THE ENERGY BLUEPRINT

3 Biohacks For 200-300% More Energy

by Ari Whitten

About the author

Ari Whitten, M.S.

Ari Whitten is the founder of The Energy Blueprint. He is the best-selling author of The Ultimate Guide To Red Light Therapy, and Eat For Energy: How To Beat Fatigue, and Supercharge Your Mitochondria For All-Day Energy. He has a Bachelor of Science in Kinesiology, certifications from the National Academy of Sports Medicine as a Corrective Exercise Specialist and Performance Enhancement Specialist, has completed extensive graduate training in Clinical Psychology, and holds a Master of Science degree in Human Nutrition and Functional Medicine. He was recently voted the top health influencer of the year by thousands of his peers in the Mindshare wellness/functional medicine community. Ari is a tireless researcher who has obsessively devoted nearly 3 decades of his life to the pursuit of being on the cutting edge of the science on health and human energy optimization. You can find his podcast, programs, and supplement formulas at www.theenergyblueprint.com.

3 Scientifically Proven Biohacks for Optimal Energy & Longevity

Are you tired of waking up exhausted, dragging yourself through the day, and constantly reaching for that extra cup of coffee? Well, you're not alone! Welcome to the around-the-clock sluggish club, where fatigue has become the norm in our fast-paced, stress-filled world.

In this brief eGuide, I want to give you 3 simple technologies (that will take you no more than 20-45 minutes each day to do) that have the ability to increase your daily energy levels by 200% or 300%!

Let me ask you: What would you do with 200% or 300% more energy? Well, you’re going to be in a position to start figuring out the answer to that question if you implement what you’re going to learn here.

In today's developed nations, the "fatigue epidemic" is on the rise. We spend long hours indoors, battling high levels of stress at work and home, and the toll on our energy levels is undeniable.

Daytime fatigue isn't just about feeling tired; it comes with a host of other symptoms that hinder our daily performance and well-being. From cognitive impairments like brain fog to muscle and joint pain, insomnia, and even depression or anxiety, the impact is far-reaching.

When it comes to talk of "chronic fatigue" or "energy" online, most people don't really know what actually regulates our energy levels. It's sort of a mysterious black box that few people actually understand. Ask your local doctor what controls and regulates human energy levels (i.e. whether someone is chronically fatigued or highly energetic) and you might expect to get blank stares or some vague rambling answer about hormones, blood sugar, or sleep.

Ask even a highly skilled functional medicine doctor and you probably won't do a lot better – they might say "It could be dozens of things, and it's different for every individual" and then suggest you run a few thousand dollars of tests (many of which aren't even scientifically validated or accurate) to get a window into your internal biochemistry, and then based on any abnormalities that show up (which are typically of questionable accuracy), they'll typically give you some sort of standard supplement protocol for gut problems, brain symptoms, cholesterol, inflammation, insulin resistance, etc.

In this eGuide, I want to give you a real, straightforward, powerful, and *scientific* answer about one of the biggest (and least known) factors that control your energy levels – one that is responsible for why so many are struggling with chronically low energy levels.

Mitochondria.

You're probably already at least a little bit familiar with the most important determinant of daily energy levels: the "power plants" of our cells, mitochondria. Most people learned in high school or college biology courses that these are the "powerhouse of the cell." Unfortunately, most people's – including doctors' – knowledge of them doesn't generally go further than being able to answer that question (mitochondria are the organelle known as the "powerhouse of the cell") on the multiple-choice exam.

It turns out that our mitochondria are actually far more important than we previously thought…

If you want to understand fatigue, it's all about mitochondria. But it's actually more than just fatigue…

Poor mitochondrial health drives fatigue and low energy levels. And it also drives fragility and loss of resilience, many chronic diseases, and even has a huge influence on the rate of aging in your body and brain at the cellular level!

So as an added bonus, the 3 strategies I'll tell you about here won't only double your energy levels – they'll also have the added "side effects" of dramatically increasing your resistance to stress (resilience), helping to prevent dozens of diseases (especially the major killers like cancer and heart disease), and extending your lifespan.

For now, let's focus on energy and fatigue.

I want you to think about fatigue (chronically low energy levels) as having two fundamental causes:

1. **Total Body Stress Load (Allostatic Load).** This is just the combination of all the different kinds of stressors that you can imagine. This is everything from psychological and emotional stress, to toxins, to pollutants in the environment, to a poor diet, to sleep deprivation, to poor gut health, and many others.

2. **Your Mitochondrial Engine.** The mitochondria are the energy generators in your cells that produce virtually all the energy for virtually all the trillions of cells in your body. So the relationship to your chronically low energy levels should be obvious. If our mitochondrial engine is smaller or less efficient, our energy levels, physical performance, and brain function all nosedive into the ground. The size of your cellular engine determines how much energy can be produced to power the function of the cells, and, importantly, how much energy is left over (in surplus) to buffer the increased energetic demands of stress. Basically, the question is, do you have cells full of big, strong cellular energy generators, or cells with weak, shriveled energy generators along with very few of them? In other words, do you have a big 500-horsepower V8 Ferrari engine in your cells or a

moped engine? (I'll explain more about what this means in a moment).

So, the equation for predicting your energy levels is:

Cellular Engine Size (energy production capacity) - Total Body Stress Load (total energetic demand on the system) = Energy Levels

Now there can be two different scenarios or different combinations here.

Scenario 1: You have way too many of these stressors and too large of a total body stress load.
Scenario 2: You can have weakened, resilient systems in your body.
Scenario 3: You can have a combination of both factors.

For most people, it's a combination of the two.

To simplify this, the total body stress load and the body's resilient systems determine your energy levels. At the most basic level, these are the two key factors that lead to how energetic or fatigued you are. Most doctors, whether we're talking about conventional doctors or holistic or functional medicine doctors, almost everybody is focused on point 1 (the total body stress load),

and almost no one is talking about or even aware of the mitochondrial engine and how it relates to health and energy.

Even though hardly anyone talks about it, I want to make the case that the size of your cellular engine is extraordinarily important – likely even more important (in most cases) than the degree of stress you're being exposed to.

First, let's address the first factor – Total Body Stress Load – and specifically how it decreases your energy levels.

Mitochondria Aren't Just Energy Generators – They're Danger Sensors

It turns out that mitochondria are much more than just mindless little creatures that produce energy from the food we eat. They actually control and regulate our energy levels by deciding whether or not it's safe to produce energy.

Mitochondria sit at the central hub of our metabolism and function as gatekeepers of cell life and cell death [1]. They influence cell signaling, regulate cell death processes, impact cellular redox balance, and house important biosynthetic pathways [2].

When our mitochondria fail, we don't just lose our energy, we lose our health. And there are many things that can cause mitochondria to fail. These threats are part of what's called the Cell Danger Response (CDR) [3], a term coined in 2014 by Dr. Robert Naviaux of the Mitochondrial and

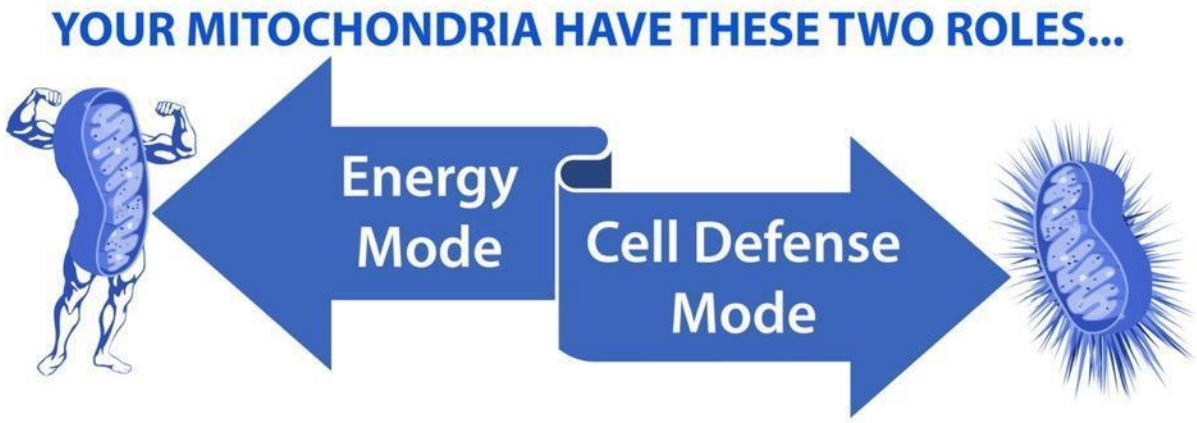
Metabolic Disease Center at the University of California San Diego.

Dr. Naviaux coined the CDR concept to function as a unifying explanation for why many chronic, developmental, autoimmune, and degenerative disorders develop. It's an evolutionarily conserved pathway that allows our mitochondria to shift their focus toward any chemical, physical, or biological threats that exceed our cellular capacity to adapt, thereby helping protect the cell as a whole.

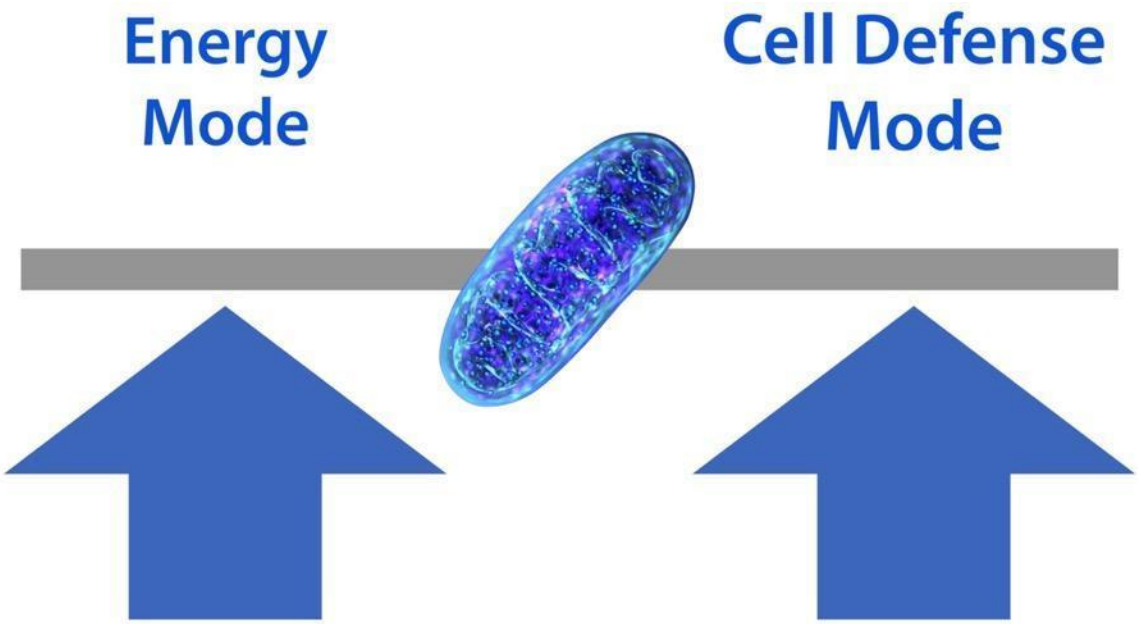
Here's how Dr. Naviaux describes it:

> *"Mitochondria lie at the hub of the wheel of metabolism, coordinating over 500 different chemical reactions as they monitor and regulate the chemical milieu of the cell. It turns out that* ***when mitochondria detect "danger" to the cell, they shift first into a stress mode, then fight mode that takes most of the energy-producing metabolic functions of mitochondria offline****. … Energy production and cellular defense are two sides to the same coin...* ***Mitochondria cannot perform both energy and defense functions at 100% capacity at the same time****."*

Our mitochondria essentially function in two modes: the life-giving energy production mode, and the death-inducing defense (or danger) mode.



These functions – defense and energy production – are mutually exclusive. Meaning, they can't do both energy production and defense well, at the same time. So, the more your mitochondria go into defense mode, the less they can operate in energy mode!



Think of it like this: If you're in your kitchen preparing dinner (the food you need to function), and then a criminal walks into your home, holds you at gunpoint, and says "Give me all your money," you're not just going to carry on chopping vegetables… You are going to drop dinner prep and deal with that threat.

And that's exactly how your cells respond to a threat.

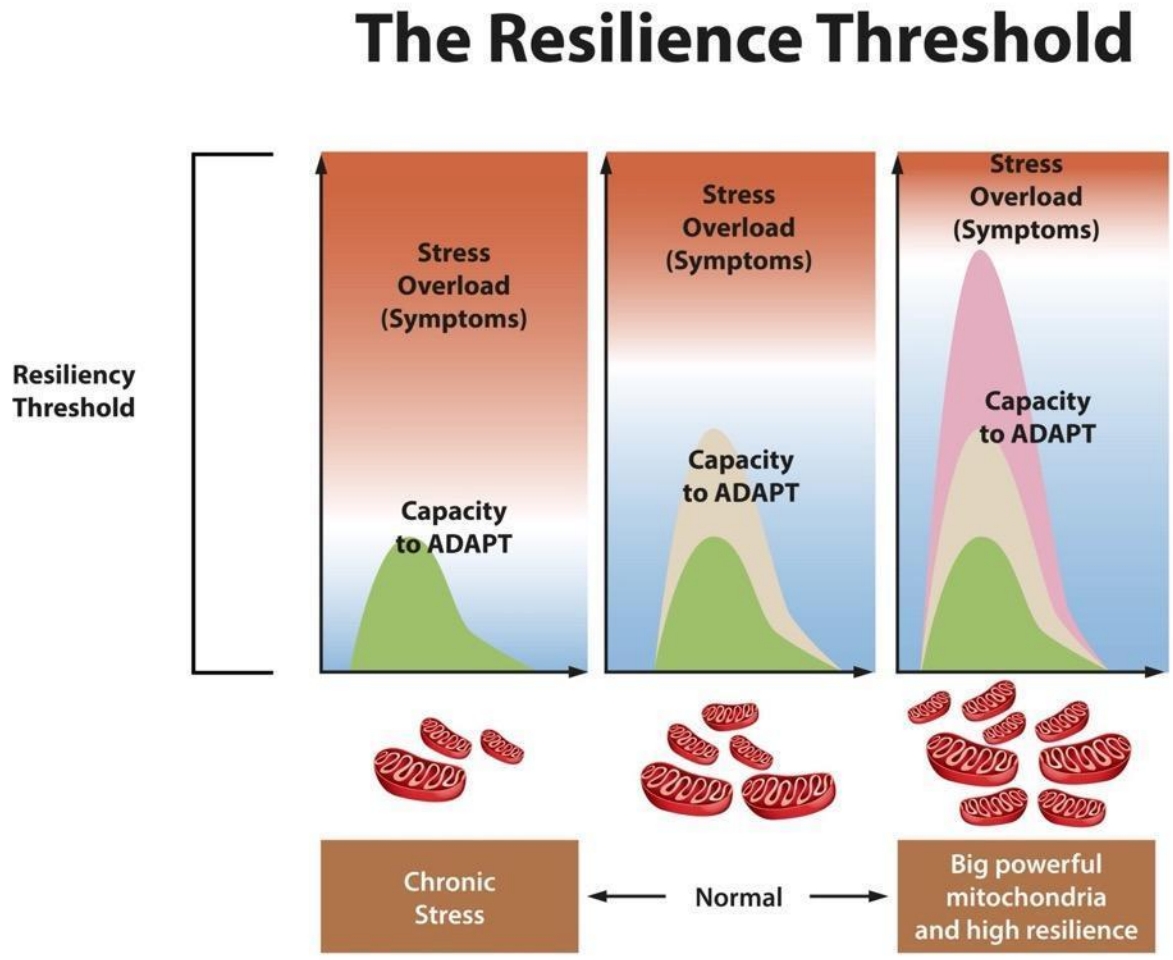
The more your mitochondria are defending against threats, the more fatigue you'll feel. To get more of one, you have to decrease the other. In other words, I am saying that your energy levels are simply a reflection of the degree that your mitochondria are busy defending you.

The default state of mitochondria is to produce energy, but that can't happen if they are constantly under attack and engaging in Defense Mode.

Let this sink in: Your energy levels are largely just a reflection of the degree to which your mitochondria have shifted away from Energy Mode towards Defense Mode.

This is the big breakthrough: Mitochondria are not just energy generators like almost everyone believes. They are also danger sensors that shift out of energy mode and into defense mode when they perceive threats to their (and your) survival. When they switch into defense mode, you have the symptom of fatigue.

That is the key to understanding what fatigue really is. Fatigue is what happens when your mitochondria have been taken offline. The more they've been taken offline, the more fatigue you have.



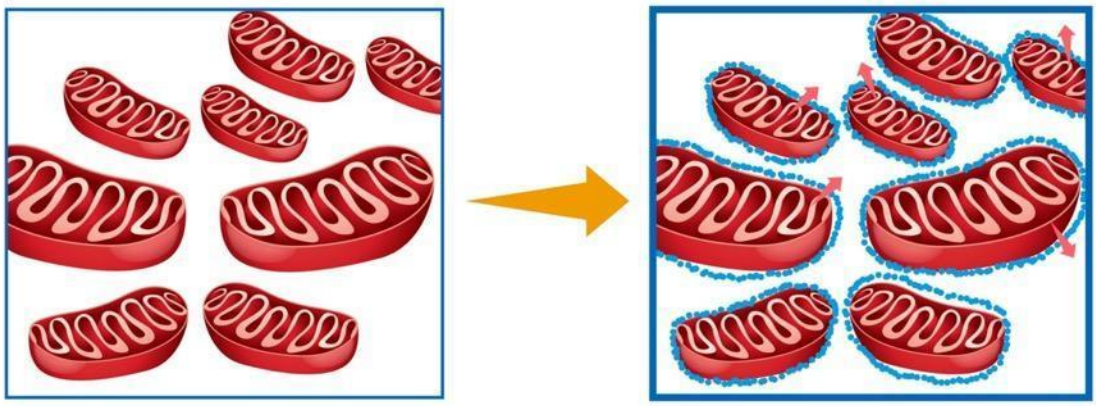
The basic idea here is that the more mitochondria you have, the greater your capacity to adapt to various kinds of stressors while maintaining balance, homeostasis, and high energy levels.

The higher your threshold is, the bigger your body's capacity to maintain balance, maintain health, and maintain high energy levels.

The more you lose mitochondria and have fewer of them, and the more they become weaker, fragile, damaged, and dysfunctional, then the lower your resilience threshold gets. The lower your capacity to tolerate, handle and adapt to stressors, the easier it is for you to enter into stress overload, where you start to experience symptoms and start to get fatigued.

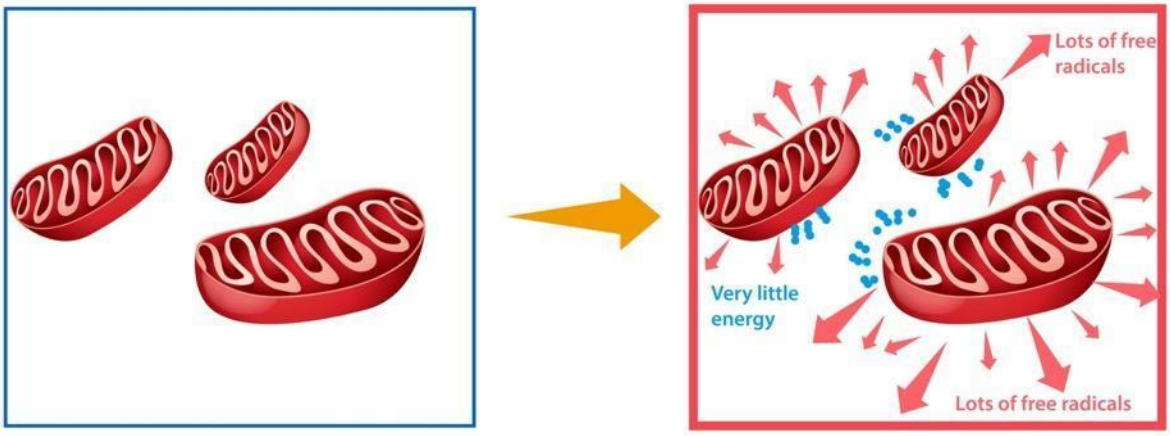
Essentially, your body becomes more fragile, you lose resiliency, and it becomes way easier to trigger your body into stress mode and fatigue mode.

The two sets of pictures below illustrate what happens when either big, strong, healthy mitochondria are subjected to stress vs. when small, weak, dysfunctional mitochondria are subjected to stress...

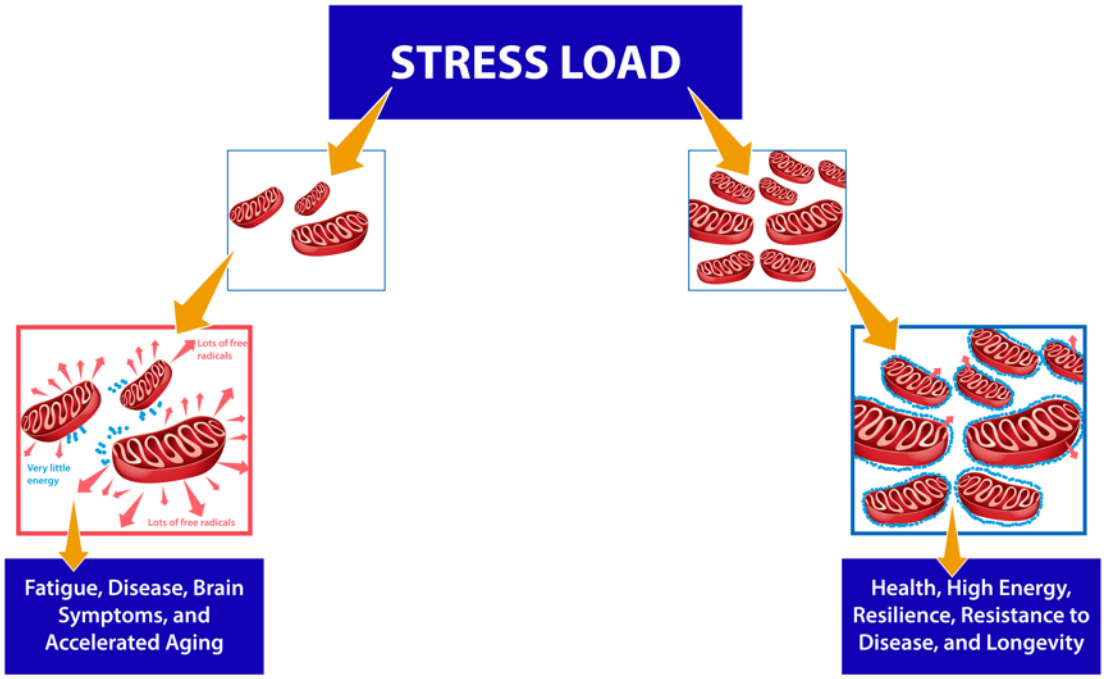


Think of it like this. The pictures above show how big, healthy, strong mitochondria handle a stress load. Normally, they're pumping out lots of energy, which I'm showing as these little blue dots here. At the same time, mitochondria also always have some little trickle of free radicals being produced pretty much all the time. I don't want to get too complex here, but it's perfectly normal and healthy for mitochondria to have some little trickle of free radicals coming out. **This is what happens while they're under stress: they maintain Energy Mode, pumping out very few free radicals and lots of energy.**

Now on the other hand, when you have smaller, weaker, more dysfunctional mitochondria, the same stress load will shift your mitochondria into Defense Mode, where you have the SYMPTOM of fatigue...



The pictures above show what happens when you have smaller, weaker, more fragile, more damaged, and dysfunctional mitochondria. The same stress load now creates a situation where these mitochondria are shifted into Defense Mode. They're throwing off lots of free radicals and very little energy. The symptom of this scenario at the cellular level, at the mitochondrial level, is fatigue.



Putting this all together, there are just two different scenarios here. You can have the same total body stress load, but depending on the state of your mitochondria, the outcome is going to be either fatigue or high energy.

If you have symptoms such as fatigue and sleep problems, post-exertional malaise, trouble maintaining energy if you don't eat, or brain symptoms like anxiety, depression, and brain fog, these are sure signs of a low resilience threshold and weakened and dysfunctional mitochondria.

Resistance to stress parallels the health of your mitochondria. And the health of your mitochondria predicts:

- Your disease resistance
- Your longevity
- Your resilience
- Your energy levels

If you want to double or triple your energy levels, prevent dozens of diseases, live to a hundred and beyond, and make yourself resilient and build a High Energy Body, you must focus on rebuilding your mitochondria. How do your mitochondria become weak, fragile, damaged, and dysfunctional in the first place, and how do we lose mitochondria?

How Does Our Cellular Engine Shrink?

There are two basic causes of this:

1. Aging
2. Lack of mitochondrial stimulation/hormesis

First, let’s talk about aging...

Several studies have shown that humans lose close to 75% of their mitochondrial capacity as they go from young adults (roughly 20) to older adults.

Clinical Trial > J Physiol. 2000 Jul 1;526 Pt 1(Pt 1):203-10.
doi: 10.1111/j.1469-7793.2000.t01-1-00203.x.

Oxidative capacity and ageing in human muscle

K E Conley [1], S A Jubrias, P C Esselman

This study, titled "Oxidative Capacity and Ageing in Human Muscle," showed that elderly subjects had nearly 50% lower oxidative capacity per volume of muscle than adult subjects.

And actually that was comparing people in their 70s to 40 year old adults. In reality, it's worth than this when you look at things from the 20s…

Here's a chart illustrating the decline in mitochondrial capacity as you go from 20 to 40 to 60 to 80 and so on.

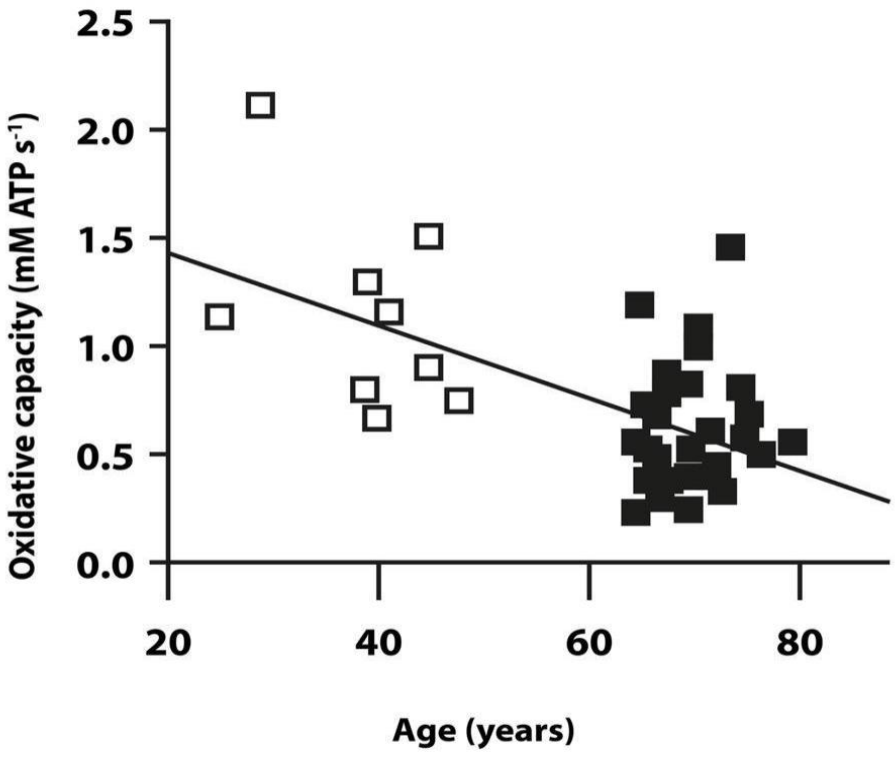


Figure 5. Oxidative capacity as a function of age.

J Aging Res. 2012;2012:194821. doi: 10.1155/2012/194821. Epub 2012 Jul 19.

Skeletal muscle mitochondria and aging: a review

Courtney M Peterson [1], Darcy L Johannsen, Eric Ravussin

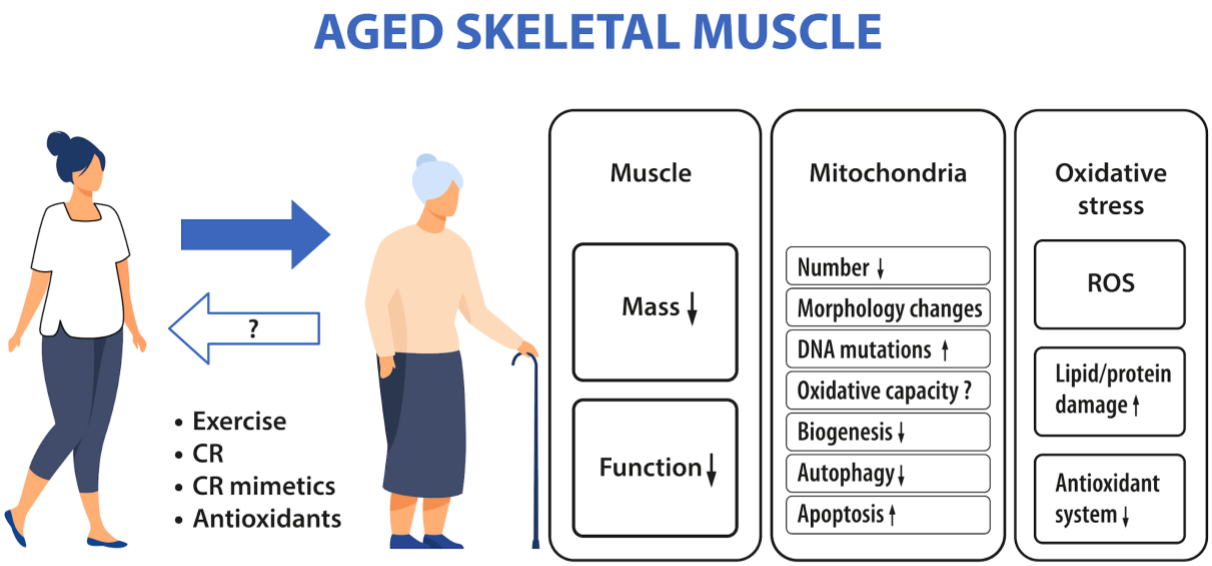


Figure 1 This cartoon describes the changes in skeletal muscle with aging on the right side of the figure. Both the mass and function of skeletal muscle are decreased in elderly people. Furthermore, at the mitochondrial level, the number of mitochondria is decreased in parallel with changes in mitochondrial morphology. Mitochondrial DNA, oxidative capacity, biogenesis, and autophagy are all decreased in conjunction with an increased number of DNA mutations and increased levels of apoptosis. Finally, oxidative stress is increased in the muscles of elderly people in association with cellular lipid, protein, and DNA damage. The bottom left of the cartoon shows that exercise, caloric restriction, caloric restriction mimetics, and antioxidants can all delay the aging of skeletal muscle.

But it’s not just that we're losing the number of mitochondria, there's a number of other changes.

- There are changes in the structure of the mitochondria…
- There is an increase in DNA mutations in the mitochondria
- There is a decrease in biogenesis
- There is a decrease in autophagy
- There is an increase in free radicals
- There is a decrease in the antioxidant system inside the cell

There are all these different changes, but the fundamental idea is that aging is associated with a very big and significant decline in mitochondrial function.

In short, we accumulate mitochondrial damage and dysfunction and lose mitochondria over the years.

Also, research from Dr. Frank Shallenberger indicates that nearly 50% of people under the age of 40 have early onset mitochondrial dysfunction, and virtually everyone over the age of 40 has it to a very significant degree.

Here's a simple way of illustrating everything I just said... Think of it like this. Between the ages of 40 and 70, what the research I just showed you indicates is that your mitochondrial capacity and number basically get cut in half.

In addition, it's actually worse than just that because not only does the number get cut in half, but the mitochondria that are present are weaker, damaged, dysfunctional, and less capable of producing energy.

A similar thing happens from the age of 20 to 40: your mitochondrial capacity gets cut in half, and then again from 40 to 70. Between the age of 40-70, people typically lose HALF of their mitochondrial capacity (their capacity to produce energy). And likely, there is a similar decline between the age of 20-40.

As you can imagine, this situation dramatically decreases our energy levels, but also it decreases our resilience to stress, accelerates aging, and massively increases our likelihood of having symptoms or disease. So that's the aging part of the equation.

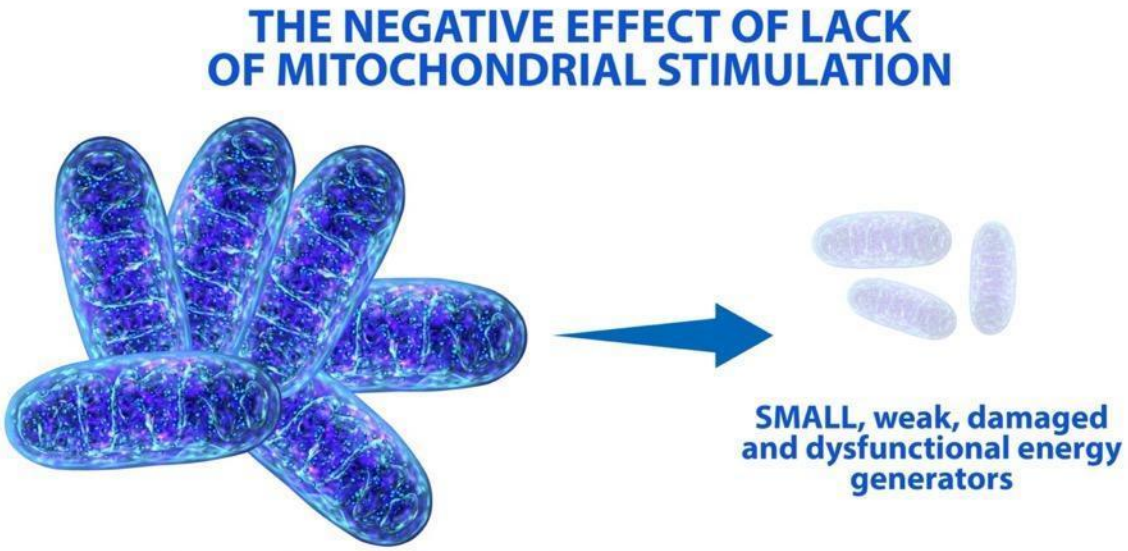
But the second part—lack of mitochondrial stimulation—is actually THE BIG KEY. It's actually way more important than aging!

What do I mean by lack of mitochondrial stimulation?

There are certain factors in our lifestyle that stimulate our mitochondria, that keep them big and strong and help us maintain lots of them. The loss of that mitochondrial stimulation leads to this.

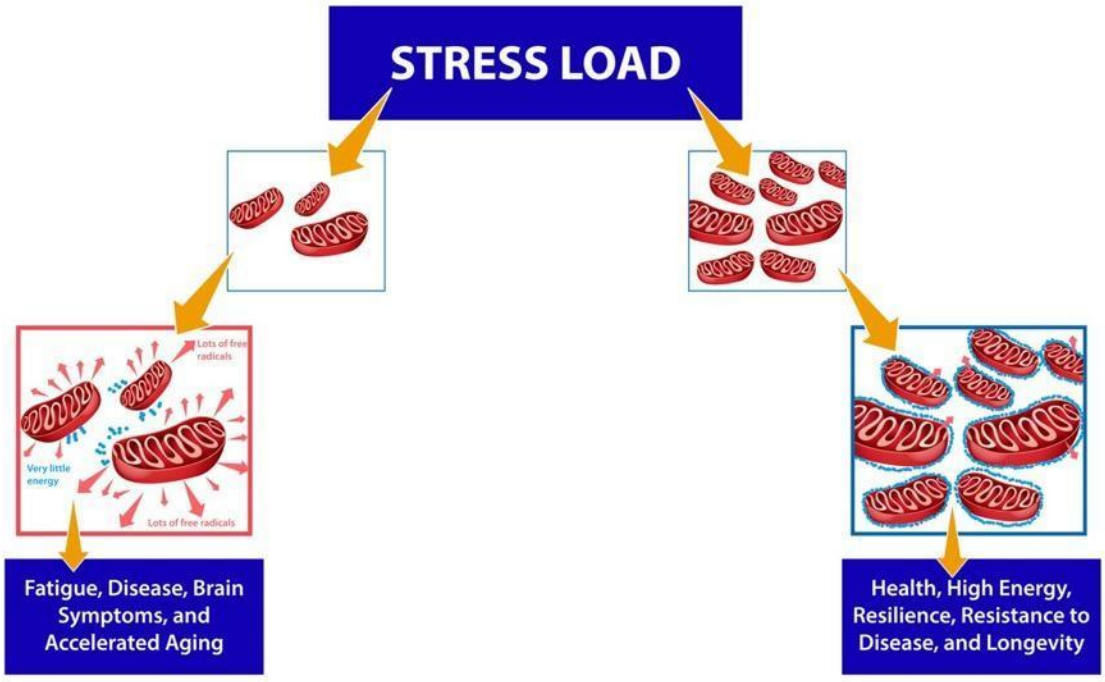
It leads to this decline over time. Like we saw with aging, it leads to this decline from lots of big, strong, healthy mitochondria to much fewer as time goes on.

This is fundamentally what lack of mitochondrial stimulation does to our mitochondria: it takes big, strong, healthy mitochondria and turns them into weak, fragile, and dysfunctional mitochondria.



Tying this back into the concepts we've been talking about, lack of mitochondrial stimulation is what takes you from a high resilience threshold to a lower resilience threshold over time. In this situation it's much easier for the stressors of life, to which we're all exposed, to overwhelm our

mitochondria and cause them to switch into Defense Mode (turn down energy production).



Key Point: When you have small, weak, damaged mitochondria (and few of them), It makes it much easier for those stressors to overwhelm your mitochondrial capacity to adapt and maintain balance, and then trigger cell Defense Mode and start to push you into fatigue. Whereas having big, strong, healthy mitochondria (and most importantly, LOTS of them) is the key to resilience in the face of stress – having a body that maintains health, homeostasis and high energy levels.

How To Build Your Cellular Engine: Hormesis

The bad news is that most people lose 75% of their mitochondrial capacity (their cellular engine) by the time they get to 70 years old. They go from a Ferrari engine in their cells at age 20 to a moped engine at age 70.

Here's the good news: Just as mitochondria in your cells can shrivel away and die off, the opposite is also true – you can reverse that process of cellular engine shrinkage that typically happens to most people with age. You can grow them bigger and stronger, and even create *more* mitochondria from scratch through a process called mitochondrial biogenesis!

You can, in other words, go from a moped engine in your cells back to something close to that Ferrari engine you had at age 20!

If you want to overcome fatigue and increase your energy, rebuilding your mitochondria is the central goal. How do we actually make this happen?

How do we go from fatigue, disease, brain symptoms, and accelerated aging to health, high energy, resilience, resistance to disease, and longevity?

The answer is simple: Hormesis.

Hormesis holds the key to unlocking our body's hidden potential. This is how you rebuild your cellular engine to the way it was in your youth.

By understanding and harnessing its power, we can overcome the stress-load and optimize our health in ways we never thought possible. Get ready to discover a new level of vitality and embrace a life full of boundless energy.

Hormesis 101

As much as the word “stress” has become associated with all kinds of negativity, it turns out that some types of stress are actually profoundly beneficial to human health. We call this type of beneficial stress “hormetic stress”, and it has been a central driver of survival and evolution among even the first cellular life forms to exist on Earth.

You’re probably more familiar with hormetic stress than you think. There is no better description of its essence than the following eloquent expression by German philosopher Friedrich Nietzsche in his masterpiece, *The Twilight of the Idols*.

“What does not kill me, makes me stronger.”

As simple as it sounds, this phrase is pretty accurate. Exposure to low amounts of stress stimulates our biology to make cellular adaptations that make us stronger and healthier. We become more resilient to not just the stressor in question, but other stressors too.

This concept is called hormesis, hence hormetic stress, which comes from the Greek “to set in motion”.

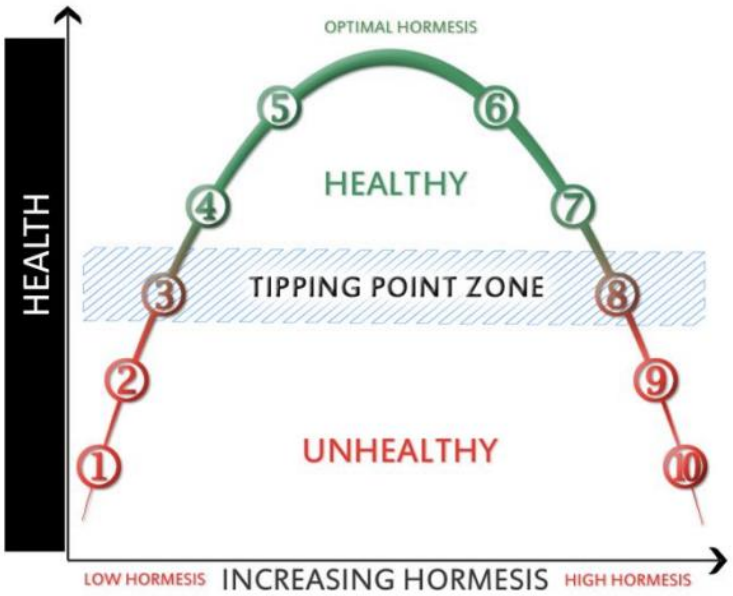
Hormesis is the process by which a mild or acute temporary stressor increases resistance to other stressors and increases the health, resilience, and vitality of the organism: the organism, in this case, being you.

Exposure to hormetic stress can increase resistance to a variety of stresses and stressors, not just the one you were exposed to. That's a key point—you can be exposed to a temporary dose of one type of stressor, and it can translate into adaptations in your body that make you much more resistant to many other types of stressors.

Another way to think about this is as a transient stressor to the body that stimulates the body to adapt and grow fitter, to be prepared for greater loads of that stressor and any stressor. Here's the key point: the more your body has been exposed to hormetic stressors and has had the chance to

adapt to them, the more stress tolerant, resilient, and energetic your body becomes.

We all have some amount of resilience against any given type of stress, and exposure within this threshold is easily managed. Similarly, we all have a threshold where any given type of stress overwhelms and damages the body.



Between these two points (4 and 7) is the hormetic goldilocks zone where the stress exposure is enough to challenge the body without damaging it, stimulating our body to adapt and ultimately increase its resilience thresholds. Not too little, not too much, but just right.

Exercise is probably the best-known example of hormetic stress. Regular physical activity causes your body to become fitter — to become stronger, more muscular, faster, and more enduring. People can run marathons and lift hundreds of pounds because they have trained their body to allow for such feats.

A powerlifter didn't just wake up one day and decide to squat 800 lbs. They spend years gradually overloading their body and giving it the rest needed to not only recover but to become bigger and stronger. If they didn't overload their body, they wouldn't adapt. But if they did too much at once or didn't allow for sufficient recovery, they'd become overtrained and injured.

Hormesis is the major key to enhanced health, longevity, and energy. It's one of the most important, if not the most important, strategy for energy enhancement.

Hormesis is actually more familiar to you than you may realize...

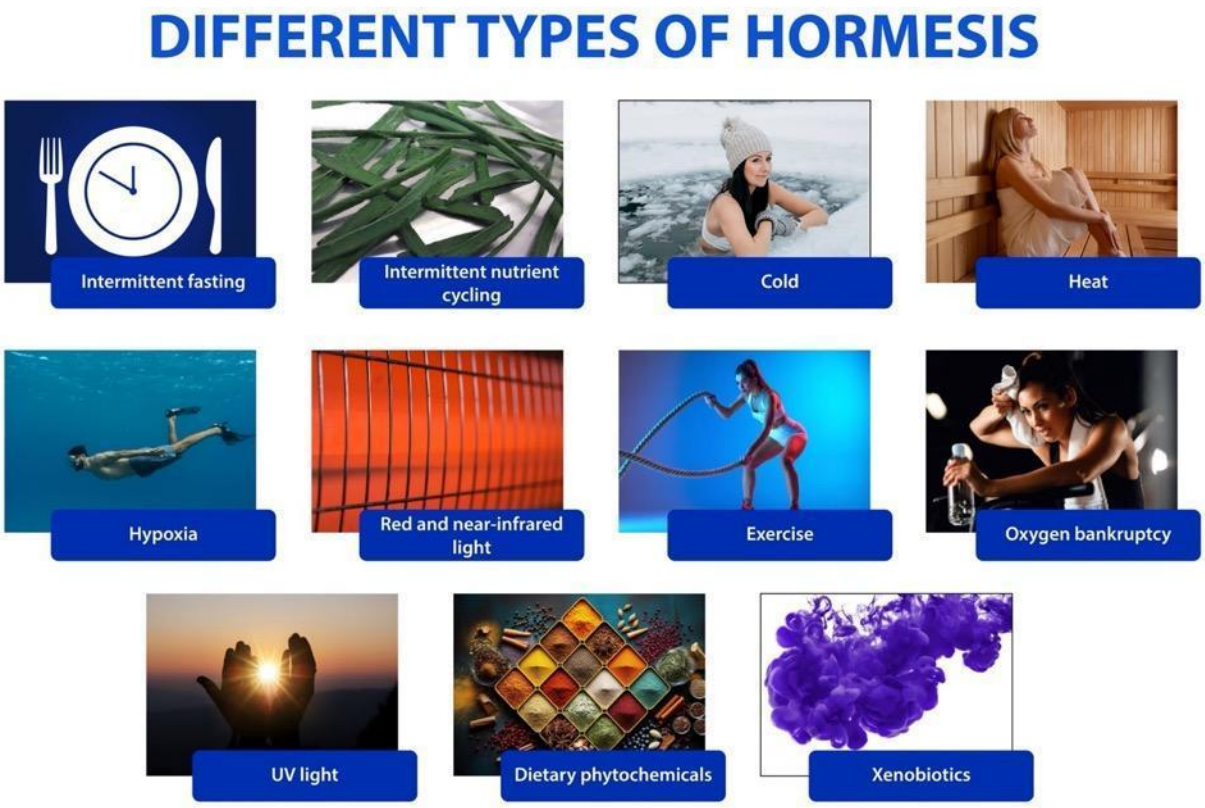
Exercise, plain old physical activity—things like cardio or aerobic exercise, weight training, or high-intensity interval training—are all forms of hormesis. It's one of many types of hormesis.

Exercise is a stress placed on the body that increases resistance to a number of other stressors, not just physical exertion, but also to cardiovascular disease, depression, all sorts of other brain-related conditions, neurodegenerative diseases, diabetes, and so on.

But exercise is just scratching the surface...

By exposing your body to these forms of hormesis, your body makes adaptations that make it more energetic, more resilient, and healthier. Now, here's an important point to understand.

It's not just exercise that creates this sort of metabolic stress and these beneficial adaptations— lots of things do. Here you can see a list of some of the most powerful types of hormesis.



There are lots and lots of different kinds of hormetic stressors, and there's a huge amount of research on many of these. Just for example, there are over 5,000 studies on red and near-infrared light alone and on the different types of benefits that it can have on the human body (you can read more about the research on red and near-infrared therapy in the article I wrote on the topic here).

There's a huge amount of research showing that these are key drivers of health, longevity, resistance to disease, and improved mitochondrial health. Importantly, all these different types of hormetic stressors work by producing a temporary stress on the body and mitochondria which stimulates beneficial adaptations.

Why these stressors? Why not exposure to air pollution, chlorine and fluoride in the water supply, and exposure to heavy metals? Why not drinking alcohol, smoking cigarettes, or undergoing psychological stress? Why are all stressors not created equal?

The answer is that every type of stress sits on a continuum, on a spectrum of the degree to which it has a potential for benefit and the degree to which it has a potential for harm. What we want when looking for an ideal type of hormetic stress is something that has a very big potential for benefit and very low potential for negative side effects.

When we look at things like smoking cigarettes, drinking alcohol, or exposure to heavy metals like lead and mercury, these are all things that could potentially have some beneficial effect in minute doses. But the potential for benefit is so small, and the potential for harm is so great, that these make really bad types of stressors to be exposed to.

And so, these types of stressors are overwhelmingly associated with harm whereas others are associated with benefit. One more key point here is that in order for stress to have beneficial adaptations, we need a balance between exposure to the stressor in a very acute, transient way (temporary stress) on the one hand, and rest, relaxation, and cellular regeneration on the other.

All these things produce amazing benefits by producing a temporary hormetic stress on the body. By exposing your body to these forms of hormesis, your body makes adaptations that ultimately make it resistant to stress, resistant to disease, and more energetic. Not only are we designed to survive stressors, we're designed to thrive with them, and this is an important concept to understand from an evolutionary and biological perspective.

In order to survive and reproduce, our ancestors spent most of their waking hours working to find food either by grazing on plants or by hunting animals. They were regularly exposed to physical activity, occasional fasting due to food scarcity, noxious plants, phytochemicals, heat, and cold.

All of these are hormetic stressors that not only don't harm us but have profound health benefits. The failure to expose your body to the right amount of hormetic stress produces poor health and a weak, fragile, diseased, and fatigued body. In the past, it was the age of hormesis, and our ancestors lived during a time when hormesis was built into their lives.

We are biologically adapted to these conditions, and any deviation from them is potentially harmful to health.

We need these stressors just for our cells and our mitochondria to function normally. Now we live in an age of anti-hormesis where exercise is no longer a requirement, food is available whenever we want it, we don't have to deal with food scarcity or fasting, a junk food diet excluding dietary phytochemicals is the norm for most people, and we live in insulated, climate-controlled environments where we never get too hot or too cold.

It is the absence of all these things that stimulate our mitochondria to be big and strong, the mitochondria atrophy, shrink and shrivel—they literally die off and become weak, fragile, and dysfunctional. As a result, we have the fatigue epidemic, diabetes, heart disease, depression, anxiety, and all sorts of stress-related diseases.

If you want a high-energy body, then using hormesis on a regular basis is critical. This is the paradigm shift around stress. It's that stress is not bad. The reality is that too little stress is just as unhealthy and toxic to your body as it's way too much stress or total stress overload.

We want to have these hormetic stressors built into our lives so that we're getting these transient doses of beneficial hormetic stressors while avoiding things like chronic psychological stress or chronic exposure to heavy metals and air pollution: we want transient, brief doses of hormetic stressors, and we want to avoid the pathological chronic stressors.

When we have these hormetic stressors built into our lives and have a moderate amount of the right kinds of stressors, that is what creates optimal health resistance to disease and high energy levels. It's time to stop thinking of stressors as bad and instead start thinking of how they work in terms of form. Here's a metaphor for understanding how hormesis works. Wind extinguishes a candle, but that same gust of wind energizes a fire.

The key thing here is that we're all being exposed to a gust of stressors in our lives: there's no way of avoiding that. The key is that we want to be the fire and not the candle.

The key to hormesis is providing the right amount of stress to stimulate adaptation. Too little stress isn't perceived as a challenge by the body, so it has no incentive to become more resilient. Too much stress is impossible to cope with, leading to damage and dysfunction.

What's most amazing about this common-sense concept is that hormesis was considered of no scientific interest a mere 30 years ago [4]. Today, it is one of the most rigorously supported scientific concepts in biology.

The purpose of this eBook is to introduce you to three incredibly powerful hormetic tools that you can do to build up your energy reserves and tackle life with renewed vigor. All three directly enhance the mitochondrial engine of your cells, allowing for a greater capacity to produce energy. They also greatly enhance our stress resilience, reducing the negative impact of stress on our energy reserves and allowing us to take on more stress without ill effects.

Too Much Stress, Not Enough Resilience

We call the total stress burden of the body our *allostatic load*. When you become overwhelmed with too much, your mitochondria shut down and you become fatigued. Your body can handle only so much stress, after all.

But, here's the unspoken and underappreciated truth regarding stress load: **It's not just the stress burden, it's your body's stress-buffering capacity. That's determined by your mitochondria (your cellular capacity to meet the energetic demands of stress.)**

Energy production capacity is basically synonymous with stress-buffering capacity.

In other words, the size of your cellular engine determines your **physiological resilience** (capacity to resist stress and not be damaged by stress).

In fact, your stress resilience or ability to cope with stress is even more important than the total stress load you are dealing with. It's your stress resilience that determines your response to stress in the first place.

On the one hand, you could strive to reduce all the stress that you experience in life so that there isn't anything you ever need to cope with, but let's be real, that's a pipe dream. It is impossible to eliminate all stress you experience throughout life, and you wouldn't want to anyway since it would result in your maintaining a very weak, fatigued, and sickly body.

Instead, you should focus your efforts primarily on increasing your ability to withstand stress, and you do that with targeted hormetic interventions. With time, all the stress that overwhelms you now won't even grab your attention. You will foster a strong, energetic, and healthy body.

Increasing stress resilience necessarily means increasing mitochondrial capacity to produce energy and protect cells.

Imagine, if you will, that mitochondria represent the civilians within a small town. These civilians have two jobs: making the town run smoothly (energy production) and fighting off invaders (stressors) as a militia (defense mode).

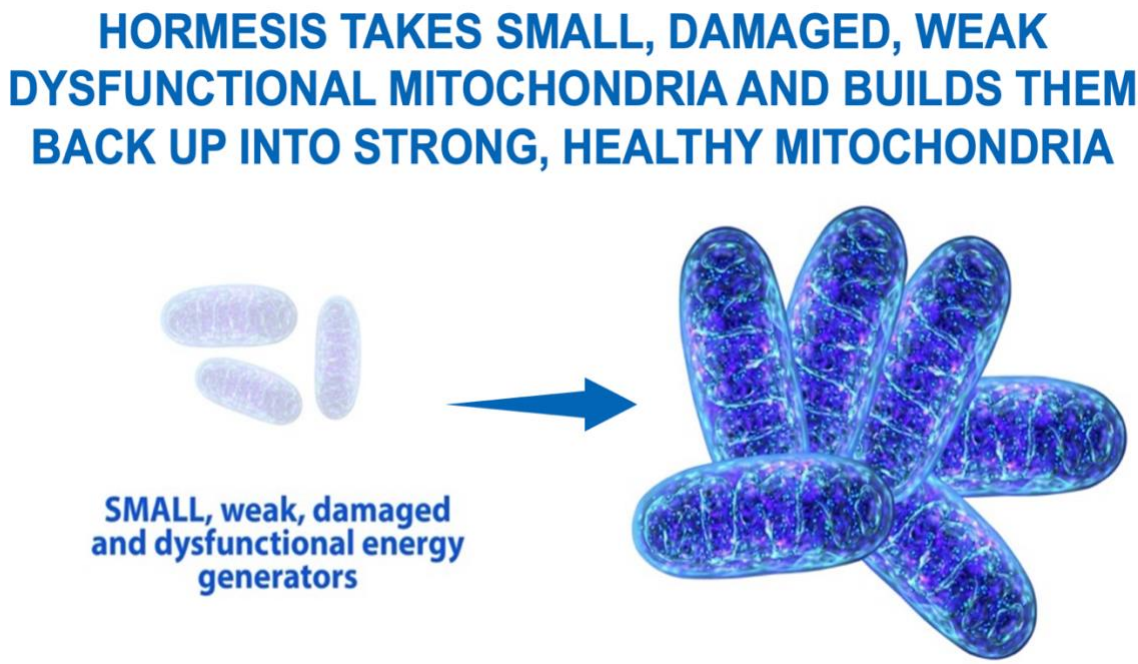
When we talk about improving stress resilience, we are talking about two things:

1) You increase the number of civilians so that more are able to stay back and run the town while others are off fighting in the militia. This process is called *mitochondrial biogenesis*. It's the process of creating new mitochondria.
2) You increase the efficiency of the civilians that you already possess. This is called *mitochondrial function*. It would be like training your civilians to be better workers or militia fighters so that you can obtain the same outcomes with fewer mitochondria.

To illustrate these concepts further, let's say you are chronically fatigued with 100 total mitochondria. Out of necessity, 50 of these mitochondria are busy defending your town from invaders, and your chronic fatigue is the result of only working at half capacity. If you add 25 more mitochondria to

your town, without any change to your stress load, you're now operating at 75% capacity rather than 50%. That's a huge energy increase. Alternatively, if you increase the efficiency of your mitochondria, those 50 staying back home to run the town can now put out the equivalent of 75 despite their numbers not changing.

This is the single most important thing to understand for those trying to fix their fatigue and increase their energy levels. Hormesis is the only way to rebuild your cellular engine.



Now, imagine you do both. Your energy levels and ability to cope with future stress will go through the roof. This is what hormetic stress can and will do for you. **This is the biggest key to increasing (doubling or tripling) your energy levels: You must build up your cellular engine back to its youthful state.**

That's what the 3 technologies in this eGuide do. I can't emphasize enough how important the following three biohacks are for your health and energy levels.

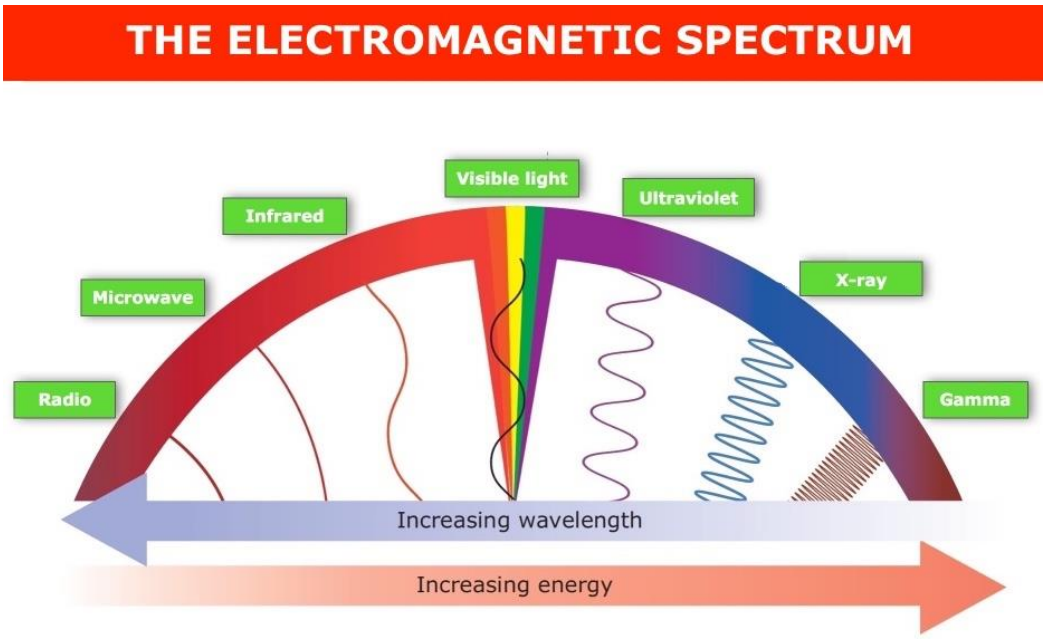
3 Biohacks for Optimal Energy & Longevity

Energy Hack #1 - Red/Near-Infrared (NIR) Light Therapy

When most people think of light, they think of what they can see — light and dark, or day and night. That's understandable, given that the only time we really ever think about lighting is when it relates to our visual system. But, it's a very limited perspective.

You see, the light we use to navigate our world is only one small part of what's called the electromagnetic spectrum — about 0.0035%, to be specific. The electromagnetic spectrum encompasses all the different types of pure energy radiation that we know of, which move through the universe in the form of vibrating or pulsating rays, often called energy waves.

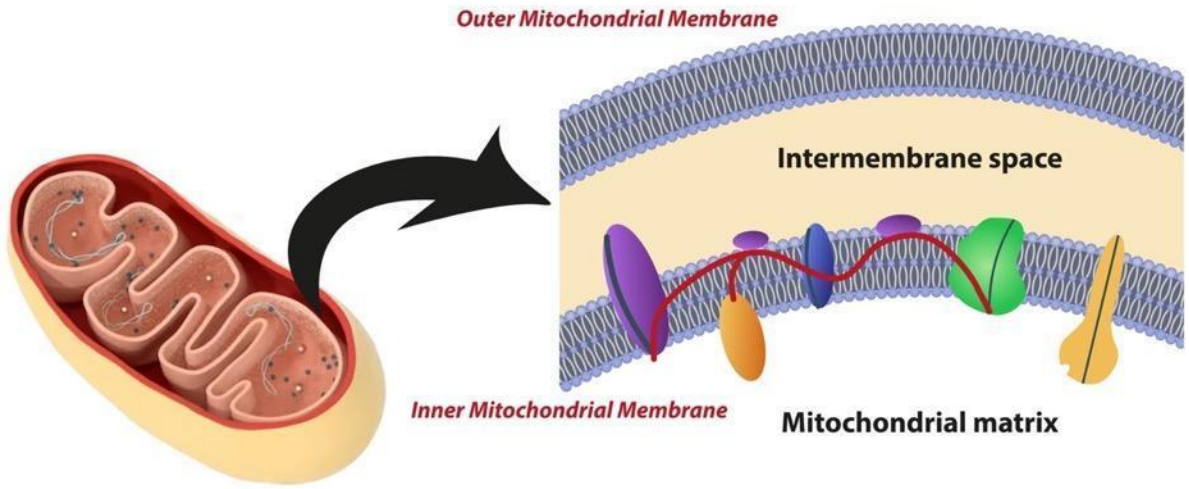
You're probably familiar with most types of electromagnetic radiation, which includes radio waves, microwaves, infrared radiation, visible light, ultraviolet radiation, x-rays, and gamma rays. All of these are light, but we can only see the 0.0035% that makes up visible light'



Our focus is on red light and near-infrared radiation (NIR). These lights have a profound impact on our mitochondria by improving their ability to generate energy. This happens for a variety of indirect reasons, by virtue of reducing stressors on the body that activate the CDR, but also occurs as a direct result of hormesis.

To better understand these effects, we need to understand how mitochondria produce most of their energy. It involves moving energy-carrying molecules through a series of enzymes embedded within the inner mitochondrial membrane, which are collectively called the *electron transport chain* (ETC).

The ETC works to pump hydrogen ions across the inner membrane, ultimately accumulating within the *intermembrane space* between the inner and outer membranes. As the pressure from hydrogen increases, they are pushed through the energy-generating nanomotor of mitochondria, *ATP synthase*, producing cellular energy (ATP) as a result.



Red and NIR light work primarily through targeting a specific enzyme within the ETC: *Cytochrome C oxidase* (CCO). This enzyme absorbs the red and NIR light and increases its activity, leading to greater mitochondrial oxygen consumption and energy production [5,6].

In an otherwise healthy state, the increase in energy production leads to a mild increase in oxidative stress that serves as the hormetic signal for enhancing mitochondrial defense mechanisms and promoting mitochondrial biogenesis [7]. Amazingly, if the mitochondria are dysfunctional, then red and NIR light instead reduce levels of oxidative stress through enhancing oxygen uptake [8,9].

It's literally a win-win situation. If you are starting from a place of chronic fatigue, then the red and NIR light therapy will heal your mitochondria in the face of overwhelming stress before then moving on to enhance them.

Another, lesser-known, way that red and NIR light enhance mitochondrial function is by impacting interfacial water, the layer of water sitting next to the inner membrane, which is what moves hydrogen in the intermembrane space towards ATP synthase [10,11].

Red and NIR light are absorbed by the interfacial water, which expands and becomes less viscous as a result [12–14]. This not only allows ATP synthase to rotate more quickly due to less resistance from the water surrounding it [13,15], but it also allows hydrogen to more easily move across the inner membrane and reach ATP synthase.

Less viscous interfacial water also limits the amount of deuterium, a type of "heavy" hydrogen, that reaches ATP synthase. Deuterium is a naturally occurring isotope of hydrogen with a mass twice as large. Although this difference in mass seems innocent given that hydrogen is the smallest element in the universe, it makes deuterium behave radically different from hydrogen within biological systems like our body [16].

ATP synthase is where deuterium wreaks havoc. Because of its increased mass, the ATP synthase nanomotors stutter when deuterium passes through, like a thick and mucky fuel that gunks up our mitochondrial engine and inhibits energy production [17].

Because deuterium is so heavy, it doesn't use interfacial water to move toward ATP synthase [18]. Therefore, red and NIR light increases the amount of hydrogen that is used for energy production relative to the amount of deuterium.

In short, there are four ways that red and NIR light boosts energy production in mitochondria:

1) The ETC works more efficiently (because its protein complexes are revved up by red and NIR light) and pumps more hydrogen into the intermembrane space where it needs to be located in order for ATP synthase to run.

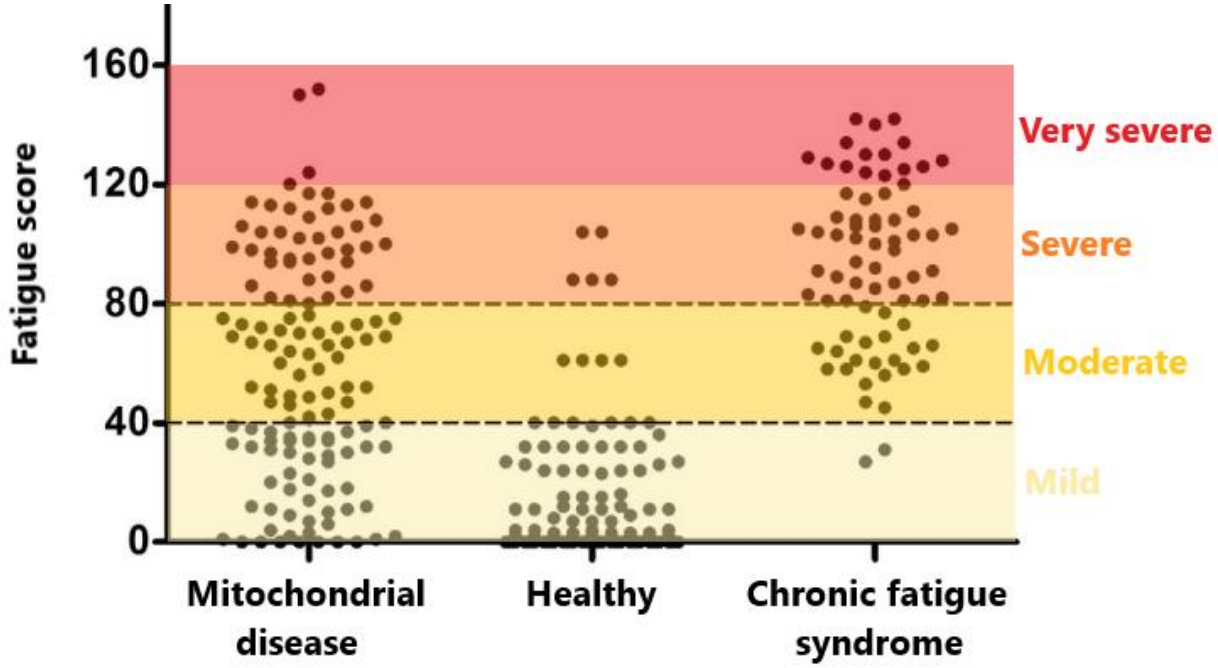
2) The hydrogen in the intermembrane space more easily makes its way to ATP synthase to be used for energy production (because red and NIR light reduce the viscosity of the interfacial water that hydrogen uses to move).

3) ATP synthase rotates faster (since red and NIR light reduce the viscosity of the interfacial water around the pump, allowing it to rotate more easily), producing more energy in a given amount of time.

4) Less deuterium disrupts the normal function of ATP synthase in a given time because more hydrogen crowds it out (due to lower interfacial water viscosity).

Red/Nir Light Increase Energy Levels

There's a strong central link between mitochondrial dysfunction and fatigue. Individuals who have chronic fatigue have a very similar fatigue profile to those with genetic mitochondrial diseases that impair function [19].



Gorman et al. *Neuromuscul Disord.* 2015; 25(7): 563-6.

A systematic review of 25 studies investigating the link between mitochondrial function and fatigue found consistent associations between fatigue syndromes and mitochondrial dysfunction, including [20]:

- Deficits in carnitine, which is required to transport fat into mitochondria for use as an energy source
- Deficits in coenzyme Q10, which is required to produce energy.
- Lower concentrations of antioxidants and higher levels of oxidative stress.
- Lower rates of ATP (cellular energy) production.

- Less gene expression in functional pathways for energy production, such as those related to metabolism, energy production, protein transport, and mitochondrial morphology.

Other research published after this systematic review confirmed the associations between fatigue and increased levels of mitochondrial oxidative stress and reduced levels of energy production [21,22].

By the simple virtue of keeping our mitochondria humming along healthfully, red/NIR light therapy will be a powerful ally against chronic fatigue.

For example, two very recent studies in patients with fibromyalgia found that whole-body treatment with red and NIR light (28 mW/cm^2 for 20 minutes providing 25 J/cm^2) cut pain in half, doubled their quality of life, and nearly tripled leisure physical activity compared to a control group [23,24].

From a physical activity standpoint, In 2015, a group of researchers from Nove de Julho University, Brazil, aggregated the data from 13 randomized controlled trials looking at how red and NIR light affect athletic performance [25]. They found consistent benefits: longer run times before exhaustion, more repetitions lifting weights, and greater strength, with improvements of 2–57%.

29 HEALTH BENEFITS OF

RED LIGHT THERAPY

Reverse Skin Aging and Get Youthful Skin 01

Slow Hair Loss and Re-Grow Hair 02

Reduce Cellulite 03

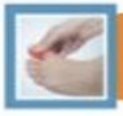
Speed Up Wound Healing 04

Combat Fibromyalgia and Chronic Fatigue, and Increase Energy Levels 05

Fight Hashimoto's Hypothyroidism 06

Potentionally Combat Cancer Growth 07

Increase Bone Healing 08



Lower Inflammation 09

Improve Eye Health 10

Combat Depression and Anxiety 11

Improve Cognitive Performance 12

Help Tendonitis 13

Increase Fertility 14

Improve Joint Health and Combat Arthritis 15

Decrease Diabetes Symptoms 16

Improve Oral Health 17

Improve Respiratory Health 18

Improve Heart Health 19

Improve Liver Function 20

Increase Pancreas Health 21

Decrease Pain 22

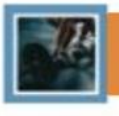
Improve Immunity 23

Help Heal Traumatic Brain Spinal Cord Injury 24

Improve Stem Cell Therapy 25

Fall Asleep Faster and Improve Sleep Quality 26

Improve Brain Health 27



Enhance Muscle Gain, Strength, Endurance and Recovery 28

Increase Fat Loss 29

Several years later, they conducted an updated analysis that included 39 randomized controlled trials [26]. Once again, it was shown that red and NIR light improved running time until exhaustion, the number of repetitions one could do for a given weight and muscular strength. It was also revealed that red and NIR light reduced signs of muscle damage.

These benefits aren't just restricted to healthy individuals in the lab, either. Red and NIR light has been shown to improve performance and recovery ability in elite athletes [27–29], as well as people with various debilitating disease states like chronic obstructive pulmonary disease (COPD) [30–32], fibromyalgia [33–35], and chronic kidney disease [36].

Quite simply, there is a mountain of data showing that red and NIR light improve mitochondrial function and biogenesis through hormesis and that the end-result of such effects is less fatigue, greater energy levels, and a greater capacity to be physically active. It doesn't matter whether you start from a place of extreme fatigue or abundant energy, red and NIR light will absolutely improve your life.

Practical Tips:

Here are the most important things to look for specifically include the near-infrared and red light therapy devices:

1. You want to make sure to get a quality, powerful light from a reputable brand. The market is flooded with cheap devices from China with ineffective power outputs, and cheap parts that break easily. Don't make this common mistake of just buying any device you find on Amazon.

2. Size of the light and treatment area: This is critically important – how big of an area will it treat? Is it a small light of less than 12" or a big light that can treat half of your body or your whole body all at once? Think about it: Do you want to hold one of these small devices by hand for 30-60 minutes to do a treatment? Probably not. You'll get tired of using it really fast. So it has to be convenient, and ideally, has to be something that is not only fast,

but something that you do while doing other things (if you wish), so you're not sitting there holding a device in different positions for 30-60 minutes. In general, you should get the largest light you can afford. Full-body length LED panels are ideal.

How To Do Red Light Therapy:

GENERAL RECOMMENDATIONS

FOR RED/NIR LIGHT THERAPY

- **Get a high power light that can still deliver an effective dose even when moved further away from your body**. This allows you to treat much larger areas of your body at once compared to l ower power lights.
- **Ideal frequency of use is likely between 3x-7x/ week (i.e. up to once per day).**
- **Start SLOW**. Use the lowest doses in the recommended range of doses when first starting out.
- **Be conservative with dosing for any sensitive areas.**

- **For skin issues, we want between 3J to roughly 15J per area. So optimal treatment times with the lights I recommend are:**
  - 30 seconds-2.5 minutes per area (if the light is 6" inches away)
  - 1-3.5 minutes per area (if the light is 12" away)
  - 1.5-5 minutes per area (if the light is 18" away)
  - 2-7 minutes per area (if the light is 24" away).
  - 3-14 minutes per area (if the light is 36" away).
  - For skin and anti-aging purposes, I suggest using it a little further away – from between 12" to 36" away from your body.
  - Note that having it further away from the body allows you to treat much larger areas of your body at once.

- **For deeper issues (e.g. muscle, bone, brain, organs, glands, fat, etc.), we want around 10-40J per area, so optimal treatment times and treatment distances with the lights I recommend are:**
  - 2-7 minutes per area (if the light is 6" inches away)
  - 5-10 minutes per area (if the light is 12" away)

- **Total Treatment Dose/Time:** I suggest that you limit total treatment dose for all areas of the body should be no more than roughly 120J. So assuming the light is 6" or 12" away from your body, that means **no more than roughly 15-20 total minutes of time with the light shining on your body.**

After you get one of these lights, you can immediately start using it to:

- Increase your energy
- Make your skin healthier and get rid of cellulite
- Speed up fat loss
- Improve muscle recovery and athletic performance
- Improve mood and cognitive function
- Increase muscle size and strength
- Speed healing from injury
- Improve metabolic and hormonal health

My favorite light currently on the market is the **840 Pulse from Red Therapy Co.**

If you can't afford it, go for the **400 Pulse**, which is several hundred dollars cheaper.

And on the other side, if you want to go all out, go for two 840 Pulses, so you can do your full body on both sides (front and back) all at once, for maximal time efficiency.

You can get the 840 Pulse or 400 Pulse HERE and get a knock off some cash by using my discount code of "energy blueprint" when you check out.

Energy Hack #2 - Heat Exposure & Regular Sauna Use

Imagine a pharmaceutical company had a pill that could reduce all-cause mortality in healthy individuals by 40 percent. We would regard this as the biggest pharmaceutical, anti-aging discovery in history. And everyone on the planet would want a prescription. If you didn't take it, people would think you were certifiably crazy.

We have this medicine, just not in pill form. It's in saunas.

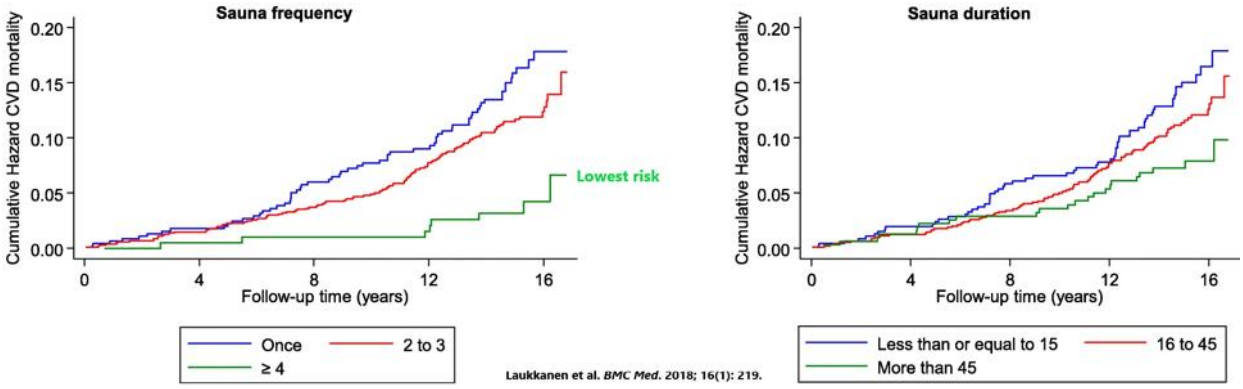
The Kuopio Ischemic Heart Disease Risk Factor (KIHD) study is one of the longest-running studies evaluating the health effects of sauna bathing. Beginning in the 1980s, researchers have evaluated thousands of middle-aged and older men and women from Eastern Finland, 4, 11, 20, and 30 years after establishing their baseline health. The KIHD findings revealed that sauna bathing four or more times per week (compared to sauna bathing once per week or less) was associated with a whopping *40 percent reduction in one's risk of dying from any cause* [37]!

Let's pause and fully appreciate what this means. This is no small magnitude of effect — this is a massive 40 percent reduction in dying from any cause over several decades.

And that's not all the researchers found. They also discovered profound reductions in the risk of age-related diseases, including:

- 50–67 percent lower risk of dying from cardiovascular diseases, especially when sauna sessions lasted over 20 minutes [37,38]
- 62 percent lower risk of having a stroke [39]
- 47 percent lower risk of developing hypertension (high blood pressure) [40]
- 37 percent lower risk of developing pneumonia [41]
- 41 percent lower risk of developing a respiratory infection [42]

- 64–65 percent lower risk of developing dementia or Alzheimer's disease [43]
- 77 percent lower risk of developing psychosis [44]

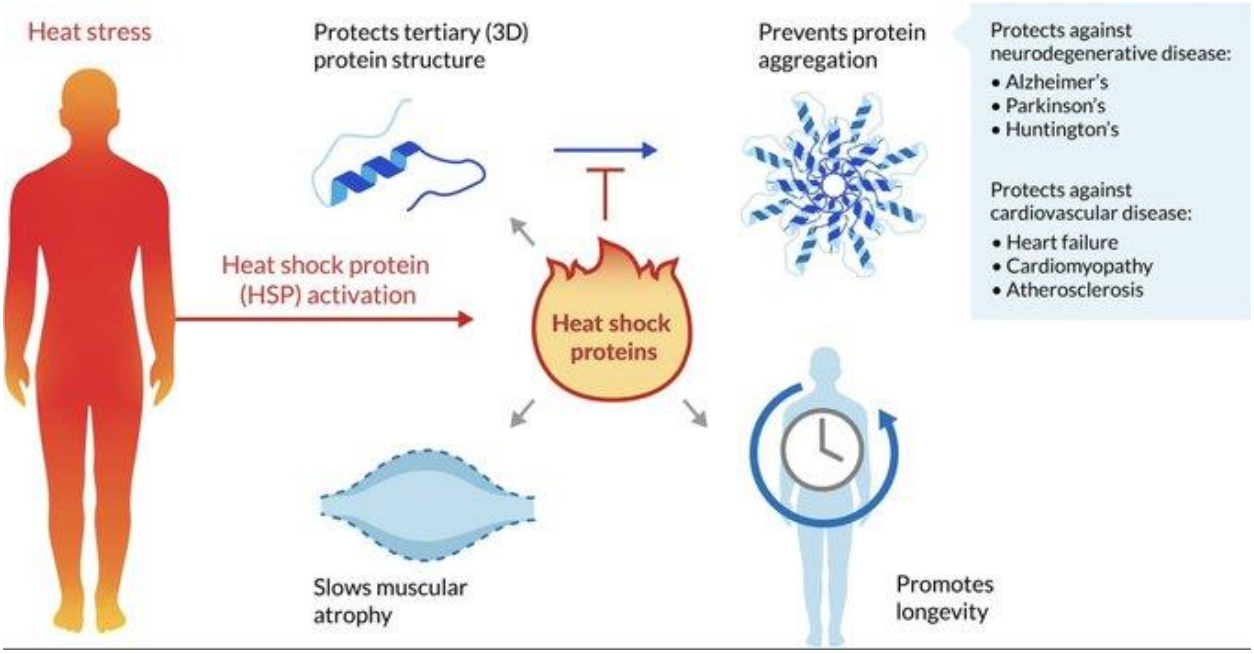


It's also worth noting that in all of these findings, the researchers accounted for numerous potential "other explanations" such as age, smoking and alcohol habits, cardiometabolic risk factors, physical activity, and socioeconomic status. Clearly, sauna use does something to offset disease and help people live their lives to the fullest.

So what makes heat so special?

When it comes to saunas, perhaps the most important key to unlocking the powerful anti-aging, strengthening, and resilience-enhancing adaptations in our bodies is due to little molecules called heat shock proteins (HSPs), particularly HSP70, which is the most prominent and best characterized of the HSPs [45].

A primary function of HSPs is identifying and binding to misfolded proteins, thereby correcting their structure and helping preserve their function. This, in turn, prevents protein aggregation, which contributes to numerous age-related diseases such as those involving neurodegeneration and the cardiovascular system.



There are also HSPs within mitochondria that function to chaperone proteins throughout the organelle to be used in the creation of new enzymes, such as those used directly in energy production [46].

Several studies have reported that women with genetic polymorphisms who increase the stability and activity of HSP70 live longer than women without [47–49], thus supporting a direct link between HSP70 expression and longevity.

Exposing your body to heat is one of the best ways to increase HSP70 in the short term and for sustained periods. For example, spending just 30 minutes in a sauna increases HSP70 by a whopping 50 percent [50], with elevations lasting up to 48 hours. Studies also show that regular heat stress leads to sustained increases in HSP, suggesting they adapt to the heat [51–53].

The takeaway: regularly stressing your body with heat causes a hormetic adaptation that leads to increases in HSP signaling that help prevent disease and promote longevity. You're keeping your protein protectors in a primed state so they can prevent the damage before it occurs.

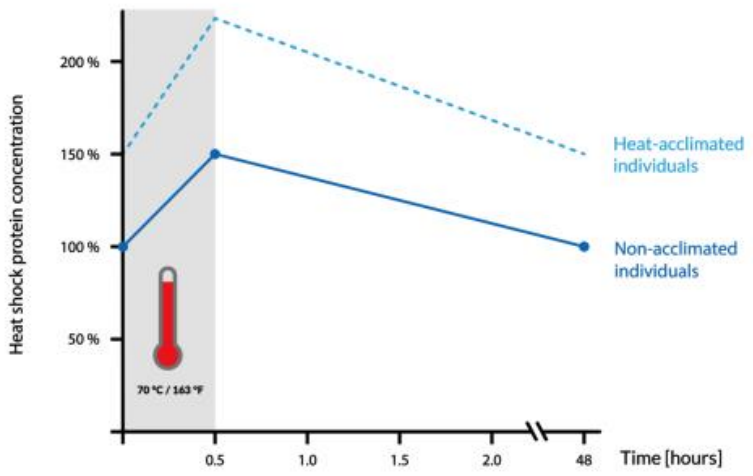


Fig. 3. Heat stress activates heat shock proteins. Heat stress robustly activates heat shock proteins (HSP), resulting in higher intracellular concentrations of HSPs. This activation occurs within 30 min of heat exposure and is sustained over time. Basal HSP concentrations are higher in heat-acclimated individuals, suggesting that heat acclimation induces whole-body adaptations that increase heat tolerance, resulting in protective cellular adaptations.

There are also direct hormetic effects on the cardiovascular system. In a traditional Finnish sauna, where ambient temperatures are 176 to 194 °F (80 to 90 °C) with 20 to 40 percent humidity, just 20 minutes is enough to elevate core body temperature to 102 °F (39 °C), equivalent to having a low-grade fever [54]. The skin becomes even hotter, reaching 104 °F (40 °C), and the body excretes about a pound (0.5 kg) of sweat to try and cool the body.

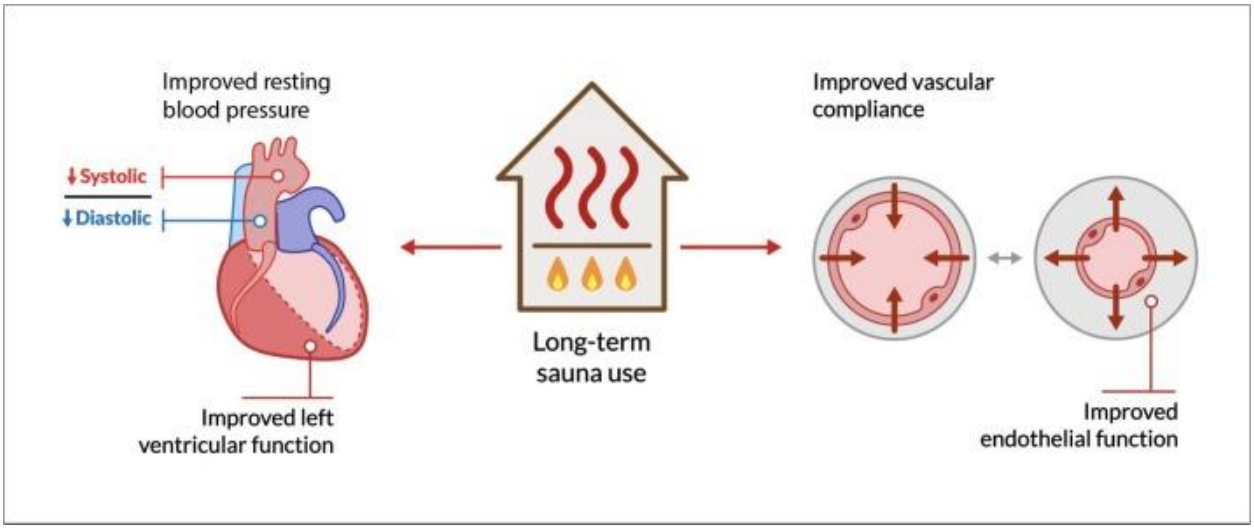
Heart rate elevates two to three times above resting to circulate our heat-carrying blood more quickly [54]; blood vessels in our skin expand [55]; and blood flow to the skin increases from five to 10 percent of cardiac output at rest to 50 to 70 percent during the sauna [56].

Studies reveal the effects on heart rate and blood pressure are comparable to moderate aerobic exercise [57]. As our body works to maintain its cool during hyperthermia, the heart and blood vessels undergo a myriad of changes essential for heat dissipation — elevations of heart rate, changes in blood distribution, and alterations to vascular function [58].

It's so transformative that regular sauna therapy has been proposed as an alternative to exercising for strengthening the cardiovascular system when people are unable to engage in regular physical activity [59,60]. Granted, it’s not a complete replacement, for a variety of reasons, but it still elicits changes in blood pressure and heart rate comparable to moderate-intensity activity [57,61].

The short-term cardiovascular changes from heat stress also cause a substantial increase in the force of the blood against the walls of our arteries, called shear stress, which is imperative for eliciting hormetic adaptations — preventing increases in shear stress during heat stress or exercise abolishes the vascular benefits [62–64]. (As a side note, there is also now emerging evidence that shear stress is also selectively toxic to cancer cells [65].)

The innermost lining of cells within our arteries, the endothelium, detects changes in shear stress and responds by releasing chemicals that modulate vascular function in cardioprotective ways. One of the most important molecules in this regard is nitric oxide, which is responsible for allowing the arteries to relax and expand, thereby improving blood flow [66,67].



The ability of our endothelium to respond to shear stress is called endothelial function. There are several ways to assess it, the most widely used being flow-mediated dilation, which looks at how well the arteries expand in response to shear stress [68].

A meta-analysis of heat-stress interventions reported that regular intermittent heat stress over several months caused a two percent increase in flow-mediated dilation [69]. Although that may seem small, it's equivalent to the improvements seen after several months of doing moderate-intensity aerobic training three times per week [70]. It's also sufficient to move someone from pathologic endothelial function (<3.8 percent) to impaired (3.8 to 6.5 percent), or from impaired to optimal (>6.5 percent) [71].

This meta-analysis also documented reductions in average, systolic, and diastolic blood pressure of 4–6 mmHg among those with normal blood pressure to begin with [69], which is consistent with a 25-year-long study reporting a 47 percent lower risk of developing hypertension (high blood pressure) with four to seven sauna bathing sessions per week, compared to one or less [40].

If that seems like more visits than you can muster, don't worry, because even twice weekly sauna sessions can help your heart. Several trials involving adults with high blood pressure have reported that twice weekly sauna sessions reduced systolic blood pressure by 20 to 23 mmHg and diastolic blood pressure by 14 to 18 mmHg over three months, effects that were at least as large as those seen in control groups asked to run twice weekly [72–74].

One of the most comprehensive studies to date, involving sedentary but otherwise healthy young adults, reported that four to five 60-minute heat stress sessions per week, each resulting in a core body temperature of about 102 °F (39 °C), improved the ability of blood vessels to expand (flow-mediated dilation) and reduced arterial stiffness, subclinical atherosclerosis (intima-media thickness), and blood pressure at various time points over 8 weeks [75].

Overall, one of the most well-supported benefits of regular heat stress is the development of stronger and more resilient blood vessels — our arteries become less stiff and more elastic, thereby allowing them to better respond to the body's needs. Our peripheral capillaries within the skin and skeletal muscle also become better able to exchange fluid and nutrients with surrounding tissues [76].

Saunas Increase Energy Levels

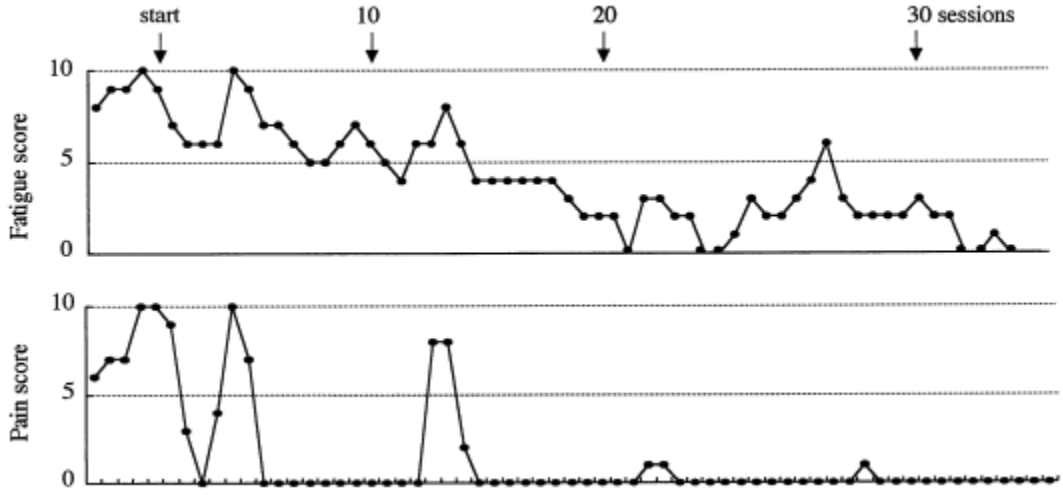
While research on sauna use and chronic fatigue is limited, many Energy Blueprint program members report that sauna use has been the biggest needle mover in helping them overcome chronic fatigue and recover their energy. It makes sense, given that many people in this demographic tend to

tolerate physical exercise very poorly (they often have debilitating exhaustion and pain for days after, post-exertional malaise).

While people with severe chronic fatigue still need to be very aware of not overdoing the dosage of any type of hormetic stressor in the initial stages, sauna allows for profound mitochondrial, cardiovascular, and metabolic health adaptations without creating nearly as much potential for harm as exercise. I've seen absolutely stunning transformations in people with chronic fatigue from this hormetic stressor.

The literature we do have is very promising. For example, a pilot study found that sauna use (Waon therapy) improved cerebral blood flow and brain function, which correlated with self-rated improvements in symptoms in all 11 participants with ME/CFS [77]. Another study found that perceived fatigue, anxiety, depression, and performance status improved in patients with ME/CFS following four weeks of Waon therapy [78].

Most impressively, a case report of two ME/CFS patients received infrared sauna therapy (Waon therapy) once a day for 35 days [79]. They experienced near-unbelievable improvements in energy levels, brain function, pain, depression, and sleep. Both patients were able to return to work six months after beginning therapy. To give you a sense of how significant their improvements were in just 35 days, here is one of their charts for fatigue and pain levels from the beginning to 35 days in.



At the start, they went from roughly an eight out 10 on the fatigue scale to scores of between zero to three by 35 days later. And from scores between six to ten on the pain scale at the start, to mostly zeroes out of 10 by 35 days in. These are not small 10 to 20 percent improvements — these are life-transforming changes in pain and energy levels. We're talking about going from debilitating symptoms to virtually no symptoms in just 35 days of sauna use.

If red and NIR light therapy is the single most important thing you could do to enhance mitochondrial function, then sauna use is the single most important thing you could do to enhance total body stress resilience. They really go hand-in-hand in the biohacker book for reaping hormetic benefits that bolster health, energy, and longevity.

How To Do Saunas:

Heat stress unlocks potent health improvements in energy, brain health, metabolic health, recovery, performance, and longevity. When training with heat, keep these tips in mind:

- Before you hit the sauna, hydrate well, ideally sipping water, or a mineral-rich electrolyte solution, which you can make using a bit of salt and mineral drops, or an electrolyte supplement.
- Then within 30 minutes after your session, drink an additional one to two glasses of water, preferably ice water with electrolytes, which can help bring you back into balance quicker.If you're y**oung, healthy, and physically fit with a high heat tolerance, try traditional saunas,** aiming for 10 to 15 minutes to start, adding five to ten minutes per session, building to 20 to 60 minutes per session, two to seven times per week.

- **If you’re not as healthy, or suffering from chronic fatigue, or a low heat tolerance, or low tolerance to stressors of all kinds, then go for infrared saunas, and** start with *no more* than five minutes at a moderate temperature for your first session. From there, add one to two minutes to your session or per week, as you feel comfortable, building to 10 to 60 minutes per session, two to seven

sessions per week.

- Slowly build resiliency by manipulating how long you remain in the sauna and/or the temperature. For example, if you begin at 135 °F for 10 minutes, try increasing the temperature by 5 °F (to 140 °F), staying in for 10 minutes the following week. Next week, try lowering the temperature to 130 °F but stay in for 20 minutes. The following week, move the needle to 135 °F for 15 minutes, and so on.

- Best times to use the sauna are generally: In the morning, after exercise, or in the evening but at least 90 minutes before bed.

- Hydrate well before using the sauna, then drink one to two glasses of ice water within 30 minutes after your session.

- Many people believe that most of the benefits of sauna come from sweating and detoxing. Actually, the research suggests that's more like a bonus than the central mechanism – the main mechanism is the heat hormesis. If you're in a sauna and you're sweating, but you never get to the point of feeling any real discomfort from the heat (i.e. if you feel like you could stay in there all day), that means it's not hot enough, and that you're not getting all the benefits of sauna use. **Just as with exercise, if you never push your body to the point of any discomfort, you're not going to stimulate any new beneficial physiological adaptations. (I.e. You're not going to get all the potential benefits). This is key, because many infrared saunas simply don't get very hot — they have a low maximal temperature.**

My Recommended Saunas:

There are two basic types of saunas.

1. **Traditional saunas** (also known as Finnish saunas) use radiant heat to achieve temperatures between 70 and 100°C (158-212°F) with a face-level temperature of 80-90°C (176-200°F). Sometimes water is intermittently poured over rocks to temporarily increase the humidity,

but not all saunas have this feature.[156], [157]

2. **Infrared saunas**, in contrast, generally have temperatures from 40-60°C (104-150°F).

If you can afford $5,000-$15,000 full-on traditional saunas, and you have the space for it in your home/backyard, that's a great option. Almost Heaven and Aleko are great brands, but there are many others as well.

Other than that, for large wooden infrared saunas, Sunlighten's Amplify saunas are also excellent, because they get up to much hotter temperatures than typical infrared saunas.

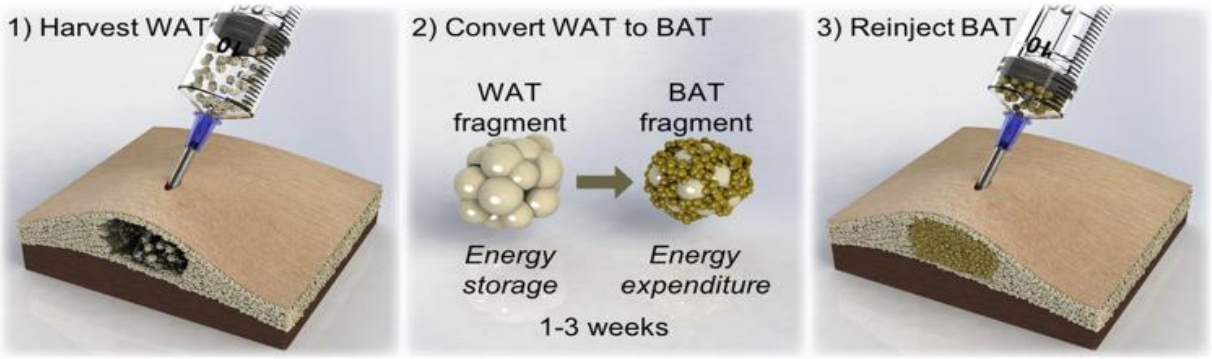
But my favorite bang-for-the-buck option for a cheap, powerful (and ultra low EMF) sauna that heats your body up to high temperatures very quickly, is the Relax Infrared Saunas. Relax Saunas currently offers two versions of very simple, low-cost but highly effective saunas. The sitting model is currently discounted to $2,100. (And you can get an additional $100 off by using the discount code ENERGY or clicking HERE.)

The Relax Saunas lie-down model is $1,500, and the value for the price simply can't be beat for any other sauna on the market. You can get an additional $100 off by using the discount code **ENERGY** or using **this link**. I also personally prefer to do my saunas lying down rather than sitting, so I actually prefer the cheaper lying down sauna.

Energy Hack #3 - Cold Plunging

On the other end of the temperature spectrum, we have deliberate cold exposure. Whereas saunas stress our cardiovascular system more than anything in order to cool down, ice baths and chilly air stress our fat and muscle.

Believe it or not, there's a type of fat that has a massive effect on our metabolism. Effects so beneficial that researchers from Columbia University have developed a simple, innovative method to directly convert all the fat you want to lose, called white fat, into the magical fat I'm talking about, called brown fat [80].



Blumenfeld et al. *Sci Rep*. 2018; 8(1): 7957.

The technique uses fat-grafting procedures commonly performed by plastic surgeons, in which fat is harvested from under the skin, transformed into

brown fat, and then retransplanted into the same patient for cosmetic or reconstructive purposes.

Unlike white fat, which stores energy for the body to use at a later time, brown fat is rich in mitochondria that make it a metabolic masterpiece! While its utility in modern climate-controlled adults is little to none, we wouldn't actually be here today if it wasn't for brown fat generating the heat we needed to stay warm as infants — a process called non-shivering thermogenesis.

While it was once thought that brown fat disappeared after infancy, evidence continues to accumulate showing that adults have it too [81–83]. Better yet, evidence continues to accumulate showing that we can stress this fat and the mitochondria within to grow bigger and stronger.

This idea went mainstream with a pinnacle study funded by the National Institutes of Health, where researchers had a small group of healthy young men stay within a clinical research unit for four months to study what effect changing the ambient temperature had on brown fat activity and energy expenditure [84].

This wasn't anything fancy — for 10 hours every night while the participants slept with nothing more than light clothing and a bedsheet, the temperature of the room was set to 24°C (75°F) during the first month, 19°C (66°F) the second month, 24°C again for the third month, and 27°C (81 °F) the remaining month.

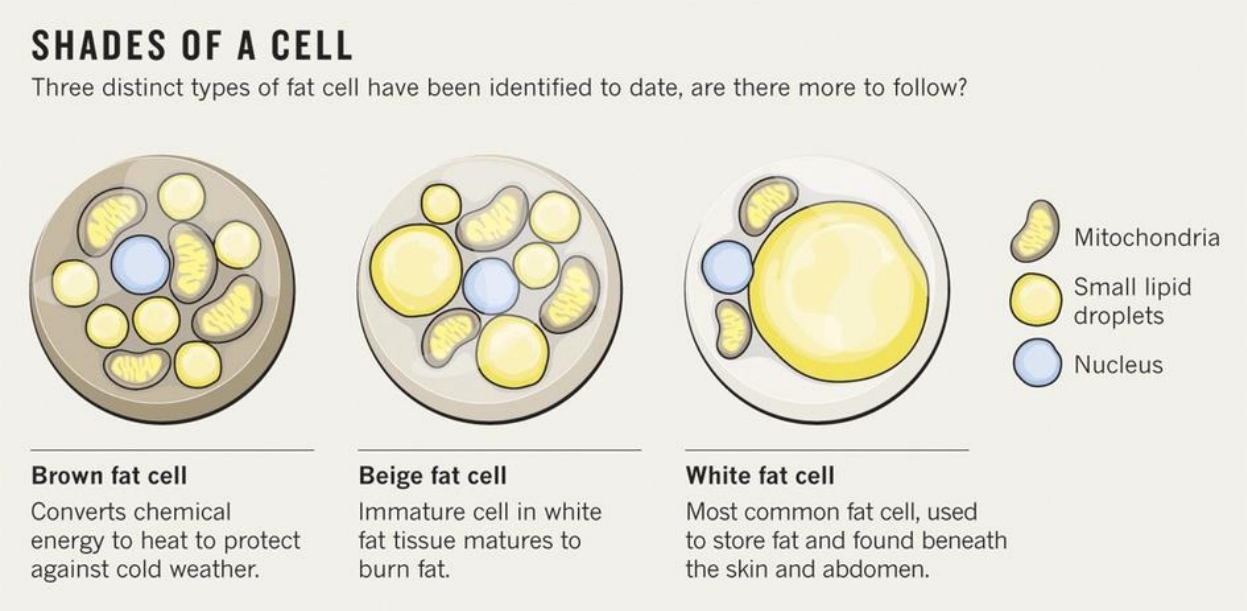
All food and physical activity were controlled to remove as many confounding variables as possible. At the end of each month, the men underwent extensive evaluations, including energy expenditure testing, muscle and fat biopsies, and PET/CT scanning of an area of the neck and upper back region to measure brown fat volume and activity.

Compared to time spent at 24°C (75°F), sleeping at 19°C (66°F) increased brown fat volume by 42% and its metabolic activity by 10%. This was accompanied by better insulin sensitivity and a 6% increase in energy expenditure — an extra 150 calories per day. And everything reversed during the following months of higher temperature exposure.

A follow-up study by the same researchers showed that these benefits are obtainable in as little as one day spent at cooler ambient temperatures [85]. Brown fat appears to turn on rapidly, like flipping a light switch, once it is exposed to cold temperatures, and shut off more slowly, like a dimmer, when the cold temperatures disappear [86].

Several other studies have reported similar findings with a variety of cold exposure protocols, some involving more extreme temperatures for shorter periods of time [87–89]. Cold stress stimulates our brown fat to grow and develop, just like exercise stimulates our muscles to get bigger and stronger.

On top of that, regular cold exposure is one way to turn on the genes that transform white fat into a type of brown-mimetic fat called beige fat [84]. In fact, white fat cells directly sense the temperatures they're exposed to and respond accordingly [90].



Within muscle tissue itself, we see that cold exposure increases mitochondrial biogenesis [91]. Cold stress leads to an uncoupling of the mitochondrial membrane, causing a loss of energy as heat [92]. This functions as a type of stressor, forcing mitochondria to work harder to

produce any given amount of energy since more of it is lost in the creation process. So, the mitochondria adapt by increasing their numbers!

Cold therapy literally transforms your body into a metabolic machine. Your mitochondria are stressed to produce more energy, and they grow more efficient as a result. You also develop new mitochondria altogether as your fat cells transform into more metabolically active tissue.

Cold Plunges Increase Energy And Focus

Cold plunges, whether it's an ice bath, chilly shower, or wading into a winter-time lake, are quite possibly the single most effective thing you can do to obtain a rapid and profound boost to energy, mood, and focus.

Here's what happens [93]: As your core body temperature nosedives, an emergency response unfolds within your body to restore balance. In an extraordinary display of adaptability, your metabolic rate surges by an astonishing 350%, all while your heart rate and blood pressure undergo only subtle shifts of 5–8%. A surge of noradrenaline floods your system, skyrocketing concentrations by 530%, while dopamine, the elixir of motivation, rises by a whopping 250%!

The result? A state of heightened arousal, unwavering attention, laser-like focus, and a cognitive prowess that knows no bounds. It's called the *cold shock response*. Allow me to explain…

As you immerse yourself into the chilling waters, a remarkable transformation unfolds within you. The icy embrace triggers an ancient

response deep within your core, awakening the primal instincts that lie dormant within. Your body, sensing the shock of the cold, unleashes a surge of raw vitality, turning you into a metaphorical warrior poised to conquer any challenge that lies in your path.

In this primal state of survival, every nerve in your body electrifies, sharpening your senses to a razor's edge. Your mind, usually scattered by the distractions of everyday life, becomes laser-focused on the present moment. Distractions fade into the background as your attention becomes singular, like the hunter stalking its prey.

This heightened focus, this state of pure concentration, becomes your ally long after you step out of the icy depths. The effects linger within you, weaving their way through the fibers of your being for hours to come. Your thoughts are crystal clear, and your mental clarity reaching new heights. It's as if a veil has been lifted, revealing a world that brims with possibilities and opportunities.

No challenge seems insurmountable in the wake of the cold shock response. Your newfound resilience and determination propel you forward with unwavering confidence. Like a warrior who has tasted victory, you march into the day with an indomitable spirit, ready to face any obstacle that may cross your path.

The cold plunge, like a masterful conductor, orchestrates a symphony of neurological and physiological changes within you. It triggers a cascade of neurotransmitters and hormones, flooding your system with a cocktail of empowerment. Endorphins dance through your veins, infusing you with a euphoric sense of accomplishment and a deep-rooted belief in your own abilities.

You emerge from the cold plunge not just refreshed, but transformed. The cold water has become your baptism of strength, washing away fatigue and doubt. You look at things from a more positive lens, no doubt as a result of overcoming such significant physical and mental stress. You are reborn as a metaphorical champion, armed with resilience, focus, and an unyielding spirit.

This is no exaggeration. Just 5 minutes of cold water immersion rewires the brain for greatness and changes how you will view the world, for the better [94].

But even going beyond that, there is another amazing layer you can add in to your cold plunge practice to take things to the next level. There is a special kind of magic when you deliberately expose yourself to a physiological stressor, while combining it with the mental approach of intentionally bringing yourself into a state of calm and serenity.

There is, in other words, a huge difference between getting into the cold plunge and hyperventilating, tensing up, and going "oh my god, oh my god, it's so cold, so uncomfortable I gotta get out of here" (a.k.a. freaking out) vs. calming your breathing, relaxing your body, and bringing your brain into a state of serenity.

By exposing yourself to the stress of cold plunge – deliberately inducing physiological stress on your body – you give yourself the opportunity to train your brain into learning how to disconnect or dissociate the physiological stress response (adrenaline/cortisol surges, sympathetic nervous system arousal, etc.) from the reflexive mind reactions that most people have to being in this state (you know, freaking out).

By bringing yourself into a brain state of calmness and serenity during the physiological stress, you're training your brain to do what's called "top-down" control of your brain's reactions to stress – that is, you're using your prefrontal cortex to interrupt the reflexive stress response of the more primal and deep reflexive responses to stress and fear. You are, in other words, training mental toughness and resilience – the ability to be calm and have strength when in a state of intense stress. This is the basis of mental resilience and grit, and it translates into every area of your life. It is, in my opinion, one of the most profoundly transformational skills you can possibly develop.

After a few minutes in the cold plunge, many people describe their mood as being transformed, brain fog lifting, and their motivation, focus and productivity increasing by 200-300%.

How To Cold Plunge:

1. **You want to find a temperature that feels uncomfortably cold**, but that you can safely stay in. Don't actually put your body in physical danger of hypothermia by jumping into a 35 degree F frozen lake with no easy way to warm back up. And also don't go so easy with the temperature that you can stay in for 10 minutes without feeling really cold and uncomfortable. The optimal initial temperature could be 40°F for some, and 60°F for others.

2. **Progression is key**. You don't want to forever do the same routine that you were capable of on day 1. Your body needs a reason to make all these beneficial adaptations described above. To make it adapt, you need to progress by lowering the temperature and or increasing the duration.

3. **Research has indicated that a total time of cold plunging per week of at least 11 minutes** was enough to yield profound benefits. That's not 11 minutes each session – it's the total per week. So think a 1-6 minute session done every other day to daily. E.g. A 3 minute session done 4 or 5 times a week.

4. **Use the Søberg Principle based on cold immersion researcher Dr. Susanna Søberg which is to "End With Cold."** That means that you don't want to warm up in a hot tub or hot shower or even to towel off after the cold plunge. Going back and forth between the cold and heat (ice plunging combined with sauna) is wonderful, but you want to "end with cold" and not towel off or use any external method to warm up after. By allowing your body to shiver, your muscles release a compound called succinate which helps amplify brown fat thermogenesis and the other adaptations of cold exposure.

5. **The colder the water, the shorter time you'll need to stay in**. I recommend experimenting with both very cold sessions where you can take no more than 1-2 minutes, and also using less frigid water and staying in for between 5-10 minutes. My personal sweet spot is a water temperature that allows for a 4-6 minute plunge.

Recommended Plunges:

At this time, there is really only one option I'd confidently recommend to buy: **The Plunge.**

Cheap options: You can make a cold plunge at home in your bathtub or an outdoor plastic or metal tub for the cost of large amounts of ice. But it's a lot of work each time, and in my experience, almost everyone gets sick of doing it, and ends up not using the cold plunge because of the work and time involved each time.

There is also the option to use a chest freezer and convert it into a cold plunge. There are instructions online in numerous sources on how to do this. If you're handy and have experience working with construction, plumbing, or carpentry, this can be a good option for some. You have to caulk it well on the seams, outfit it with a filter, temperature controller, and ozonator for it to be worth the time. And it doesn't look good after all that, with wires hanging off the sides, etc. If you don't care about looks and you're handy, it can be a good option.

I personally had a chest freezer that I used for a few months before getting a proper cold plunge. All I can say is that it's a huge difference. Not only does it look way better and is it way more comfortable and durable, but more importantly, the cold source is different. In the real cold plunge, the cold source is external to the tub and this makes the temperature in all parts of the tub the same. This is actually not a trivial difference at all.

In the chest freezer, the cold comes from the walls and floor of the tub itself, and I found that my toes would freeze and get really painful before the rest of my body was actually ready to get out. So the source of the cold was the limiting factor in how long I could stay in.

With the real cold plunge, the toes were fine, and my overall body temperature is the limiting factor – which is what you want. So chest freezers can be decent if you're on a tight budget, but my recommendation is to save up and get a proper plunge. You get what you pay for.

Expensive options: There are a number of brands like Morozko Forge making beautiful, high-quality cold plunges for over $10,000. But this is simply out of reach for most people. Plus, having had personal experience

with the pricey ones, I can tell you that they're really no better than the option I'm about to tell you about.

Unless you're willing to spend $12,000+, there are very few options around $5,000 or under, and most of them are not very good. Too bulky, too loud, not quality materials, or some other option.

I initially didn't want to spend the money to get The Plunge, and instead opted for another brand (which I shall not name, because I have a rule about speaking badly about others) that was about $1,500 cheaper. It was horrifically loud and looked like the caulking job in the tub was done by a 5-year-old. Intolerable.

I ended up selling it used for $1,000 less than I bought it for. Then ended up buying The Plunge after that, and it was HEAVEN. Absolute perfection. Sleek, beautiful large tub, filter, and ozone system that all work perfectly.

So without question, my top recommendation is *The Plunge.* And that's why I partnered with them to get you a discount,

This is the plunge I have, and it is absolutely amazing. Quiet, beautiful, durable, and extremely effective.

You can get it HERE from The Plunge's website, and you'll get $150 off, when using the code **ARIW** on checkout.

Summary

There you have it – three technologies that have the ability to increase your energy levels by 200-300% within just a few weeks. (And actually with cold plunges, you'll also get an immediate 200-300% increase in energy that lasts for 3-6 hours, without the side effects of caffeine).

Plus, you'll get a whole slew of other amazing "side effects" (the beneficial kind), like:

- Enhanced physical performance
- Better mood (they combat anxiety and depression)
- Faster recovery from exercise
- Better sleep
- Increased resilience to stress
- Reduced inflammation
- Fat loss
- Longevity/anti-aging effects

Do you have 30 minutes a day to devote to integrating these 3 tools into your life? Incredible energy, performance, and longevity benefits are waiting for you.

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