are that glyphosate is also a patented antibiotic as well as a chelator. A chelator is a substance that binds metals and prevents their absorption. So glyphosate would be expected to reduce the essential metals present in food, like magnesium, as well as disrupt the health of the human microbiome. Not so good. Some of these chemicals may also disrupt soil health.

In light of this, Wonder Medicine recommends eating organic produce, pasture raised meat, and wild fish animals whenever possible.

But, do not fall for the trap that is ultra-processed organic foods. I would eat (and often do eat), conventional real whole foods over ultra-processed organic foods any day. In general, switching from an ultra-processed food diet to a whole foods diet will get you 95% of the way, whether conventional or organic. If you want to go the final 5%, eat organic.

Sugar - The #1 Modern Addiction

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Sugar is the number one addiction in the United States. Want to see a child break down and behave like a crack addict? Give them some sugar and then take it away. As such, sugar should be consumed in moderation as a desert or treat, just as you would any hedonic pleasure. A lot of whole foods contain sugar, particularly fruits. These foods are generally ok for metabolically healthy individuals. However, added sugar and sugary liquids should be avoided.

Consume Adequate Protein to Maintain Muscle Mass and Satiety

Protein gives us the building blocks we need to build healthy lean tissue like protein, skin, and bone. We also continue to be hungry until we have consumed enough protein. So to turn hunger off and build muscle, we need protein.

Every decade after age 30, we all lose 2-8% of our muscle mass and 10-15% of our strength. Because frailty and debility are such huge problems as we age, holding onto muscle becomes essential for health and longevity.

The RDA (recommended daily intake) of protein for a sedentary individual is 0.8 grams per kg of body weight (0.36g/pound). This number must increase for anyone that is not sedentary. At Wonder Medicine, we consider the RDA to be low. It is probably sufficient to keep from withering away, but insufficient to make muscle or strength gains in the setting of a strength training routine (we want all of our Longevity and Performance Members on a strength training routine).

Protein consumption needs to change with age, kidney function, and activity level. As such Wonder Medicine will customize daily protein intake recommendations for you. But, our minimum daily consumption is set at double the RDA, or 1.6 g/kg of body weight (0.72 g/lbs). Ideally, this daily protein intake would be consumed over 2 to 4 meals.

Eat a Variety of Foods and Healthy Fats to Obtain Adequate Micronutrients and Feed your Gut Microbiome

Humans require a diversity of nutrients to function optimally. Additionally, the best way to build a healthy and diverse gut microbiome is to eat a variety of produce and other healthy whole foods.

We recommend that you consume a variety of nutrient dense foods. Try to consume at least five different colors of vegetables and fruits a day and consume healthy fats like avocado, olive oil, nuts, seeds, and dairy regularly.

These first three steps are recommended to all individuals. For people who are struggling with metabolic health, steps four and five will also be useful.

Reduce Sugar and Carbohydrate Intake If You Have Signs of Metabolic Disease

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Sugar and other carbohydrates trigger blood sugar to spike and blood insulin levels to rise. Insulin tells us we are hungry and instructs our bodies to put on and store fat. This is good if you are fattening up for a hard winter, but not so good in the modern era where food is never scarce. Essentially, carbohydrates are an immediate energy source. But when they are not needed for energy, they often end up getting stored as fat.

If you have signs of metabolic syndrome or would like to try and lose weight, then avoiding sugar and other carbohydrates (excluding fiber) can often help with this. The strictest low carbohydrate diet is a ketogenic diet, approximately < 25g a day (or whatever is needed to maintain the body in ketosis).

People with seizures, obesity, diabetes, other metabolic derangements, and mental health problems like bipolar depression, should consider trialing a ketogenic diet.

Reduce Calorie Intake if you Have Metabolic Syndrome

For the vast majority of Program Members, Wonder Medicine does not restrict calories. But for individuals with metabolic syndrome, this often becomes necessary. For some individuals with profound insulin resistance, prolonged fasting may even be necessary to break the signals instructing the body to store fat. Those with profound insulin resistance often find that they cannot lose weight no matter how little they eat. A problem like this may call for extreme measures.

Diets to Improve Lifespan

Meat or no Meat

Diet and lifespan is a controversial topic. The reality is that no-one really knows. I can find papers that say vegetarians live longer. I can also find papers that say that the more meat a population eats the longer they live. Below are citations from two contradictory peer reviewed papers.

- You W, Henneberg R, Sanjotis A, Ge Y, Henneberg M. Total Meat Intake is Associated with Life Expectancy: A Cross-Sectional Data Analysis of 175 Contemporary Populations. *Int J Gen Med.* 2022
- Norman K, Klaus S. Veganism, aging and longevity: new insight into old concepts. *Curr Opin Clin Nutr Metab Care.* 2020

Wonder Medicine recommends that infants, children, and teenagers consume animal products to assure healthy growth and development. After childhood and teenage years, one may choose to eat vegetarian or even vegan. But we cannot conclude whether meat or no-meat is helpful or harmful for longevity in adults based on the current available research.

Calorie Restriction

Another concept to consider regarding diets for longevity is calorie restriction. Calorie restriction has been shown to increase the lifespan in multiple organisms including Rhesus Monkeys. But these studies were all done in laboratory settings. In the real world we must battle diseases, attackers, and have the energy needed to survive. So what works in the lab

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does not always translate to the real world. Additionally, calorie restriction has never been studied in humans, but it should be, and Wonder Medicine is doing just that.

Bottom Line

Diets that allow people to maintain adequate musculature and avoid chronic disease seem like the best option for improving Longevity. As such, this is what Wonder Medicine will be focusing on until more and better research on diet and longevity become available.

Chapter 7: Supplements

*****Always talk with your healthcare provider before starting any supplement or Medication*****

Supplements are very popular. Some “Longevity Clinics” focus treatment plans around supplements. Wonder Medicine believes this is a mistake. People should try to get most of their nutrients from food. Only after diet has been fully optimized, should one invest time, money, and effort into supplements. However, supplements can often be very helpful in treating certain symptoms and for optimizing health. Below are some of the supplements we commonly use, like, and recommend.

Fiber

Taking psyllium or acacia powder can help improve gut health. Fiber is a prebiotic. It feeds our microbiome. The metabolites of fiber, short chain fatty acids, are the main source of food for the colon.

Protein

Getting adequate protein from the diet can be challenging. A lean and clean protein powder can often be very helpful.

Multivitamins and Multiminerals

A multivitamin and multiminerals can provide small amounts of vitamins, minerals, and nutrients to assure that a person is not under consuming essential micronutrients.

Vitamin D3

D3 can help with bone health, mental health, and hormone production. It is particularly helpful in the winter when most of us get very little sunlight.

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Omega 3 Fatty Acids

DHA and EPA supplements can help support brain, nerve, and cardiovascular health. It is important to get a high quality source and assure that it is not contaminated with Mercury or other toxins (toxins love fat).

Magnesium

A lot of people are low on magnesium (Mg). Mg can help improve sleep, cardiac health, thyroid function, digestion, energy metabolism and so many other processes. There are many types of Mg that one can consider supplementing with.

Creatine monohydrate

Creatine is good for muscle strength and brain health.

NAD+, NMN, NR, and Niacin

Niacin derivatives can help with energy production and in certain disease states. High IV doses of NAD+ are being studied for longevity and as an aid to behavioral change. These subjects should be avoided in those with cancer or under surveillance for cancer resurgence until more research confirming safety in these circumstances is performed.

Glutathione

Helpful for detoxification and liver health.

Vitamin C

We use vitamin C for acute infections as well as skin and connective tissue health.

B12

Methylcobalamin (B12) is essential for multiple biochemical processes, prevents anemia, methylates DNA, and is essential for long term health.

Iron

If you are low on iron, get some. Iron is needed to prevent anemia.

Probiotics

We always recommend probiotics for people currently taking antibiotics.

Plant and Mushroom Derived Supplements

Many different plant and mushroom derived supplements can be very helpful in treating medical conditions and optimizing health. Some of these medicines have been used for thousands of years, are generally safe, and work. We have used ashwagandha, rhodiola, turmeric, fadogia agrestis, lion's mane, reishi, slippery elm, and many others. In the right setting, dose, and duration, plant and mushroom based supplements can be very helpful.

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Supplements for Longevity

There are many supplements that have been reported to improve longevity. None of these supplements have been adequately studied enough to truly claim they can extend lifespan. Wonder Medicine will continue to monitor research regarding supplements and longevity. If any supplement becomes appealing as a potential longevity treatment, we will add it as a Longevity Treatment Protocol and test it in our research setting.

Chapter 8: Exercise

Exercise is the fountain of youth. This makes a ton of logical sense when you think about it. What do we lose when we get old? Functionality, balance, strength, and our ability to recover from exertion and injury all decline. Exercise can improve all of these things. Moreover, being very physically fit versus very unfit can decrease a person's all-cause mortality by four times. This means that an unfit person is four times more likely to die every day than a very fit person, regardless of everything else going on including chronic diseases.

Exercise is more powerful than any known pharmaceutical or supplement from a longevity standpoint. Being unfit is also much more likely to kill you than even the most severe chronic disease. For example, end stage renal disease is associated with one of the highest disease related mortality at 1.5 times normal.

Additionally, exercise will make you feel better, function better, and improve brain health. The most powerful prevention tool we have for dementia is regular exercise. Anyone interested in health, longevity, and performance simply must exercise regularly. There is no way around this.

Benefits of Exercise

- More energy and vitality. Feeling tired all the time, anyone?
- Strength and endurance. These things may seem fine at age 25, but at 75 everyone wants more of them.
- Look and feel great. Exercise will make your skin look better than any cosmetic product.
- Longer life span. Hard to pinpoint the exact number. But from our research we estimate 7 to 12 years of life extension with regular vigorous exercise.

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- Brain health and prevention of dementia. Keeping the body healthy is the best way to maintain a healthy mind.
- Better sleep.
- Protection from infection, cancer, and almost all chronic diseases.
- Better sex.
- The list goes on.

How to Exercise for Health and Longevity in 7 Steps

1. Build posture, body alignment, balance, and how to load properly first.
2. Start slow and be consistent.
3. Focus on recovery.
4. Avoid Injury.
5. Put on muscle symmetrically and build strength through your entire concentric and eccentric ranges of motion.
6. Improve cardiopulmonary health.
7. Live an active lifestyle and move.

Posture, Body Alignment, Balance, and How to Load Properly (Movement Mechanics)

Movement starts with the right mechanics. This can frustrate people because it can really slow down fitness gains initially. But without the right mechanics, injury will eventually stall progression.

People can have different strategies to achieve certain movements. Some strategies are much better than others. But any good strategy will include good posture, the right body alignment, and proper loading. Balance is also a key aspect of this equation.

Get your movement mechanics right before trying to get stronger, faster, and more fit. It will pay dividends. Most people need help to get this right. A good physical therapist, personal trainer, or exercise physiologist is a good place to start.

Start Slow and Be Consistent

Do not try to jump into exercise or rapidly increase exercise intensity or duration. This is how people hurt themselves and then decide to avoid exercise for the foreseeable future. Start very slow. If you have not been exercising, start with just ten minutes of light exercise two or three times a week. For a completely sedentary person it should take about three months to work up to three, one hour sessions of moderately intense exercise a week.

Consistency is most important. Going really hard for a couple weeks and then getting injured, burning out, and stopping is not helpful. Stay in the race and make exercise a consistent habit.

Focus on Recovery

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Recovery is just as important as exercise itself. Eating proper nutrition and protein, getting sleep, and the right amount of rest is what makes the exercise we do useful. We don't get stronger, faster, or more endurance during exercise, this all happens during recovery.

If recovery is not adequate, it also puts people at higher risk for injury, burnout, and diminishes the returns exercise gives us.

Treat recovery as seriously as you do exercise. It is a vital part of the process.

Avoid Injury

Avoiding injury is key. Particularly as we get older. Injuries at age 20 are relatively easy to bounce back from. But serious injuries in the elderly often lead to rapid decline and death. But, at any age, injuries set us back tremendously. Additionally, injuries often lead to mental health issues and bad behaviors.

Restorative exercises are key to maintain proper body mechanics and avoid injury. These exercises must be both the start to one's exercise journey as well as a constant companion. Progressing slowly and consistently is also very important. Additionally, always allow for adequate time and pursue behaviors that will aid recovery.

Finally, warm up appropriately prior to exercise. Kids can stand up after watching a movie, jump, and sprint. Adults need to get up, walk for a while, jog for a while, jog a bit faster, and then run. Don't skip the warmup or you will eventually pay for it.

Put on Muscle Symmetrically and Build Strength Through the Entire Concentric and Eccentric Ranges of Motion

Muscle keeps us metabolically healthy, allows us to move, and is the most important savings account for your future self. Muscle and strength are aggressively lost as we age, leading to frailty and debility. Muscle is truly the gold that all of us should be seeking out through strength training and adequate protein intake.

It is very important that muscle be put on symmetrically to avoid injury and support proper body mechanics. For instance, perform complimentary lifts like pushes and pulls. Play sports that complement each other. Force yourself to do one sided activities, you do frequently, the other way. For instance, play tennis with your non-dominant hand occasionally. These tips will make for a much more balanced system.

Athletes often struggle with imbalance in muscle groups because they train so hard in their respective sport. For instance, when I played basketball competitively, I picked up ice skating and hockey to help build my gluteus muscles and prevent calf injuries on the basketball court. In general, we recommend choosing at least two complimentary

sports/activities in order to build a more balanced system. For instance, biking and swimming will build much better symmetry than cycling alone.

Most people are fairly good at concentric movements (strength while the muscle is shortening). However, we often neglect eccentric movements (strength while the muscle is lengthening) Think about the person deadlifting 500 lbs that just seems to drop the weight after each set. This person has power concentrically, but very little control in the opposite direction. Having imbalance between concentric and eccentric strength can lead to injury and a lack of control in movements. Train for eccentric strength in addition to concentric strength.

Improve Cardiopulmonary Health

Cardio is a can't miss opportunity in health. In fact, VO2 max, or the maximum amount of oxygen a person can utilize per minute, per kg of body weight is probably one of the best studied metrics shown to greatly improve the quality and length of life.

Just as a person must build muscle through strength training, they must also improve heart, lung, blood vessel, brain, and mitochondrial health through regular low intensity and high intensity cardiopulmonary exercise.

Live and Active Lifestyle and Move

Sedentary lifestyles have been definitively shown to be bad for health. Sitting at a desk all day is a good way to get old quickly. Moving more throughout the day can help a lot.

Structured strength training and cardiovascular exercise is very important and cannot be missed. But making a habit of moving frequently is also critically important.

Try and never sit for more than an hour a time without getting up to walk for a few minutes. Try to walk several miles every single day. Take the stairs instead of the elevator. Walk or ride your bike to work. These things really matter. But they are not a replacement for structured exercise. Walking your dog is great! But do not try and count it as your cardio unless you are just starting to move again for the first time in a long while.

Ideal Exercise Amounts

Remember, do not try and jump right into the ideal exercise amounts listed below. Work up to them slowly over several months or maybe even a full year. Also, do not be discouraged if you cannot dedicate this much time to exercise. Any increase above zero exercise will represent a huge win for your performance now and longevity in the future. Generally, the more exercise you can do the better and even small increases in duration and/or intensity are big wins. Some people may choose to do even more exercise than what is listed below, and this can sometimes be even better for health. But, recovery must never be neglected per above. Your ability to properly recover should always limit exercise. This is probably why,

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if taken too far, exercise can impair health. The unfortunate development of heart failure in some ultramarathon and ultra-endurance athletes is a good example of how you can overdo exercise and get diminishing returns and even develop disease. But for most of us, too much is not the issue.

Restorative Exercise

Improve posture, flexibility, body alignment, and help us load properly.

Minimum: 10 minutes per day, 5 days a week.

Ideal: 20 to 30 minutes per day 5 days a week.

Strength Training

Build muscle, coordination, strength, and balance. Weight lifting, rock climbing, and pilates are good strength training modalities.

Minimum: 30 minutes 3 times a week.

Ideal: 1 hour 3 times a week.

Moderate Cardiopulmonary Exercise (zone 2 – able to conversate while doing but hard to do so)

Build heart, lung, and blood vessel health with running, swimming, cycling, and other modalities.

Minimum: 30 minutes 3 times a week.

Ideal: 60 minutes 3 times a week.

Intense Cardiopulmonary Exercise (zone 5 – sprint)

Recommend performing immediately following moderate cardiopulmonary exercise.

Minimum: 5 minutes 1 time a week.

Ideal: 10 minutes 2 times a week.

Move

Ideal: get up and walk for 5 to 10 minutes every hour you are awake throughout the day. Walk after each meal.

Chapter 9: Cognitive Challenge

The brain, like the body, atrophies if we do not use it. If you want to stay sharp, improve your memory, and your intelligence then use your brain. I am not talking about crossword puzzles or sudoku. While these simple exercises are probably better than nothing, they are not

nearly as good as taking on and solving challenging problems, engaging in work, learning new skills, and being able to change your opinions throughout life.

Brain fog is one of the top complaints we see at Wonder Medicine. Regardless of the cause of brain fog, of which there are many, perhaps the best thing you can do (other than to get adequate sleep, exercise your body, and stop abusing substances) is to exercise your brain with the below strategies.

Getting back into normal activities and re-engaging in life after head traumas, illness, traumatic events, and other life stressors seems to be universally beneficial. The old advice of rest and taking time off never works as well as re-engaging in multiple clinical research studies.

Tips to Improve Cognition

1. Take on challenging problems and solve them.
2. Engage in work that challenges you and adds meaning to your life.
3. Learn new skills and new things regularly throughout life.
4. Re-evaluate your opinions on things and be willing to change.
5. Change your environment, travel, and experience new things regularly.

As we age, our brains become more and more fixed. Our neuroplasticity, the ability to change and learn, declines. Eventually, we become the rigid elderly person that cannot learn or change their mind.

Don't become this person. Engage, learn, change, and be adaptable. Force yourself to do things that are hard and challenging. Be willing to learn something new and be the stupidest person in the room on a regular basis. This is how we grow. Leave your pride at the door. You don't always have to be right or the person who knows the most.

Be a lifelong learner that can adapt and change.

Chapter 10: Moderation and Addiction

Nothing can impair health, longevity, and performance more than habitual bad behaviors. So far, we have discussed behaviors that program members must do. In this chapter we will talk about things program members must do in extreme moderation or avoid entirely.

Addiction Definition

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- A behavior or thought pattern that a person performs habitually.
- Has recurrent negative effects on life, health, and relationships.
- The person suffering from addiction is unable or unwilling to stop this behavior or thought pattern.

Addictions come in many forms. Most of us think about substances when talking about addiction. But, so many other things can fit the above definition. Some very common addictions of the modern era include:

1. Sugar
2. Cannabis
3. Tobacco and alcohol
4. Social Media
5. Phones and screens
6. Ultra-Processed foods
7. Negative thought patterns leading to self-destructive behaviors and chronic underachievement
8. In-action (deferring dreams in favor of doing nothing at home)

There are so many more things to list, including very destructive substances such as cocaine, methamphetamine, and narcotic pain killers like fentanyl.

Addictions erode away our time, brain capacity, thoughts, relationships, and dreams. Perhaps the most important thing any person can do to improve performance and longevity is leave their addictions behind. However, this can be extremely challenging. Wonder Medicine would love to help. We only ask that you be completely open and honest about addiction or recurrent negative behaviors and that you are ready to make the change.

Tips for breaking any bad habit or addiction:

1. Build your army. Tell everyone you care about that you have a problem. Let them know you are going to quit or change. Ask for their support and set a date. Consider joining a support group to help (this is why alcoholics anonymous can be so effective - support is everything).
2. Change your environment and put friction between yourself and bad behaviors. Move living spaces, get a new circle of friends, travel, go to rehab. New environments make changing behaviors easier. Make good behaviors as easy as possible and put as much friction (difficulty) as you can between you and bad behaviors. Get drugs and junk food out of the house. Schedule frequent social activities that require sobriety. Reward and celebrate your good behaviors, no matter how small.

3. Think about the life you will have. The clear thoughts, extra money, extra time, attention for loved ones, and etc (do not think about quitting – that doesn't work – think about the positive and avoid focusing on the negative).
4. Change your mind and become aware. Change starts in the brain with our thoughts. Actions or behaviors then follow our thoughts. Start by gaining awareness. What thoughts and stimuli lead to desired behaviors. What thoughts and stimuli lead to bad behaviors. By controlling thoughts and stimuli (environment), you can gain control of and change your behaviors.
5. Get help from a medical provider. Your brain has been hijacked and hardwired. The right medical provider can wield powerful medications that will help you reprogram your brain and break the cycle.

Anything that makes us feel good can be habit forming. This can be a good thing in the setting of healthy behaviors like exercise. But, so often these behaviors can start with healthy and good intentions, only to devolve into a problematic state.

Be honest about what your thoughts, surroundings, and behaviors are doing to you, your performance and the people around you. Ask your loved ones. They will tell you when things are a problem if you ask.

Addictions can be isolating. People feel like they are alone and that nobody else can understand. This is far from the truth. Most everyone struggles with some degree of addiction in their life. If you start talking about your addictions with the people around you, most people find that battling with addiction is a shared experience with so many others.

Kick the bad habits and enjoy pleasurable things in moderation. If you need help, the Longevity and Performance Program has many tools including:

- Pharmaceuticals like ketamine, naltrexone, bupropion, and so many more.
- Nutraceuticals like NAD+.
- Lifestyle coaching, Thought Coaching, and Behavioral Coaching.
- Recommendations for mental health therapy.

Chapter 11: Meaningful Relationships

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People matter more than anything. We started the Longevity and Performance Program because we value people. Ask yourself, are you being the friend, boss, co-worker, family member, or community member that you should be?

We have more access to each other than ever before through our phones, computers, and same day world travel capabilities. Yet, we have never been so isolated. Humans need a tribe. We are social creatures. All of us need help, love, support, and community. Additionally, the best way to achieve anything spectacular is with the help of a team.

Some questions:

- Who are your people? Those you love and care about.
- Who is your community?
- Are you engaging with your people and with your community?

Relationships and society take work. They require our time, effort, discomfort, and confrontation. But, besides your health, Wonder Medicine would argue that there is nothing more important for you to invest in than your relationships.

When I asked a 99 year old World War II Veteran, hospitalized for pneumonia, what his secret to long life and fulfillment are, he told me this. "People are everything, without them you have nothing. Invest in people."

The greatest generation, born (approximately) between 1901 and 1924, fought in two World Wars and weathered the Great Depression. I have spent a lot of time with this generation and for the most part they are now gone. But, overwhelmingly, these people were all about community and doing good things for others.

We all need to re-embodiment the spirit and ideals of the greatest generation if society is to survive and we are to achieve our full potential

Some Tips to Build Meaningful Relationships

- Reach out to loved ones regularly and have meaningful conversations with them. Calling once a year is not enough. Make this a weekly or monthly routine.
- Set aside time, now, to spend with the people you care about most.
- Make new friends. Put yourself out there. Do not worry about rejection. Go up to that person you think might be a good fit and ask if they want to spend time with you.
- Do nice things for other people. The best way to make friends is to help and support them.
- Get involved in your community. There are so many entities in need of help. This is a great way to both do good and meet people

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The best way to get support is to give it. Be a good friend. Help others in their times of need. Do nice things for people you barely know. We promise, these things will improve your health and make your life much more fulfilling.

Tips for Your Most Intimate Relationships

Everyone has a different capacity for how much they can do and give. Our most intimate relationships with our spouses, dearest friends, and the people we live with are often strained because of this.

Stop measuring and keeping tabs on how much other people are doing for you. For instance, who did the dishes last, took care of the kids more, cleaned up, or paid for dinner. Sure, relationships must have some degree of balance if they are to continue. But, stop fixating on what others should be doing. Instead, do as much as you can for those who matter most. Live outwardly. In healthy relationships, people do what they can for those they care about with little to nothing asked in return. Expect less of people and love them more.

Forgiveness

Forgiving people is good for the heart. Carrying around negative feelings that are directed at other people is bad for our bodies, minds, and souls. Forgive those who have wronged you. It will reduce your stress and free up your mind for more positive and constructive thought patterns.

Chapter 12: Purpose and Philanthropy

Purpose - The reason for which something exists.

Wonder Medicine asks every Longevity and Performance Program Member what their purpose in life is. Most people are shocked by this. Some people have put very little thought into their purpose. But, this is the most important question that anyone can ask.

Everyone can have multiple purposes in life. Oftentimes, people will pin their purpose onto other people. For instance, "My purpose is to take care of my family." This is certainly a noble purpose- but it cannot be the purpose of your life.

This is scary and awful to think about. But if the person above lost their family, they would be left purposeless.

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As such, Wonder Medicine encourages Program Members to consider a higher purpose that is not tied to other people. Finding this purpose will add tremendous meaning and value to life. Religion, faith, and spirituality are a source of purpose for many people. But, purpose can come from many other ideologies and philosophies as well.

In general a purpose should:

- Add value to people, society, and/or the environment.
- Align with your values.
- Be something you are willing to spend a lifetime working towards.

When we know what our purpose is, life gets much easier and much more rewarding. This is because through the lens of our purpose decisions can be evaluated and made appropriately.

Are you living wholly and purposefully? Does your life, career, relationships, ideals, and behaviors support this purpose. If not, you must change these things in order to find fulfillment in life. There is no point in extending the length of your life without fulfillment and meaning.

Philanthropy - The desire to promote and support the welfare of others and the environment.

In a famous social experiment, participants were given \$100. They were asked to either spend the money on themselves or someone else. Almost universally, the people who spent the money on someone else felt a much deeper sense of happiness with their decision.

Philanthropy is a good place to start when looking for your purpose. Philanthropy is also something that Wonder Medicine encourages all Program Members to take part in. Ask yourself, what things do I love or care about? Then take action to promote and support these things. High performers are the people that society depends on to give back.

Chapter 13: Stress Reduction and Positive Thinking

Stress can challenge us, make us better people, and it is a part of life. However, chronic (everyday) stress that is not managed properly can be profoundly detrimental to our health, longevity, and performance. Program Members are encouraged to take on work and life obligations thoughtfully to avoid the burden of too much stress. But, no matter who you are

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or how much you have on your plate, stress will always be there. This is why adopting healthy stress reduction techniques is so important.

Key Points for Stress Reduction

- Everyone should set aside at least 60 minutes a day for stress reduction.
- Develop healthy habits for dealing with stress.

Benefits of Healthy Stress Reduction Tactics

- Longer lifespan (total years lived).
- Longer health span (total years lived without disease).
- Better cardiovascular health with less heart attacks and strokes.
- More resilience in the face of adversity.
- Improved mental health (less depression and anxiety).

Tips to Improve Our Bodies Response to Stress

- Be present, feel your emotions, use your senses, and engage with your surroundings.
- Start a daily mindfulness meditation practice, start with five minutes a day and work your way up from there.
- Learn to harness the power of breathing (see Breathing below).
- Expose yourself to the elements (Chapter 16, Earth).
- Think about the things you are grateful for in your life every day for at least a few minutes. This is called a gratitude practice.

Healthy Ways/Habits to Deal with Stress

- Change your life (example: get out of a bad relationship, change jobs, move to a new apartment, etc.).
- Exercise.
- Create (write, draw, paint, build, sculpt, film, photograph, etc).
- Spend meaningful time with loved ones.
- Talk about your stressors and problems.
- Sleep (see Sleep Handout).
- Take time away from stressors and live a balanced life (see Chapter 15, Structure and Balance).

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Unhealthy Ways to Deal with Stress

- Using substances (alcohol, THC, tobacco, illicit drugs).
- Avoiding the situation, people, or things that must be done.
- Mind numbing activities like television, video games, and etc.
- Dissociation (separating one's self from their emotions and feelings).
- Using immature coping mechanisms. See Full Scope Podcast - Defense Mechanism available at:
(<https://www.fullscope.org/podcast-1/episode/4988dd4f/defense-mechanisms>)

Positive Thinking

Our thoughts and the voice inside our heads can cause both wellness and disease. The world that each one of us lives in starts in our minds. Our thoughts then become our reality. This is why positive thinking and positive self-talk are so important. Put more simply:

- Negative thoughts = negative life, unhealthy emotions, mental health disorders, and chronic disease.
- Positive thoughts = health, prosperity, fulfillment, and positive emotions.

If You Struggle with Negative Thoughts, Tell Yourself Everyday

Every day, day by day, I am getting better and better.

This is particularly powerful if you are suffering from an illness or chronic disease. Often the first step toward getting better is believing that you can. If you suffer from disease, telling yourself this simple line 10 to 20 times a day can be very helpful.

Negative thoughts, negative ideas, and self-doubt have no place in my life.

This powerful suggestion can and will eventually become true. Everyone should consider telling themselves this daily. Anyone suffering from persistent negative thoughts should tell themselves this, whenever negative thought patterns arise.

Stop Negative Thoughts

Criticism can be constructive. This includes self-criticism. However, if criticism is pervasive, not actionable, destructive, and not meant for self-improvement, it can become very detrimental to health. If you have negative thoughts that are not constructive, you should consciously stop those thoughts immediately. This is a great time to tell yourself line two above and move on to more positive ideas.

Breathing Exercises

Humans take 500 million breaths during a full lifespan. Breathing gives our bodies oxygen. It is also the main way our bodies get rid of waste in the form of CO₂ (carbon dioxide). Most of

us give breathing very little thought. But if you want better control over your stress, your emotions, your anxiety, and your life, then it is time to start paying attention to your breathing.

1. *Breath Through Your Nose*

Breathing through your nose will lower stress, lower blood pressure, improve sexual performance, prevent snoring, inhibit obstructive sleep apnea, and help you sleep better. If you are a mouth breather, do not fear. The more you breathe out of your nose the easier it will get.

- Focus on breathing through your nose during the day and with light exercise
- Tape your mouth shut at night for several weeks until it becomes habitual. It may take several weeks before you are able to keep the tape on all night. That's ok.

2. *Optimal Rate (10 breaths per minute)*

Most people breathe too fast. Breathe in for 5.5 seconds and out for 5.5 seconds. This will equal about 10 breaths per minute. Interestingly, many religious prayers and chants put us into this breathing pattern. Saying the Rosary in Catholicism and chanting Om in Hinduism (or yoga) are two good examples. This is thought to be part of the reason why these activities can be so relaxing and rewarding.

- Breathe in for 5.5 seconds and out for 5.5 seconds.

3. *Humming*

Humming vibrates the muscles in the back of our throat and stimulates the vagus nerve, activating our parasympathetic (rest and digest) nervous system. It can be very calming to many people.

- Hum and sing. It can be very relaxing.

4. *4, 7, 8 Breathing*

The next time you are stressed try breathing in for 4 counts, holding air in for 7 counts, and then breathing out for 8 counts. Do this for 5 to 10 breaths or more. Alternatively, try taking in two big back-to-back inhales through your nose and then letting out a sigh. These breathing techniques can really calm you down.

- When you feel anxious or stressed, pay attention to your breathing

5. *Lengthen Your Exhale*

Getting all the air out of your lungs with each breath is a good practice. Try and lengthen your exhalation in a slow and controlled manner. Start by breathing in for 4 seconds and breathing out for 8 seconds. Try and lengthen your exhale to 30 seconds over several weeks of practice. This can be very relaxing after a hard workout.

- Exhale all the air out of your lungs in a slow and controlled way with each breath.

6. *Other Techniques*

There are so many other breathing techniques that can reduce anxiety, optimize wellness, help those suffering from asthma and COPD, and so much more. Optimizing your breathing will also improve your ability to focus, learn, and exercise. Below are a few examples of breathing techniques that can be helpful. Youtube.com is a great place to start if you want to learn more about these techniques.

- Tummo breathing
- Wim Hof breathing
- Buteyko breathing
- Kundalini breathing
- Hypoventilation
- Pranayama
- Focused breathing during exercise

Disclaimer on Breathing

Some breathing techniques can be dangerous. They can cause some individuals to pass out or lose consciousness. Certain breathing techniques should never be done while standing, in water, and certainly not while driving or operating machinery. Additionally, if breathing is a problem while sleeping, get a sleep study done first.

Chapter 14: Structure and Balance

Humans crave structure. We see this in our children. They love routines, structure, and consistency. Adults are just big children.

In life, we only have a finite amount of time, energy, and focus. This is why it is so important to prioritize your life with the appropriate structure. The right structure will bring life into the proper balance.

Tips for Structure and Balance

- Set aside time for work, play, family, friends, self, and obligations.
- Adjust time-amounts to bring balance to your life as needed.

Work

Meaningful work and structured education are so important for any person. Wonder Medicine believes that all people should seek out work and projects that add meaning and structure to their life. We believe that not working is very harmful to health. This is because

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so much idle time invites bad behavior, wasting of natural born talents, and a lack of fulfillment. Way too many people are going on Disability in the modern era. Many of these people could work in some capacity. But they do not, and are aided in doing so. We believe that if the United States Social Security Disability Program was evaluated through the lens of health, it would be a disaster. We have seen countless patients' health deteriorate rapidly after losing the meaning and structure that comes from a job well done.

But, it is also very important that work does not consume one's life. Balance must be sought with the other important parts of life. Many high performing individuals struggle with balance. Their work becomes their life. These people need to actively make time for relationships and self care.

Chapter 15: Earth, The Giver of Life

Earth is our home and a paradise. It is the only place that humans are currently aware of capable of harboring and giving life. We depend on our planet for health and wellbeing, more so than most of us realize. This became very apparent with the advent of the space age. Humans in space experience rapid deterioration in health. This problem will likely prove to be the greatest challenge in the human transition to a space faring civilization.

Earth Attributes that People Depend On

Gravity - Helps keep our muscles and bones strong.

Sunlight - Important for physical and mental health. Aid in biochemical processes like the production of vitamin D3.

Ground - The electrical grounding effect of our earth optimizes the human electrical machine.

Exposure - Heat and cold, in the ranges that earth provides can build resiliency and health.

Protection - The magnetosphere of earth protects us from the abundant harmful ionizing radiation present in outer space.

Nature - nature has healing properties. It also provides us with the food, water, vitamins, and minerals needed to sustain life.

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Biodiversity - Earth is a paradise of life. Humans are covered inside and out with trillions of microscopic organisms that aid in our health and metabolism. This microbiome that surrounds us is essential to health.

Humans have never been more removed from earth, nature, and the elements than in today's modern world. However, nature and the stress that the elements put on our bodies is vital to our health.

Benefits of Time in Nature and Exposure to the Elements

- More resilience and grit.
- Healthier physiology (blood vessels, heart, skin, and brain).
- Increased microbiome diversity.
- Higher metabolism with better thermoregulatory capacity.
- Facilitation of detoxification.
- Better mental health.
- Improvement in energy and mitochondrial function.

Spend Time in Nature

Time in nature is the healing reset that so many of us are missing. Just spending time outside helps our bodies regulate our circadian rhythm, gives us access to fresh air, natural sunlight, and elevates our mood.

- Try and spend at least an hour a day outside (especially in winter). Generally, the more time outside the better (> 3 hours a day is optimal).
- Try and get into a wilderness environment at least one time a week for > than an hour (> 6 hours is optimal). Natural landscapes have healing powers. Mountains, forests, valleys, plains, and any other landscapes that have not been influenced significantly by humans will do. Natural landscapes help us keep our lives in perspective.

Expose Yourself to the Cold

Intentionally exposing oneself to cold increases metabolism, improves circulation, builds mental toughness, and grit. Shoot for at least 15 minutes of cold exposure per week broken up into 3-7 exposures. More may be even better. People should expose themselves to cold for a long enough duration and at a cold enough temperature that they begin to shiver. Increase the duration and total time exposed to cold gradually if needed. One can even start with a warm shower, sauna, steam room, or exercise prior to cold exposure to make things easier.

- Spend at least 15 minutes a week in a cold shower, submerged in cold water, or other modality.
- As being in the cold gets easier, increase the duration and intensity of exposure.

Expose Yourself to the Heat

Heat exposure can increase metabolism, heart health, and improve detoxification pathways. Sweating is good for people. In the last few decades, research on the positive benefits of heat exposure have exploded. So much so that regular sauna usage is one of Wonder Medicine's Longevity Treatment Protocols.

- Spend at least 45 minutes a week in a sauna, steam room, or other uncomfortably warm environment.
- As being in the heat gets easier, increase the duration and intensity of exposure.

Caution for Nature Goers and with Thermal Exposures

The wilderness and temperature extremes can be dangerous places. Enter into them prepared and with great respect. Cold and heat can be dangerous to humans if exposures are too great or if safe recovery environments are not available. Nature and exposure can and has killed people when not done properly. If visiting natural areas or performing heat or cold exposure. Particularly if you have health issues like seizures, heart, or lung problems.

- Have a plan.
- Bring a friend.
- Gradually increase the time and intensity of cold and heat exposures.
- Talk with your doctor first if you have health issues.

Grounding

Electrical equipment like computers, power tools, and televisions must be grounded to the earth in order to run properly and avoid static interference. Like electronics, human bodies are electrical machines. Essentially, our bodies use electrochemical gradients to perform reactions and do work. When we humans are grounded, our bodies work better. Historically humans have always been "grounded". However, rubber-soled shoes, foam mattress pads, other insulating materials, and time in outer space now prevent us from being directly in contact with the ground for most of our lives.

Theory of Why Grounding is Good for Health

When the human body is in direct contact with the ground, electrons (negatively charged particles) can move freely into and out of our bodies. These electrons are thought to have

antioxidant effects that prevent inflammation. Think of the inflammation in your body as static that needs to be removed to function properly. The more time our bodies spend grounded, the greater the potential health benefits.

Health Benefits of Grounding in Published Research Studies

- Improved sleep quality.
- Improved recovery time from athletic activity and less soreness.
- Reduced inflammation following injury and in chronic disease states.
- Better blood flow.
- Improvements in mood and mental health.

Risks of Grounding

- Injuries to the feet like splinters, wounds, etc.
- Potential risk of electrocution if using a grounding mat during a lightning storm. Unplug your mat if lightning is occurring. More research is needed to determine if this risk is real or not. But for now, we choose caution.

How to Ground

1. The more time our bodies are grounded the better.
2. Take off your shoes and walk barefoot on the ground. Dirt, grass, rocks, sand, and cement surfaces are all electrically conductive. Grounded shoes can also be purchased. Touching, sitting on, or laying on any of these surfaces will have the same “grounding” effect. Be careful with your feet if walking barefoot, especially if you have diabetes, neuropathy, or reduced sensation.
3. Purchase a grounding mat. These pads can be plugged into the wall ground. This is the best way to ground in an apartment, high rise building, while inside, and while sleeping.
4. Sleeping with part of your body in contact with the grounding pad is the best way to improve the amount of time spent in contact with the ground. Wonder Medicine believes this is the best way to appreciably and sustainably spend more time in contact with the ground.

Chapter 16: Resources and Health

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Having the proper resources are essential to life itself. This used to mean food, water, and shelter. In the modern era, it means even more. We all need enough capital (money) to provide for ourselves and our loved ones in the good times. But, a healthy person must also plan for the hard times and unexpected life/health problems that will almost certainly occur at some point. So resources also include security in the form of savings or insurance policies to protect us against life's hardships.

Most Longevity and Performance Program Members will be adequately resourced. However, they may need to re-think the allocation of resources to best align them with health and future planning. But, regardless, having adequate resources allows us the ability to focus on health, longevity, and performance in the first place.

Many people in the world are severely under-resourced. For instance, six countries, Lesotho, Chad, Nigeria, Central African Republic, and South Sudan all have life expectancies < 55 years. These countries also lack adequate resources and illustrate the profound effect that this can have on Longevity. Especially considering that most developed countries have a life expectancy in the late 70s and early 80s. This is why, Resources is one of the 12 Pillars of Health and in some contexts can be the most important.

Resources matter. But, the resource game can be a vicious cycle as health is often needed to obtain said resources. As health deteriorates predictably with age, planning early in life for appropriate resources is key to success. Part of any Program Member's long term plan must include the acquisition and allocation of sufficient resources.

Make a plan!

Chapter 17: Environment, Safety, and Security

All big changes start with a series of smaller changes. Forward progress, no matter how small, will eventually get you to the finish line.

Our environment, or the places we spend our time, people we spend our time with, and the knowledge available to us along the way (education) are the most important drivers of both health and un-health.

Example of Environment and Health

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Type 2 Diabetes runs in families. For a long time, scientists believed that it was closely tied to our genetics as a result. But, behaviors and habits also run in families. For instance, eating ultra-processed junk food habitually and living a sedentary lifestyle. In 1959, 0.87% of United States residents had Diabetes. By 2019, 11.3% of people have Diabetes and this number is climbing. The prolific rise in diabetes rates points to the environment, as our genes have not really changed over the past 60 years.

Safety and Security

We all need safety and security in order to achieve our best self. Sadly, domestic violence, crime, unsafe living situations, and living under the threats of others are all common in the modern era. Health, longevity, and performance all depend on safety and security. If you are living in a situation that puts your or your loved ones at risk, get out now. Sadly, self directed improvement often feels unobtainable or even unsafe for those living in unsafe places.

Wonder Medicine will ask about safety and security. Please be honest with us. We would love to help you achieve the safety, security, and dignity that we believe society should seek to offer everyone.

Tips for Optimizing Environment

- Surround yourself with people that challenge, engage, are focussed on health, and practice healthy behaviors.
- Cut the bad people out of your life. Don't keep spending time with the people that trigger you to perform bad behaviors.
- Remove unhealthy things from your environment. For instance, get the ultra-processed foods or substances that you have problems with out of your living situation.
- Clean up your living space. An organized and clean environment leads to a healthy-organized mind.
- Move living situations or even cities in order to find a healthy environment that is safe and secure.
- Surround yourself with the knowledge you need to better your life and live your purpose. Seek out the education you need.
- Avoid chemical and environmental toxins as much as possible as outlined below.

Environmental Chemicals and Toxin Avoidance

Key Ideas for Toxin Avoidance

1. Avoid harmful chemicals and toxins as much as reasonably possible.
2. Support your body's natural detoxification system as many modern chemicals are unavoidable.

In the last hundred years, humans have created > 100,000 novel chemicals for use in various industries and our everyday life. These chemicals are present in our food, furniture,

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clothing, cosmetics, water, air, and everywhere else around us. Many accumulate in the environment and even within our bodies. In fact, over 240 novel man-made chemicals have been found in the umbilical cords of newborn babies. While a handful of dangerous chemicals have been banned (e.g. DDT, PCBs), thousands of others that likely should (and eventually will) be banned, remain in use. Sadly, the United States continues to use a number of harmful chemicals that have been banned in other developed nations.

Major Groups of Toxins

- Pesticides (glyphosate, DDT, other insecticides, other herbicides)
- Preservatives, dyes, and antimicrobials
- Formaldehyde and volatile organic chemicals
- Parabens and phthalates
- Smoke and smog
- Mercury, Lead, Arsenic, and other heavy metals
- Asbestos, crystalline silica, and mineral dusts
- Carcinogens (cancer causing chemicals)
- Endocrine disrupting chemicals (BPA)
- Cleaning, lawn care, maintenance, and building chemicals
- Ionizing radiation and harmful electromagnetic frequencies

Food Toxins

Unfortunately, our food now contains numerous synthetic chemicals, dyes, preservatives, and pesticides. Always know where your food comes from and avoid ultra-processed foods as much as possible.

Glyphosate (Round-Up) and other pesticides are the biggest concern with food. Choosing organic or at least non-GMO (genetically modified organisms) will help minimize exposure to glyphosate and other pesticides.

In addition, toxins that bioaccumulate like mercury in predatory fish and dioxin in livestock are also concerns. Bioaccumulation is when toxins travel up the food chain as larger animals take on the toxic loads of smaller animals or plants they consume. This is a big problem for apex predators like humans! Do not eat large predatory fish more than one time a week and avoid feed-lot cattle. Some bodies of water such as the great lakes contain so much chemical contamination that fish from them are no longer safe to eat. Always check to make sure the fish you are eating has been obtained from a safe water source.

Use glass and stainless steel for food storage over plastic and styrofoam. Plastics can contain harmful chemicals like bisphenol-a and other similar endocrine (hormone)

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disruptors. Do not use non-stick, or Teflon cookware (avoid perfluorinated chemicals). Choose ceramic pots for the same non-stick benefits without the toxins

Cosmetics (soap, shampoo, deodorant, lotion, make-up, etc) Toxins

Cosmetic products often contain harmful chemicals like parabens, phthalates, bisphenol-a, artificial preservatives, and other additives with questionable safety. Many such additives disrupt hormones and other body functions.

- Choose products that do not contain harmful chemicals as much as possible.
- <https://www.ewg.org/skindeep/> can help you determine if your products might contain harmful chemicals.

Household Chemicals

Cleaning supplies, lawn fertilizers, insecticides, and other products we put on our houses, lawns, or use for DIY home projects can often be very dangerous. Great care must be taken if they need to be utilized and complete avoidance is usually best. Always remember to use proper protective equipment such as rubber gloves, glasses, masks or respirators, and skin coverings in a well-ventilated area when working with potentially dangerous chemicals.

- Use more natural cleaning products like pure soap, water, vinegar, baking soda, and natural fragrances.
- Avoid using fertilizer, insecticides, and harmful lawn chemicals, especially if you have children.

Water Toxins

Tap, well, and bottled water can contain numerous dangerous substances such Chromium 6, halogens, and Lead. Using a water filter can help with these toxins. However, be aware, softening water (removing calcium and magnesium) is not good for the cardiovascular system.

- Check https://www.ewg.org/tapwater/?gclid=CjwKCAiArOq0BhBmEiwAsgeLmZriXvSUu3_PiYW4wC3mKerLi9sdc-TfPzpu7Sow1MDD-uKmf-yCMB0CfmoQAvD_BwE to see if your tap water may contain harmful chemicals.
- Water test kits can also be purchased.
- Use an appropriate water filter if your water contains unsafe levels of chemicals.

Air Pollution

Clean air is vital to health. The lungs are the fastest route a toxin can enter the body. Be cautious about new mattresses, rugs, clothing, furniture, and cars. That "new" smell is often formaldehyde and other harmful volatile organic chemicals. For this reason, it is often best to purchase used vehicles, mattresses, furniture, or those that do not contain chemicals. If

new materials cannot be avoided, opening a window or utilizing an air purifier can really help. Washing clothes before wearing them is also a good practice.

In a growing number of cities, the air is simply not safe. In fact, many scientists estimate that most humans are currently losing around 3–4 years of life due to widespread unsafe air. Bad air may contain smoke, smog, and other particles known to cause lung disease and harm. Utilize an air filter if you live in a city or environment with bad air. Do not go outside on days when the Air Quality Index, AQI (airnow.gov) is above 200, and avoid strenuous exercise outside if the AQI is above 150. If you live in a city with poor air quality, strongly consider moving.

Finally, some houses and buildings can contain air particulates that can be harmful to health. These include mineral dusts (asbestos), molds, heavy metals, and other potentially harmful aerosolized residues. It may not be a big deal to spend 30 minutes in a building with mold or dust. But living or working regularly in such a building can take its toll on health. If you suspect your home or work contain mold, asbestos, or other harmful particulates, consider hiring an expert for advanced testing. Remember to change your furnace filter every year and clean out ducts and vents at least every few years.

- If the air inside your home or work is bad, open a window and use an air purifier. The underlying problem should be fixed if able.
- If the air outside your home is bad, close the window and use an air purifier. If outside air quality is consistently poor, consider moving.
- Do not spend time outside if the AQI is > 200 (airnow.gov).

Ionizing Radiation and Electromagnetic Frequencies (EMF)

Ionizing radiation at unsafe levels should always be avoided. This is why doctors limit the use of CT scans and Xrays as much as possible. Outer space often contains very high levels of ionizing radiation. This will be a challenge for humans as space travel becomes more common.

Some frequencies of non-ionizing electromagnetic radiation can also be very irritating to some individuals. In addition, many scientists have serious concerns that certain higher energy frequencies and dirty electricity from power converters, smart meters, and 5G may be harmful to health and adversely affect the lives of all of us.

If you think you may be affected by EMF, consider having the levels in your home or work tested with an EMF home inspection. Problems from EMF might include anxiety, problems sleeping, irritability, fatigue, or other nonspecific symptoms. Children are sometimes more sensitive to EMF than adults. Certain electrical units like “smart” power meters give off large amounts of EMF. If requested, power companies are obligated to remove these “smart” meters.

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Strategy for Removing Toxins

All of these toxin avoidance recommendations may seem overwhelming. Don't get stressed and take it slow. Try removing one source of chemicals or toxins from your life each week or even every month. Do not throw everything you have away and upend your life in a frenzy to remove toxins.

No matter how good of a job we do, toxins are simply unavoidable as they are everywhere in our increasingly contaminated environment. The goal is to try and limit the total toxin exposure (toxic burden) we are exposed to, not remove toxins entirely.

Improving the Body's Natural Detoxification Mechanisms

As avoidance of chemicals is impossible, building up the body's natural detoxification mechanisms is the best strategy. Everything you have learned in this handbook so far will aid in this practice including:

- Exercise regularly and break a sweat.
- Sauna.
- Prioritize adequate sleep.
- Stimulate autophagy through the above modalities and even fasting.
- Reduce stress levels and get out of negative thought patterns.
- Eat a diet high in fiber, cruciferous vegetables, and sulfur containing vegetables (e.g. garlic).
- Spend time outside in nature. Get some sun.

Optimizing your environment will improve health, longevity, and performance. The modern era exposes our bodies to toxins that our ancestors did not see and our bodies have not evolved to handle. Do your best to live a clean life.

We have the advantage of modern medical care when things go wrong acutely. But chronically, our unhealthy environments are leading us to shorter lifespans regardless of this. Removing the toxins from our environment, building circular economies, and optimizing our manufacturing processes and consumer products is a societal level problem that must be addressed, this generation for the sake of our planet and future generations.

Chapter 18: Wearable Devices and Blood Pressure Monitoring

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Wearable Devices

Wearable devices are disrupting healthcare. These devices are getting increasingly good at monitoring heart rate, heart rate variability, temperature, respiratory rate, pulse oximetry, and sleep architecture. They come as rings, watches, bracelets, and in other forms from multiple companies and the space is only getting bigger. Sadly, most conventional medical facilities have been slow to adopt. But, Wonder Medicine will be implementing wearable device data into our program and database. Readers should strongly consider utilizing wearable health technology, if only temporarily, to gain insight into how behaviors affect day to day health.

Monitoring the effect of our behaviors on our health can be challenging. For instance, what effect does drinking alcohol, fasting, exercise, or even medications have on our immediate health? Wearable devices help answer this question through daily continuous health tracking.

Some Data Available through Wearable Devices

Resting Heart Rate

Resting heart rate is a good indicator of overall health. We can measure this at our Center. But, getting readings at home when you are asleep or truly at rest is a better way of obtaining this information and wearables allow for this.

Heart Rate Variability (HRV)

Our heart beats with a variable rhythm. This means that the time between each of our heart beats is never exactly the same. Every person has a unique heart rate variability that changes daily. When we are stressed, sick, or tired HRV goes down. When we are feeling good and at our best HRV goes up. HRV can provide real time information about the effects of behavior on our bodies system and should be monitored and tracked.

Sleep and Sleep Architecture

Wearable devices are getting increasingly accurate at measuring sleep and sleep stages including light, deep, and REM sleep. Optimizing behaviors and treatments in order to get better sleep is critically important. Sleep tracking allows for optimization in real time.

Steps, Movement, and Activity

Most wearable devices monitor how much we move. This information can help a person optimize their level of movement each day.

Temperature

Devices track our daily temperatures. This can be very important for monitoring how we are doing day to day. For instance if we are sick or stressed, temperature will often go up or down from normal. Temperature tracking is also essential for any woman tracking ovulation and menstrual cycles.

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Blood Glucose

Continuous glucose monitors that measure blood glucose every few minutes are now available at affordable costs. These devices can offer valuable insight on the effect of food, activity, and stressors on our blood glucose levels. Optimizing blood glucose is an important part of optimizing health and preventing metabolic disease.

Continuous Glucose Monitoring

Continuous glucose monitor (CGM) gives tremendous insight into metabolic health. It provides a blood glucose reading every 2 minutes over a 2 week period. These can be obtained from a medical provider for just <\$100 for 14 days.

At Home Blood Pressure Monitoring

Blood pressure is a vital sign measurement that is important for heart, kidney, brain, and blood vessel health. Blood pressure measures the amount of pressure or force inside arteries, the blood vessels that carry blood away from the heart. High blood pressure leads to organ damage, heart attacks, strokes, and other serious medical problems. High blood pressure is also a sign of metabolic disease. As such, maintaining a normal resting blood pressure is very important for long term health and longevity.

Blood pressure can be improved with lifestyle interventions as well as several pharmaceutical medications that work well and are generally safe. Do not tolerate elevated blood pressure. Over time, high blood pressure causes irreversible damage to vital organs.

Blood Pressure Measurements

Blood pressure is measured in units of pressure called millimeters or mercury (mmHg). There are two numbers for every blood pressure, systolic and diastolic. Both of these numbers must be optimized in order to achieve long term health.

Systolic Blood Pressure (top number)_____

Diastolic Blood Pressure (bottom number)

Systolic blood pressure = the pressure inside the arteries when the heart beats.

Diastolic blood pressure = the pressure inside the arteries when the heart relaxes.

Normal Resting Blood Pressure

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The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (2003 Guideline) ²		The American College of Cardiology/American Heart Association Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults (2017 Guideline) ¹	
Normal	systolic: less than 120 mm Hg diastolic: less than 80 mm Hg	Normal	systolic: less than 120 mm Hg diastolic: less than 80 mm Hg
At Risk (prehypertension)	systolic: 120–139 mm Hg diastolic: 80–89 mm Hg	Elevated	systolic: 120–129 mm Hg diastolic: less than 80 mm Hg
High Blood Pressure (hypertension)	systolic: 140 mm Hg or higher diastolic: 90 mm Hg or higher	High blood pressure (hypertension)	systolic: 130 mm Hg or higher diastolic: 80 mm Hg or higher

Note: These are resting blood pressures. Blood pressure can and should go up significantly from these levels with any exertion or stress.

How to Check a Resting Blood Pressure

Checking blood pressure in a medical office is problematic. This is because medical offices are stressful and we have to drive, bike, and walk to get into them. For this reason, it is hard to determine the true resting blood pressure in the office. This is why at home blood pressure monitoring is essential. Follow the below steps to obtain a resting blood pressure at home.

1. Get a forearm blood pressure cuff from a reputable vendor (avoid wrist cuffs).
2. Empty your bladder.
3. Avoid alcohol and stimulants like caffeine or nicotine.
4. Sit down in a comfortable and relaxing place for at least 5 minutes with your blood pressure cuff on your upper arm, per the manufacturer instructions. The cuff must fit snugly and be sized appropriately. Wonder Medicine can help make sure you have the right size cuff.

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5. Sit upright, uncross your legs, with your back supported, and place your arm on a surface to bring it up to heart level.



6. Press the 'Start' button. Do not talk or move during the process as it will result in erroneous results.
7. When done recording and the cuff has completely deflated you can take off the cuff.
8. Record your blood pressure in your log with date and time.
9. If you need to retake your blood pressure, ensure to give your arm a 3-5 minute break or switch arms.
10. Check a resting blood pressure everyday if you have high blood pressure and at least one time every month if you do not.

Chapter 19: Longevity Treatment Protocols

Interested in taking your Longevity to the next level with more than just lifestyle? Then please consider joining the Wonder Medicine, Longevity and Performance Program. Wonder Medicine is a research based institution. We seek to learn what treatments and

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lifestyle recommendations effectively extend lifespan and healthspan. The Longevity and Performance Program creates a health metric tracking infrastructure. This infrastructure can be used to monitor current health, performance, and health trajectory. Additionally, this infrastructure allows for the testing of treatments and lifestyle protocols that target the biology of aging. There is so much to learn in the Longevity Medicine space. Wonder Medicine seeks to understand what treatments are most efficacious by utilizing Longevity Treatment Protocols, monitoring, and continuous improvement.

Longevity Treatment Protocols

Longevity treatment protocols are lifestyle protocols, pharmaceuticals, nutraceuticals, and regenerative medicine interventions meant to help Wonder Medicine Program Members live better, for longer. Longevity treatment protocols will be updated, added, and deleted from time to time, based on what strategies are performing best as well as what current peer reviewed research suggests may be most helpful. Wonder Medicine offers the below 11 Longevity Treatment Protocols as of September 1, 2023

1. Metformin Longevity Protocol
2. Rapamycin Longevity Protocol
3. DHEA Replacement Protocol
4. Men's Testosterone Replacement Protocol
5. Women's Hormone Replacement Protocol
6. NAD+ Longevity Protocol
7. Exosome Replacement Protocol
8. Apolipoprotein B Lowering Protocol
9. Sauna Longevity Protocol
10. Calorie Restriction Longevity Protocol
11. Prolonged Fasting Longevity Protocol

If any of the above longevity treatment protocols sound appealing to you, please contact Wonder Medicine.

website: <https://www.wondermedicine.com/>

email: info@wondermedicine.com

phone: 208-342-1129

address: 3366 W. Overland Rd. Boise, Idaho 83705

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Do not attempt any of these longevity treatment protocols without the help of a licensed and experienced medical provider

Chapter 20: Life Fulfillment, Emotional, and Spiritual Wellness

Emotional and Spiritual Wellness

There is no point to extending the length of your life if you are not emotionally and spiritually well. Life without these things can be torture. This is why profound depression can often result in an individual choosing to harm themselves or even take their own life. As such, any good Longevity Program must address these issues first.

Emotional wellness starts with purpose. Having a clear and defined purpose makes life choices easier. When we make choices that align with our purpose, our bodies and minds can be at peace. So this is step number one; know your purpose and allow your purpose to drive the way you live your life.

However, purpose alone is not enough. Every person needs tools to help them feel their emotions, regulate, and keep them in check. This is where healthy thought patterns, positive thinking, mature coping mechanisms, and healthy stress reduction tactics can be so helpful (see lifestyle chapters above).

Additionally, treating mental health disease and addiction are also critically important. Mental health problems cause people to withdraw from life, lose interest, isolate, and decline. Addiction causes the same issues as well as physical bodily harm. Both mental health disease and addiction also greatly increase the risk of physical health issues like heart disease and metabolic syndrome. Take action against mental health problems and addiction now. This is the best way to start your longevity journey.

Ketamine

Ketamine is a small molecule used in medicine for pain and anesthesia for over 50 years. At lower doses, ketamine can also rapidly improve depression, anxiety, PTSD, OCD, addiction, and even suicidal ideation. Ketamine therapy is available to all Program Members struggling with the above mental health problems and addiction. Ketamine can also be a powerful tool to help people find meaning, view one's life from a third party perspective, and make behavioral changes easier. We have had tremendous success working with ketamine for years and will continue to offer this life changing intervention. Please speak with your mental health provider or call Wonder Medicine if you are interested in learning more about ketamine.

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Classic Hallucinogens and MDMA (methylenedioxymethamphetamine)

Classic hallucinogens like psilocybin as well as MDMA show tremendous promise in the treatment of multiple mental health disorders. They are also powerful tools for improving relationships and emotional wellness. As these therapeutics become legal, Wonder Medicine will adopt them as early as possible. Set and Setting are essential. Please speak to your healthcare provider before using classic hallucinogens or MDMA for medicinal purposes.

Life Fulfillment

Living a purposeful life, performing optimally, and adding value to people, society, and/or the environment will result in tremendous life fulfillment. Living a fulfilling and meaningful life is perhaps the most important thing anyone can hope to do.

Happiness is often sought after in popular culture and even in many research studies. We believe this is a huge mistake. Happiness is a broad term. In today's world it is often synonymous with immediate satisfaction or pleasure. Program Members are strongly discouraged from optimizing immediate happiness.

Living a fulfilling life often requires hard-work, sacrifice, hardships, and short term loss in the pursuit of long term, meaningful gains. This process is hardly ever fun and often at odds with "happiness" as it is used mostly today.

At Wonder Medicine, we seek true long term happiness. We think this is better described as life-fulfillment, and therefore avoid the use of the word happiness altogether.

Chapter 21: Notes from Bill Brandenburg, MD

As the saying goes, "without your health you have nothing." Having worked with sick patients both in and out of the hospital for years, I can tell you this is unequivocally true. I have seen people lose their minds and the function of their bodies. This can be horrific to both the individual and the people who knew them. There truly are worse things than death. Most people, even healthcare providers, often look at this loss of mind and body as abrupt. But the process is hardly ever abrupt. It happens little by little over years and even decades. Sadly, and most often, nobody paid any attention to all the signs until the very end. By this point it was too late and nothing could be done. But to someone who knows where to look and is actively monitoring, these signs are often apparent and even measurable for years leading up to their initial diagnosis.

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Most people have big plans for retirement. People think with time and money, they will be able to do all the things they want to do. People think about traveling in those final years, engaging in cool projects, chasing passions they never had enough time for, spending time with family and loved ones, playing with grandkids, and recreating with boats, planes, outdoor sports, and everything else imaginable. But when people finally get to their later years, an increasingly larger number of people are finding that their health and fitness are too poor to engage in these activities. Without health, money and time are not so helpful. Since 2019, the average lifespan in the United States has fallen from 79 to 76 years old. Additionally, other markers of good health are also deteriorating. Maternal mortality is rising (more moms are dying in childbirth), chronic diseases are skyrocketing, and over 90% of people in the United States have at least one sign of metabolic syndrome. Metabolic syndrome is covered in Chapter 8, but what you need to know is that most US adults have it, it is the great killer of our time, and most people are flying under the radar with this life threatening disease for decades before it is brought to their attention in primary care or other medical settings. Most people's health problems go unknown for years and even decades under our current healthcare system. We (doctors and healthcare) are failing to deliver health and people's lives are being ruined as a result. I think this is a big reason why so many healthcare workers are burned out. It sucks to fail! Personally, I am tired of failure and unwilling to spend my career doing it.

Simply put, healthcare is not working. But is it actually broken? While healthcare is failing to deliver health, I believe healthcare and the medical industrial complex of the United States is functioning exactly as designed. Healthcare in the United States jumps into action when a person becomes ill. Only after a person develops diabetes, heart disease, has suffered a stroke, or develops a life changing illness or chronic disease, does medicine kick in. Prevention is not part of the strategy. Sure a few pennies of each dollar we spend on healthcare go toward prevention. But as a doctor working in the system, I can tell you that this is mostly for show as prevention pays no money and is therefore, severely disincentivized. What we have is more accurately termed, sickcare.

Healthcare systems, drug companies, and doctors make money off of sick people. Keeping people well does not pay in our current model and therefore is completely disincentivized. Meanwhile the rise of ultra-processed junk food and the standard american diet (SAD) is killing us slowly (more in Chapter 9). This fake food now makes up >66% of the United States diet and is driving most major killers of humans. Think heart disease, cancer, and diabetes. Pair this with an increasingly sedentary population and you have a recipe for disaster. Society is literally deteriorating under the weight of our increasingly poor health. No pun intended.

Who loves a chronically ill population? Drug companies. Don't get me wrong, drug companies have delivered some amazing technologies that have and continue to save lives. We will be using many such pharmaceuticals in the Longevity and Performance Program.

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But, drug companies also have a dark side and are exceptionally good at making money. Make no mistake, these are the smartest people in the world. Drug companies have found out that “treating” a chronic disease with a daily medication is much more lucrative than curing the disease.

So, giant food companies and our sedentary lifestyles are making us sick. Pharmaceutical companies are enrolling us onto their daily payroll at earlier ages and in record numbers, and healthcare systems have a lot of sick people to draw money from. But who loses.....we all do.

So most of us are walking around sick, somewhat by design, and our healthcare system continues to tell us we are fine, until the later stages of disease when we clearly are not. But nothing is fine! Obesity is soaring. Diabetes type 2 is rampant. Our bodies are getting weaker. Sperm counts have dropped 40% in 40 years and some hormone levels along with them. Infertility is rising sharply in both men and women. Meanwhile, most of us are fatigued, our thoughts are not clear, our mental health is deteriorating, and addiction and other unhealthy coping strategies are rising at alarming rates. The house is on fire and most of us are either oblivious, not healthy enough to act on it, caught in the system, or making too much money to act against it.

Moreover both health and unhealth are contagious. If the people around you are depressed, addicted to drugs, suffer from heart disease, Type 2 Diabetes, or other forms of illness, both acute or chronic, you are more likely to have these problems. Luckily, if the people around you are healthy, fit, and emotionally well, you are also more likely to take on these positive traits. So as more people’s health deteriorates, they drag the rest of us down with them. It’s time to turn the tide.

In spite of millions of good intentioned people working in the industry, healthcare is failing to deliver what really matters, health. This failure is killing our society and healthcare providers are burning out at alarming rates. Going to a doctor once a year for 15 minutes and having a few basic tests done is not cutting it. Prevention in United States healthcare is a joke. This must change if we are to survive and thrive. Ready for a paradigm shift?

Wonder Medicine turns healthcare upside down. Instead of waiting for chronic diseases to develop, we take action by optimizing health, longevity, and performance years and even decades before disease and disability develop. We use health tracking, treatments that targets the biology of aging directly, big data, artificial intelligence, and a team-based approach. We will succeed, grow, and prosper, so that you may prosper. This is our purpose!

Thanks for optimizing your life, listening to Full Scope, reading this handbook, and considering the Longevity and Performance Program.

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Bill Brandenburg, MD
Wonder Medicine and Full Scope Founder

Chapter 22: References

1. Yorgason JB, Draper TW, Bronson H, Nielson M, Babcock K, Jones K, Hill MS, Howard M. Biological, Psychological, and Social Predictors of Longevity Among Utah Centenarians. *Int J Aging Hum Dev*. 2018 Oct;87(3):225-243. doi: 10.1177/0091415018757211. Epub 2018 Mar 25. PMID: 29577740.
2. Cao Y, DiPiro N, Krause JS. Life Satisfaction Trend and Mortality After Traumatic Spinal Cord Injury: A Cohort Study. *Top Spinal Cord Inj Rehabil*. 2023 Winter;29(1):33-41. doi: 10.46292/sci22-00090. Epub 2023 Feb 15. PMID: 36819925; PMCID: PMC9936900.
3. Sadler ME, Miller CJ, Christensen K, McGue M. Subjective wellbeing and longevity: a co-twin control study. *Twin Res Hum Genet*. 2011 Jun;14(3):249-56. doi: 10.1375/twin.14.3.249. PMID: 21623655; PMCID: PMC3105329.
4. Walker, Matthew. *Why We Sleep; Unlocking the Power of Sleep and Dreams*. Scribner. 2017
5. Troynikov O, Watson CG, Nawaz N. Sleep environments and sleep physiology: A review. *J Therm Biol*. 2018
6. Lowe CJ, Safati A, Hall PA. The neurocognitive consequences of sleep restriction: A meta-analytic review. *Neurosci Biobehav Rev*. 2017
7. Owens JA, Weiss MR. Insufficient sleep in adolescents: causes and consequences. *Minerva Pediatr*. 2017
8. <https://courses.drhyman.com/sleep-course-own>
9. Getting a Good Night's Sleep. NIH. <https://www.nia.nih.gov/health/good-nights-sleep>
10. Brain Basics: Understanding sleep. <https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Understanding-Sleep>
11. Elizabeth L, Machado P, Zinöcker M, Baker P, Lawrence M. Ultra-Processed Foods and Health Outcomes: A Narrative Review. *Nutrients*. 2020; 12(7):1955. <https://doi.org/10.3390/nu12071955>
12. Longo VD, Anderson RM. Nutrition, longevity and disease: From molecular mechanisms to interventions. *Cell*. 2022 Apr 28;185(9):1455-1470. doi: 10.1016/j.cell.2022.04.002. PMID: 35487190; PMCID: PMC9089818.

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Live better, longer.

13. Kokkinos P, Faselis C, Samuel IBH, Pittaras A, Doumas M, Murphy R, Heimall MS, Sui X, Zhang J, Myers J. Cardiorespiratory Fitness and Mortality Risk Across the Spectra of Age, Race, and Sex. *J Am Coll Cardiol*. 2022 Aug 9;80(6):598-609. doi: 10.1016/j.jacc.2022.05.031. PMID: 35926933.
14. Strulik H. Smoking kills: An economic theory of addiction, health deficit accumulation, and longevity. *J Health Econ*. 2018 Nov;62:1-12. doi: 10.1016/j.jhealeco.2018.09.001. Epub 2018 Sep 15. PMID: 30261429.
15. Higgins ST. Behavior change, health, and health disparities 2021: Rural addiction and health. *Prev Med*. 2021 Nov;152(Pt 2):106834. doi: 10.1016/j.ypmed.2021.106834. Epub 2021 Oct 7. PMID: 34626647; PMCID: PMC9258004. Tan BKJ, Ng FYC, Song HJJMD, Tan NKW, Ng LS, Loh WS.
16. Holt-Lunstad J. Why Social Relationships Are Important for Physical Health: A Systems Approach to Understanding and Modifying Risk and Protection. *Annu Rev Psychol*. 2018 Jan 4;69:437-458. doi: 10.1146/annurev-psych-122216-011902. Epub 2017 Oct 16. PMID: 29035688.
17. Vila J. Social Support and Longevity: Meta-Analysis-Based Evidence and Psychobiological Mechanisms. *Front Psychol*. 2021 Sep 13;12:717164. doi: 10.3389/fpsyg.2021.717164. PMID: 34589025; PMCID: PMC8473615.
18. Koenig HG. Religion, spirituality, and health: a review and update. *Adv Mind Body Med*. 2015 Summer;29(3):19-26. PMID: 26026153.
19. Tung J, Archie EA, Altmann J, Alberts SC. Cumulative early life adversity predicts longevity in wild baboons. *Nat Commun*. 2016 Apr 19;7:11181. doi: 10.1038/ncomms11181. PMID: 27091302; PMCID: PMC4838827.
20. Zulkarnain, Alice and Matthew S. Rutledge. 2021. "Do Men Who Work Longer Live Longer? Evidence from the Netherlands" Issue in Brief 21-8. Chestnut Hill, MA: Center for Retirement Research at Boston College.
21. Kondo MC, Jacoby SF, South EC. Does spending time outdoors reduce stress? A review of real-time stress response to outdoor environments. *Health Place*. 2018 May;51:136-150. doi: 10.1016/j.healthplace.2018.03.001. Epub 2018 Mar 29. PMID: 29604546.
22. National Center for Health Statistics. 2012. Health, United States, 2011: With Special Feature on Socioeconomic Status and Health. Hyattsville, MD: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. [http://www.cdc.gov/nchs/data/11.pdf](http://www.cdc.gov/nchs/data/hus/11.pdf)
23. Lv J, Wang W, Krafft T, Li Y, Zhang F, Yuan F. Effects of several environmental factors on longevity and health of the human population of Zhongxiang, Hubei, China. *Biol Trace Elem Res*. 2011 Nov;143(2):702-16. doi: 10.1007/s12011-010-8914-8. Epub 2010 Dec 14. PMID: 21153714.
24. Megyesiova S, Lieskovska V. Premature Mortality for Chronic Diseases in the EU Member States. *Int J Environ Res Public Health*. 2019 Oct 21;16(20):4021. doi: 10.3390/ijerph16204021. PMID: 31640142; PMCID: PMC6843938.

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-
25. Böhm M, Reil JC, Deedwania P, Kim JB, Borer JS. Resting heart rate: risk indicator and emerging risk factor in cardiovascular disease. *Am J Med.* 2015 Mar;128(3):219-28. doi: 10.1016/j.amjmed.2014.09.016. Epub 2014 Oct 15. PMID: 25447617.
 26. SPRINT Research Group; Wright JT Jr, Williamson JD, Whelton PK, Snyder JK, Sink KM, Rocco MV, Reboussin DM, Rahman M, Oparil S, Lewis CE, Kimmel PL, Johnson KC, Goff DC Jr, Fine LJ, Cutler JA, Cushman WC, Cheung AK, Ambrosius WT. A Randomized Trial of Intensive versus Standard Blood-Pressure Control. *N Engl J Med.* 2015 Nov 26;373(22):2103-16. doi: 10.1056/NEJMoa1511939. Epub 2015 Nov 9. Erratum in: *N Engl J Med.* 2017 Dec 21;377(25):2506. PMID: 26551272; PMCID: PMC4689591.
 27. Studenski SA, Peters KW, Alley DE, et al. The FNIH sarcopenia project: rationale, study description, conference recommendations, and final estimates. *J Gerontol A Biol Sci Med Sci.* 2014; 69(5):547-58. [PubMed: 24737557]
 28. Kelly Thomas, Practical and Technical Advantages of DXA Visceral Fat Assessment Compared to Computed Tomography. Hologic.
 29. Lundblad MW, Jacobsen BK, Johansson J, De Lucia Rolfe E, Grimsgaard S, Hopstock LA. Reference Values for DXA-Derived Visceral Adipose Tissue in Adults 40 Years and Older from a European Population: The Tromsø Study 2015-2016. *J Obes.* 2021 May 15;2021:6634536. doi: 10.1155/2021/6634536. PMID: 34055405; PMCID: PMC8147540.
 30. Huo L, Li K, Deng W, Wang L, Xu L, Shaw JE, Jia P, Zhou D, Cheng XG. Optimal cut-points of visceral adipose tissue areas for cardiometabolic risk factors in a Chinese population: a cross-sectional study. *Diabet Med.* 2019 Oct;36(10):1268-1275. doi: 10.1111/dme.14060. Epub 2019 Aug 4. PMID: 31257674.
 31. Lorentzon M, Cummings SR. Osteoporosis: the evolution of a diagnosis. *J Intern Med.* 2015 Jun;277(6):650-61. doi: 10.1111/joim.12369. PMID: 25832448.
 32. Sheu A, Diamond T. Bone mineral density: testing for osteoporosis. *Aust Prescr.* 2016 Apr;39(2):35-9. doi: 10.18773/austprescr.2016.020. Epub 2016 Apr 1. PMID: 27340320; PMCID: PMC4917635.
 33. Chen HC, Wang WT, Hsi CN, Chou CY, Lin HJ, Huang CC, Chang CT. Abdominal aortic calcification score can predict future coronary artery disease in hemodialysis patients: a 5-year prospective cohort study. *BMC Nephrol.* 2018 Nov 8;19(1):313. doi: 10.1186/s12882-018-1124-x. PMID: 30409161; PMCID: PMC6225627.
 34. Spirometry NHANES III Reference Values.
CDC.gov/niosh/topics/spirometry/nhanes.html
 35. Langan RC, Goodbred AJ. Office Spirometry: Indications and Interpretation. *Am Fam Physician.* 2020 Mar 15;101(6):362-368. PMID: 32163256.
 36. Agusti A, Fabbri LM, Baraldi E, Celli B, Corradi M, Faner R, Martinez FD, Melén E, Papi A. Spirometry: A practical lifespan predictor of global health and chronic respiratory and non-respiratory diseases. *Eur J Intern Med.* 2021 Jul;89:3-9. doi: 10.1016/j.ejim.2021.04.027. Epub 2021 May 18. PMID: 34016514.
-

This Handbook does not create any form of provider patient relationship. The handbook is not intended to diagnose, treat, or cure any specific disease. If you have a medical problem, please talk to your healthcare provider or enroll in Wonder Medicine's Longevity and Performance program.

-
37. Agusti A, Fabbri LM, Baraldi E, Celli B, Corradi M, Faner R, Martinez FD, Melén E, Papi A. Spirometry: A practical lifespan predictor of global health and chronic respiratory and non-respiratory diseases. *Eur J Intern Med*. 2021 Jul;89:3-9. doi: 10.1016/j.ejim.2021.04.027. Epub 2021 May 18. PMID: 34016514.
 38. Ehrlich JR, Ramke J, Macleod D, Burn H, Lee CN, Zhang JH, Waldock W, Swenor BK, Gordon I, Congdon N, Burton M, Evans JR. Association between vision impairment and mortality: a systematic review and meta-analysis. *Lancet Glob Health*. 2021 Apr;9(4):e418-e430. doi: 10.1016/S2214-109X(20)30549-0. Epub 2021 Feb 16. PMID: 33607015; PMCID: PMC7966688.
 39. Associations of Hearing Loss and Dual Sensory Loss With Mortality: A Systematic Review, Meta-analysis, and Meta-regression of 26 Observational Studies With 1 213 756 Participants. *JAMA Otolaryngol Head Neck Surg*. 2022;148(3):220-234. doi:10.1001/jamaoto.2021.3767
 40. Shetler K, Marcus R, Froelicher V, et al. Heart rate recovery: validation and methodologic issues. *J Am Coll Cardiol*. 2001 Dec, 38 (7) 1980-1987.
 41. Cole CR, Blackstone EH, Pashkow FJ, Snader CE, Lauer MS. Heart-rate recovery immediately after exercise as a predictor of mortality. *N Engl J Med*. 1999 Oct 28;341(18):1351-7. doi: 10.1056/NEJM199910283411804. PMID: 10536127.
 42. Mandsager K, Harb S, Cremer P, Phelan D, Nissen SE, Jaber W. Association of Cardiorespiratory Fitness With Long-term Mortality Among Adults Undergoing Exercise Treadmill Testing. *JAMA Netw Open*. 2018;1(6):e183605. doi:10.1001/jamanetworkopen.2018
 43. Strasser B, Burtscher M. Survival of the fittest: VO_2 max, a key predictor of longevity? *Front Biosci (Landmark Ed)*. 2018 Mar 1;23(8):1505-1516. doi: 10.2741/4657. PMID: 29293447.
 44. Macfarlane, D.J., Wu, H.L. Inter-unit variability in two ParvoMedics TrueOne 2400 automated metabolic gas analysis systems. *Eur J Appl Physiol* 113, 753-762 (2013). <https://doi.org/10.1007/s00421-012-2483-9>
 45. D'Onofrio G, Kirschner J, Prather H, Goldman D, Rozanski A. Musculoskeletal exercise: Its role in promoting health and longevity. *Prog Cardiovasc Dis*. 2023 Mar-Apr;77:25-36. doi: 10.1016/j.pcad.2023.02.006. Epub 2023 Feb 24. PMID: 36841491.
 46. <https://testsforsports.com/strength/wall-sit-test>
 47. Li R, Xia J, Zhang XI, Gathirua-Mwangi WG, Guo J, Li Y, McKenzie S, Song Y. Associations of Muscle Mass and Strength with All-Cause Mortality among US Older Adults. *Med Sci Sports Exerc*. 2018 Mar;50(3):458-467. doi: 10.1249/MSS.0000000000001448. PMID: 28991040; PMCID: PMC5820209.
 48. Leonardo Barbosa Barreto de Brito and others, Ability to sit and rise from the floor as a predictor of all-cause mortality, *European Journal of Preventive Cardiology*, Volume 21, Issue 7, 1 July 2014
 49. Wang YC, Bohannon RW, Li X, Sindhu B, Kapellusch J. Hand-Grip Strength: Normative Reference Values and Equations for Individuals 18 to 85 Years of Age

This Handbook does not create any form of provider patient relationship. The handbook is not intended to diagnose, treat, or cure any specific disease. If you have a medical problem, please talk to your healthcare provider or enroll in Wonder Medicine's Longevity and Performance program.

- Residing in the United States. *J Orthop Sports Phys Ther.* 2018 Sep;48(9):685-693. doi: 10.2519/jospt.2018.7851. Epub 2018 May 23. PMID: 29792107.
50. Andersen SL, Du M, Cosentino S, Schupf N, Rosso AL, Perls TT, Sebastiani P; Long Life Family Study. Slower Decline in Processing Speed Is Associated with Familial Longevity. *Gerontology.* 2022;68(1):17-29. doi: 10.1159/000514950. Epub 2021 May 4. PMID: 33946077; PMCID: PMC9093735.
51. Berrigan LI, LeFevre JA, Rees LM, Berard JA, Francis A, Freedman MS, Walker LAS. The symbol digit modalities test and the paced auditory serial addition test involve more than processing speed. *Mult Scler Relat Disord.* 2022 Dec;68:104229. doi: 10.1016/j.msard.2022.104229. Epub 2022 Oct 7. PMID: 36279599.
52. Glucose Tolerance Test.
[https://www.mayoclinic.org/tests-procedures/glucose-tolerance-test/about/pac-20394296#:~:text=A%20normal%20fasting%20blood%20glucose,\(8.6%20mmol%2FL\).](https://www.mayoclinic.org/tests-procedures/glucose-tolerance-test/about/pac-20394296#:~:text=A%20normal%20fasting%20blood%20glucose,(8.6%20mmol%2FL).)
53. Eyth E, Basit H, Swift CJ. Glucose Tolerance Test. [Updated 2023 Apr 23]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023
54. Glucose.
<https://www.cdc.gov/diabetes/basics/getting-tested.html#:~:text=A%20fasting%20blood%20sugar%20level,higher%20indicates%20you%20have%20diabetes.>
55. Otto Tschritter, Andreas Fritsche, Fatemeh Shirkavand, Fausto Machicao, Hans Häring, Michael Stumvoll; Assessing the Shape of the Glucose Curve During an Oral Glucose Tolerance Test . *Diabetes Care* 1 April 2003
56. Insulin. <https://emedicine.medscape.com/article/2089224-overview>
57. Neild GH. Life expectancy with chronic kidney disease: an educational review. *Pediatr Nephrol.* 2017 Feb;32(2):243-248. doi: 10.1007/s00467-016-3383-8. Epub 2016 Apr 26. PMID: 27115888; PMCID: PMC5203814.
58. Xie K, Chen CH, Tsai SP, Lu PJ, Wu H, Zeng Y, Ye Y, Tu H, Wen C, Huang M, Zhang Y, Lee JH, Tsai MK, Wen CP, Wu X. Loss of Life Expectancy by 10 Years or More From Elevated Aspartate Aminotransferase: Finding Aspartate Aminotransferase a Better Mortality Predictor for All-Cause and Liver-Related than Alanine Aminotransferase. *Am J Gastroenterol.* 2019 Sep;114(9):1478-1487. doi: 10.14309/ajg.0000000000000332. PMID: 31425154.
59. Cieslak KP, Baur O, Verheij J, Bennink RJ, van Gulik TM. Liver function declines with increased age. *HPB (Oxford).* 2016 Aug;18(8):691-6. doi: 10.1016/j.hpb.2016.05.011. Epub 2016 Jun 20. PMID: 27485064; PMCID: PMC4972366.
60. Chen PL, Li ZH, Yang HL, Cao ZJ, Cheng X, Zhao F, Zhang XR, Lv YB, Li FR, Zhou YF, Li HN, Qu YL, Yin ZX, Liu L, Wu XB, Shi XM, Mao C. Associations Between High-Sensitivity C-Reactive Protein and All-Cause Mortality Among Oldest-Old in Chinese Longevity Areas: A Community-Based Cohort Study. *Front Public Health.* 2022 Feb 8;10:824783. doi: 10.3389/fpubh.2022.824783. PMID: 35211447; PMCID: PMC8861080.

This Handbook does not create any form of provider patient relationship. The handbook is not intended to diagnose, treat, or cure any specific disease. If you have a medical problem, please talk to your healthcare provider or enroll in Wonder Medicine's Longevity and Performance program.

-
61. Gu HQ, Yang KX, Lin JX, Jing J, Zhao XQ, Wang YL, Liu LP, Meng X, Jiang Y, Li H, Wang YJ, Li ZX. Association between high-sensitivity C-reactive protein, functional disability, and stroke recurrence in patients with acute ischaemic stroke: A mediation analysis. *EBioMedicine*. 2022 Jun;80:104054. doi: 10.1016/j.ebiom.2022.104054. Epub 2022 May 13. PMID: 35576642; PMCID: PMC9118507.
 62. Johnson AA, Stolzing A. The role of lipid metabolism in aging, lifespan regulation, and age-related disease. *Aging Cell*. 2019 Dec;18(6):e13048. doi: 10.1111/ace1.13048. Epub 2019 Sep 27. PMID: 31560163; PMCID: PMC6826135.
 63. Johannesen CDL, Mortensen MB, Langsted A, Nordestgaard BG. Apolipoprotein B and Non-HDL Cholesterol Better Reflect Residual Risk Than LDL Cholesterol in Statin-Treated Patients. *J Am Coll Cardiol*. 2021 Mar 23;77(11):1439-1450. doi: 10.1016/j.jacc.2021.01.027. PMID: 33736827.
 64. Mohammadi-Shemirani P, Chong M, Narula S, Perrot N, Conen D, Roberts JD, Thériault S, Bossé Y, Lanktree MB, Pigeure M, Paré G. Elevated Lipoprotein(a) and Risk of Atrial Fibrillation: An Observational and Mendelian Randomization Study. *J Am Coll Cardiol*. 2022 Apr 26;79(16):1579-1590. doi: 10.1016/j.jacc.2022.02.018. PMID: 35450575; PMCID: PMC9584800.
 65. Emerging Risk Factors Collaboration; Erqou S, Kaptoge S, Perry PL, Di Angelantonio E, Thompson A, White IR, Marcovina SM, Collins R, Thompson SG, Danesh J. Lipoprotein(a) concentration and the risk of coronary heart disease, stroke, and nonvascular mortality. *JAMA*. 2009 Jul 22;302(4):412-23. doi: 10.1001/jama.2009.1063. PMID: 19622820; PMCID: PMC3272390.
 66. Kronenberg F. Lipoprotein(a). *Handb Exp Pharmacol*. 2022;270:201-232. doi: 10.1007/164_2021_504. PMID: 34196811.
 67. Tabas I, Lichtman AH. Monocyte-Macrophages and T Cells in Atherosclerosis. *Immunity*. 2017 Oct 17;47(4):621-634. doi: 10.1016/j.immuni.2017.09.008. PMID: 29045897; PMCID: PMC5747297.
 68. Valiathan R, Ashman M, Asthana D. Effects of Ageing on the Immune System: Infants to Elderly. *Scand J Immunol*. 2016
 69. Sadighi Akha AA. Aging and the immune system: An overview. *J Immunol Methods*. 2018 Dec;463:21-26. doi: 10.1016/j.jim.2018.08.005. Epub 2018 Aug 14. PMID: 30114401.
 70. Jayedi A, Khan TA, Aune D, Emadi A, Shab-Bidar S. Body fat and risk of all-cause mortality: a systematic review and dose-response meta-analysis of prospective cohort studies. *Int J Obes (Lond)*. 2022
 71. Otsuka, R., Matsui, Y., Tange, C. *et al*. What is the best adjustment of appendicular lean mass for predicting mortality or disability among Japanese community dwellers?. *BMC Geriatr* 18, 8 (2018). <https://doi.org/10.1186/s12877-017-0699-6>
 72. <https://dexalytics.com/news/appendicular-skeletal-muscle-index-athletes/>
 73. Centanarian Statistics. <https://www.bumc.bu.edu/centenarian/statistics/>

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-
74. Deelen J, Evans DS, Arking DE, Tesi N, Nygaard M, Liu X, Wojczynski MK, Biggs ML, van der Spek A, Atzmon G, Ware EB, Sarnowski C, Smith AV, Seppälä I, Cordell HJ, Dose J, Amin N, Arnold AM, Ayers KL, Barzilai N, Becker EJ, Beekman M, Blanché H, Christensen K, Christiansen L, Collerton JC, Cubaynes S, Cummings SR, Davies K, Debrabant B, Deleuze JF, Duncan R, Faul JD, Franceschi C, Galan P, Gudnason V, Harris TB, Huisman M, Hurme MA, Jagger C, Jansen I, Jylhä M, Kähönen M, Karasik D, Kardia SLR, Kingston A, Kirkwood TBL, Launer LJ, Lehtimäki T, Lieb W, Lyttikäinen LP, Martin-Ruiz C, Min J, Nebel A, Newman AB, Nie C, Nohr EA, Orwoll ES, Perls TT, Province MA, Psaty BM, Raitakari OT, Reinders MJT, Robine JM, Rotter JI, Sebastiani P, Smith J, Sørensen TIA, Taylor KD, Uitterlinden AG, van der Flier W, van der Lee SJ, van Duijn CM, van Heemst D, Vaupel JW, Weir D, Ye K, Zeng Y, Zheng W, Holstege H, Kiel DP, Lunetta KL, Slagboom PE, Murabito JM. A meta-analysis of genome-wide association studies identifies multiple longevity genes. *Nat Commun.* 2019 Aug 14;10(1):3669. doi: 10.1038/s41467-019-11558-2. Erratum in: *Nat Commun.* 2021 Apr 23;12(1):2463. PMID: 31413261; PMCID: PMC6694136.
 75. GBD US Health Disparities Collaborators. Life expectancy by county, race, and ethnicity in the USA, 2000-19: a systematic analysis of health disparities. *Lancet.* 2022 Jul 2;400(10345):25-38. doi: 10.1016/S0140-6736(22)00876-5. Epub 2022 Jun 16. PMID: 35717994; PMCID: PMC9256789.
 76. <https://www.nih.gov/news-events/news-releases/life-expectancy-us-increased-between-2000-2019-widespread-gaps-among-racial-ethnic-groups-exist>
 77. Xu JQ, Murphy SL, Kochanek KD, Arias E. Mortality in the United States, 2021. NCHS Data Brief, no 456. Hyattsville, MD: National Center for Health Statistics. 2022. DOI: <https://dx.doi.org/10.15620/cdc:122516>.
 78. Edwards RD. The Cost of Uncertain Life Span. *J Popul Econ.* 2008 Jun 1;w14093:1149339. doi: 10.1007/s00148-012-0405-0. PMID: 22368324; PMCID: PMC3285408.
 79. Arias E, Tejada-Vera B, Kochanek KD, Ahmad FB. Provisional life expectancy estimates for 2021. *Vital Statistics Rapid Release*; no 23. Hyattsville, MD: National Center for Health Statistics. August 2022. DOI: <https://dx.doi.org/10.15620/cdc:118999>.
 80. Lustig, Robert. *Metabolics: The Lure and Lies of Processed Food, Nutrition, and Modern Medicine.* Harper Wave, 2021.
 81. Saklayen MG. The Global Epidemic of the Metabolic Syndrome. *Curr Hypertens Rep.* 2018
 82. Lemieux I, Després J-P. Metabolic Syndrome: Past, Present and Future. *Nutrients.* 2020
 83. Shi TH, Wang B, Natarajan S. The Influence of Metabolic Syndrome in Predicting Mortality Risk Among US Adults: Importance of Metabolic Syndrome Even in Adults With Normal Weight. *Prev Chronic Dis.* 2020.
 84. Mattison, J.A., et al. [Caloric restriction improves health and survival of rhesus monkeys.](#) *Nature Communications.* 2017;8:14063.
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85. National Research Council (US) Subcommittee on the Tenth Edition of the Recommended Dietary Allowances. Recommended Dietary Allowances: 10th Edition. Washington (DC): National Academies Press (US); 1989. 6, Protein and Amino Acids. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK234922/>
86. Wu G. Dietary protein intake and human health. *Food Funct*. 2016 Mar;7(3):1251-65. doi: 10.1039/c5fo01530h. PMID: 26797090.
87. Kochanek KD, Murphy SL, Xu J, Arias E. Deaths: Final Data for 2017. *Natl Vital Stat Rep*. 2019 Jun;68(9):1-77. PMID: 32501199.
88. Xu JQ, Murphy SL, Kochanek KD, Arias E. Mortality in the United States, 2021. NCHS Data Brief, no 456. Hyattsville, MD: National Center for Health Statistics. 2022. DOI: <https://dx.doi.org/10.15620/cdc:122516>.
89. Ruth Allen. Health Benefits of Nose Breathing. *Nursing and General Practice*. 2016.
90. Recinto C, Efthymeou T, Boffelli PT, Navalta JW. Effects of Nasal or Oral Breathing on Anaerobic Power Output and Metabolic Responses. *Int J Exerc Sci*. 2017;10(4):506-514. Published 2017 Jul 1.
91. James Nestor. *Breath, the New Science of a Lost Art*. 2020.
92. Manchanda SC, Madan K. Yoga and meditation in cardiovascular disease. *Clin Res Cardiol*. 2014 Sep;103(9):675-80. doi: 10.1007/s00392-014-0663-9. Epub 2014 Jan 25. Erratum in: *Clin Res Cardiol*. 2014 Sep;103(9):763. PMID: 24464106.
93. Snippe E, Dziak JJ, Lanza ST, Nyklíček I, Wichers M. The shape of change in perceived stress, negative affect, and stress sensitivity during mindfulness-based stress reduction. *Mindfulness (N Y)*. 2017 Jun;8(3):728-736. doi: 10.1007/s12671-016-0650-5. Epub 2017 Jan 10. PMID: 29057017; PMCID: PMC5648363.
94. Kushner RF, Sorensen KW. Lifestyle medicine: the future of chronic disease management. *Curr Opin Endocrinol Diabetes Obes*. 2013 Oct;20(5):389-95. doi: 10.1097/01.med.0000433056.76699.5d. PMID: 23974765.
95. Restrepo J, Lemos M. Addressing psychosocial work-related stress interventions: A systematic review. *Work*. 2021;70(1):53-62. doi: 10.3233/WOR-213577. PMID: 34511476.
96. Wikipedia.org. Stress Management. https://en.wikipedia.org/wiki/Stress_management
97. Wim Hoff. *The Wim Hof Method*. 2020.
98. Jimenez MP, DeVille NV, Elliott EG, Schiff JE, Wilt GE, Hart JE, James P. Associations between Nature Exposure and Health: A Review of the Evidence. *Int J Environ Res Public Health*. 2021
99. Buijze GA, Sierevelt IN, van der Heijden BC, Dijkgraaf MG, Frings-Dresen MH. The Effect of Cold Showering on Health and Work: A Randomized Controlled Trial. *PLoS One*. 2016
100. Ivanova YM, Blondin DP. Examining the benefits of cold exposure as a therapeutic strategy for obesity and type 2 diabetes. *J Appl Physiol (1985)*. 2021

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101. Crinnion WJ. Sauna as a valuable clinical tool for cardiovascular, autoimmune, toxicant- induced and other chronic health problems. *Altern Med Rev.* 2011
 102. Menigoz W, Latz TT, Ely RA, Kamei C, Melvin G, Sinatra D. Integrative and lifestyle medicine strategies should include Earthing (grounding): Review of research evidence and clinical observations. *Explore (NY).* 2020
 103. Chevalier G. The effect of grounding the human body on mood. *Psychol Rep.* 2015
 104. Chevalier G, Patel S, Weiss L, Chopra D, Mills PJ. The Effects of Grounding (Earthing) on Bodyworkers' Pain and Overall Quality of Life: A Randomized Controlled Trial. *Explore (NY).* 2019
 105. Ghaly M, Teplitz D. The biologic effects of grounding the human body during sleep as measured by cortisol levels and subjective reporting of sleep, pain, and stress. *J Altern Complement Med.* 2004
 106. Ewg.org
 107. https://www.ewg.org/tapwater/?qclid=CjwKCAiArOqOBhBmEiwAsgeLmZriXvSUu3_PiYW4wC3mKerLi9sdc-TfPzpu7Sow1MDD-uKmf-yCMBocfmoQAvD_BwE
 108. <https://www.ewg.org/skindeep/>
 109. Airnow.gov
 110. "Think Dirty" cell phone application
 111. Seneff, Stephanie. *Toxic Legacy: How the Weed-Killer Glyphosate is Destroying our Health and our Environment.*
 112. Carson, Rachel. *Silent Spring*
 113. Landrigan, Philip. *Children and Environmental Toxins. What Everyone Needs to Know*
 114. Pizzorno, Joseph. *How Hidden Poisons in the Air, Water, Food, and Products We Use Are Destroying Our Health—AND WHAT WE CAN DO TO FIX IT*
 115. Colborn, Theo. *Our Stolen Future: Are We Threatening our Fertility, Intelligence, and Survival.*
 116. Trasande, Leonardo: *Sicker, Fatter, Poorer: The Urgent Threat of Hormone Disrupting Chemicals to our Health and Future*
 117. Newman, Janet. *Living in the Chemical Age: How an Ounce of Prevention Can Protect your Family from a World of Toxins*
 118. Attia, Peter. *Outlive: The Science and Art of Longevity.* 2023
 119. Sinclair, David: *Why We Age and Why We Dont Have To.* 2019.
 120. Barzilai, Nir. *Age Later: Healthspan, Lifespan, and the New Science of Longevity.* 2020.

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Longevity Fundamentals Handbook, 2023

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