



THE ENERGY BLUEPRINT

SUPERCHARGING YOUR BRAIN



To Fix Anxiety,
Depression, Brain Fog
And Fatigue

Causes of Brain Fog and How to Fix It

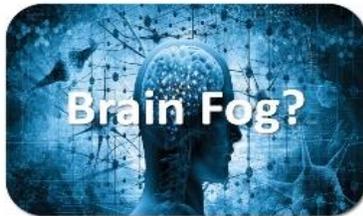
In this Masterclass , we're going to go over even more power-packed strategies. I'll be giving you some absolutely must-know information and powerful strategies to increase your energy levels by **optimizing your brain function**. Here's what you're about to learn:

1. The link between fatigue and brain symptoms like anxiety, depression, brain fog, and more.
2. Hidden keys to dramatically improve your brain function, giving you more brain energy and brain clarity than you've had in years.
3. The key types of cellular dysfunction in the brain that drive anxiety and depression, and science-backed strategies to rewire your brain out of anxiety, depression and stress mode.
4. 20 powerful evidence-based foods and supplements that can dramatically improve your brain health and brain energy levels.
5. A 10 minute daily practice to start the day that's a combination of nervous system rewiring and a technique called the “Secret Smile”, which is something I learned from one of my mentors that is incredibly fun and will literally retrain your brain and nervous system out of stress mode and help switch your body back into energy mode.

Causes of Brain Fog

Do you have any of these symptoms?

Brain Fog



Brain fog is a type of cognitive dysfunction that involves memory problems, lack of ability to concentrate, lack of mental clarity, clouded thoughts, slow thought processes and poor focus.

Brain-Related Fatigue

Brain related fatigue is feeling fatigued, exhausted or sleepy, almost as if your brain is turning off after you do something mentally demanding such as doing work at your job, reading a nonfiction book, studying, driving a car or anything like that.



Loss of Resilience



Poor resilience to stress, fragility, the inability to handle and recover from stress, and even relatively minor psychological stress or physical activity can put you into a state of anxiety or exhaustion.

Anxiety or depression

Anxiety and depression. These are self-explanatory.

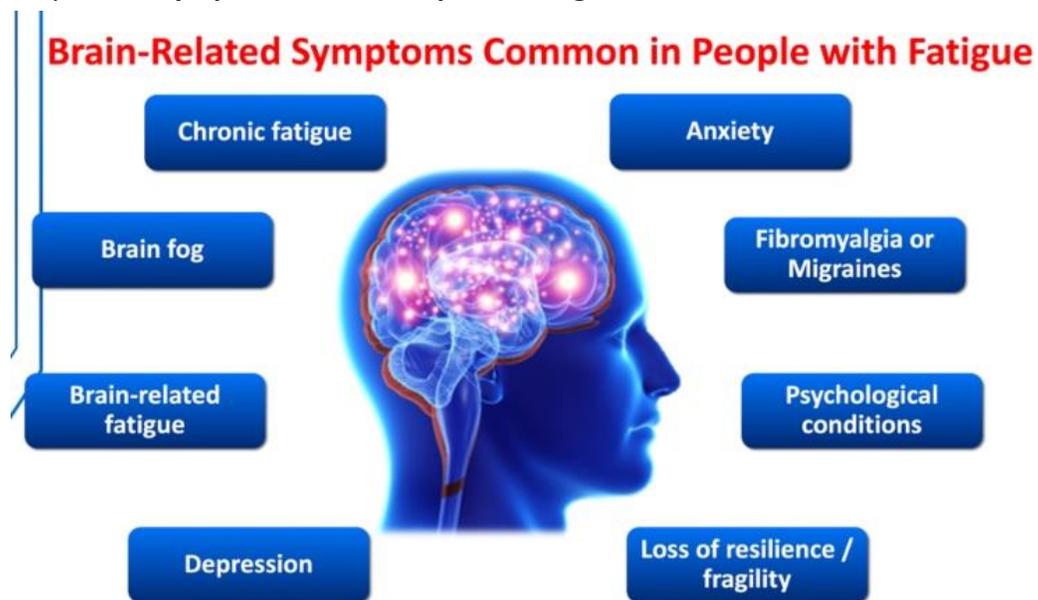


These symptoms are not just normal parts of aging: They are symptoms of neurons in your brain that are either damaged, inflamed, dysfunctional, or not communicating properly.

If you have any of these symptoms, then you have brain cell dysfunction.

These are all symptoms indicative of dysfunction at the neuron level in your brain.

Importantly, these symptoms also link up with fatigue.



People who have energy problems and fatigue problems, especially in the more severe stages of chronic fatigue, also start to get lots of other symptoms like:

- brain fog
- brain-related fatigue
- fibromyalgia or migraines
- psychological conditions or psychiatric conditions
- loss of resilience
- depression
- anxiety

All of these are brain-related symptoms that commonly co-occur in people with energy issues.

Now, many people think of these as separate and unrelated conditions; they often talk of having one particular psychological condition or another. We tend to think of these as totally separate and unrelated things. **In reality, these are all connected. They're intertwined.**

First, we know that there are brain changes in people with chronic fatigue. This has been confirmed in many studies. If we're looking specifically at brain function and nervous system function in people with chronic fatigue, a lot of different studies have found a link here—widespread neuroinflammation has been found in Chronic Fatigue Syndrome.

So we know that there is a brain component in chronic fatigue, but there's more to the story here...

We also know:

- Rates of anxiety, depression, brain fatigue, psychological conditions, and brain fog are all extremely common in people with chronic fatigue.
- Depression and anxiety often go together about 75% of the time.
- If you have depression, many people don't know this, but you're much more likely to have neurological diseases like Alzheimer's or dementia later on in life.
- Over 60% of people with chronic fatigue syndrome are at risk for psychiatric disorders.

These things are very much intertwined, and people who have even mild or moderate fatigue also very commonly have brain-related symptoms like brain fog, anxiety, depression, and more.

People think of these as totally separate things, but they're not. They're very much related.

These things are connected at the cellular level in the brain. So why are all of these connected?



Because they all come down to the same basic types of dysfunction at the cellular level in the brain.

And those mechanisms are neuroinflammation and oxidative damage in the brain, mitochondrial dysfunction and mitochondrial shutdown, something called glial activation or microglia activation, excitotoxicity, and leaky blood-brain barrier.

The truth is that most of the time these four mechanisms co-occur, but we can think about them as four separate mechanisms.

Let's talk about each of these mechanisms in depth.

The 3 Types of Dysfunction That Cause Poor Cell Function and Communication

1 - NEUROINFLAMMATION, OXIDATIVE DAMAGE, AND EXCITOTOXICITY

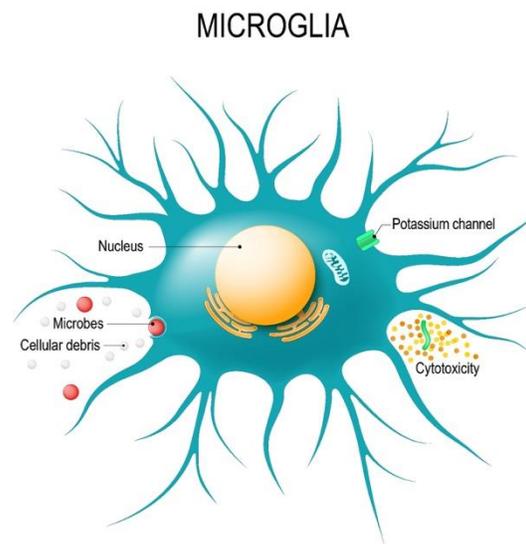
Poor cell function, or poor cell communication, is the single biggest cause of brain fog. Simply put, it is when you have too much inflammation, oxidative stress, and excitatory neurotransmitters in the brain. These three factors tend to occur together. Neuroinflammation (inflammation in the brain) causes neurons to fire more slowly, or potentially to fire too much. It can slow down and disrupt brain cell communication and cognitive performance in many ways. Ultimately, it makes your brain cells either sluggish or exhausted from firing excessively, and then they don't communicate properly and easily fatigue.

Neuroinflammation revolves around cells in the brain called "microglia." The function of microglia **cells in the brain was unknown for decades, but it is now known that they** function as mediators of the immune system in the brain – they act to help clear cellular debris and dead neurons by sort of eating up damaged cell parts and debris.

They also "switch on" and release inflammatory compounds in response to things like:

- Toxins entering the brain
- Chronic stress
- Head trauma or traumatic brain injury
- Poor blood circulation or lack of oxygen to the brain
- Excessively high blood sugar spikes or chronically high blood sugar or insulin resistance
- A leaky blood-brain barrier
- Circadian rhythm disruption or sleep deprivation
- Inflammation in other parts of the body

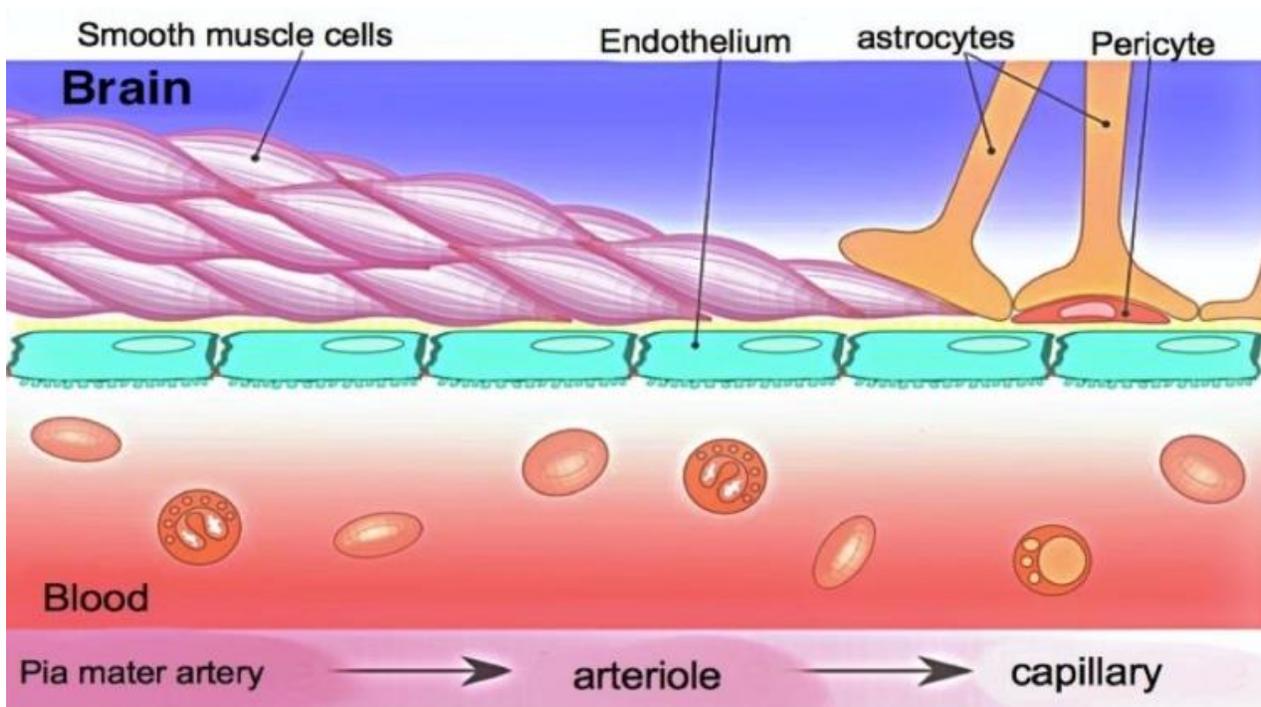
Here's the problem: **When these microglia are too frequently activated, they get stuck in "on" mode. Once that happens, they tend to cause chronic inflammation and oxidative stress in**



the brain. This also leads to “excitotoxicity” and mitochondrial shutdown which translates into brain fog, brain-related fatigue, and other brain-related symptoms that we’ve been talking about.

2- LEAKY BLOOD-BRAIN BARRIER

Another major cause of brain fog is leaky blood-brain barrier. We have a barrier the surrounds our brain that is designed to let things into the brain that should get in and keep things out that need to be kept out. When this barrier becomes compromised, leaky blood-brain barrier occurs.



What specifically are we talking about here?



The blood-brain barrier is literally a physical protective shield that surrounds your brain and plays an integral role in protecting it from all the things that shouldn't be allowed to enter.

The blood-brain barrier needs to let in things like glucose, carbohydrates, proteins, amino acids, ketones, vitamins and minerals, immune cells and cytokines, and

hormones. On the other hand, the blood-brain barrier needs to keep out things like toxins, pathogens, errant immune cells, foreign particles in the bloodstream, and so on.

The problem is that over time, due to things like toxins in the environment, a poor diet, or chronic stress, the blood-brain barrier can become leaky, and particles that shouldn't be getting through start to leak through. When this happens, these particles that leak through start to trigger immune reactions and inflammatory reactions which trigger this cascade of neuroinflammation, excitotoxicity, mitochondrial dysfunction, glial overactivation, and so on.

3- MITOCHONDRIAL DYSFUNCTION AND SHUTDOWN

The third key factor is mitochondrial dysfunction. Most people know of mitochondria as the cellular energy generators. The secret, as I told you in the last video, is that your mitochondria are not just that. They are also danger sensors.

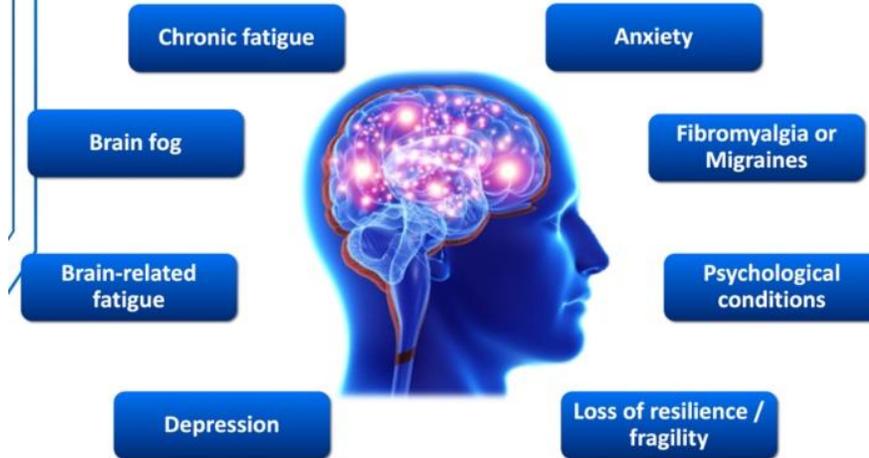
Like I showed you before, the mitochondria can either exist in energy mode, a.k.a peacetime metabolism, or cellular defense mode. The more they pick up on threats and stressors, the more they shift into cell defense mode: they are either in high energy mode or cell defense mode. When you have chronic stress, whether it's psychological stress, toxins or anything else, those mitochondria are triggered into cell defense mode, where they shut down energy mode.



As you might guess, when energy production in your cells is slowed, your cells don't work as well. That includes your brain cells. When the mitochondria in your brain cells don't work as well as they should, your brain cells don't have as much energy as they need, and that leads to poor mental stamina and poor ability to focus, i.e. brain fog.

Interestingly, in just the last few years, a huge amount of research has come out linking mitochondrial dysfunction to these brain conditions and brain-related symptoms that we've been talking about.

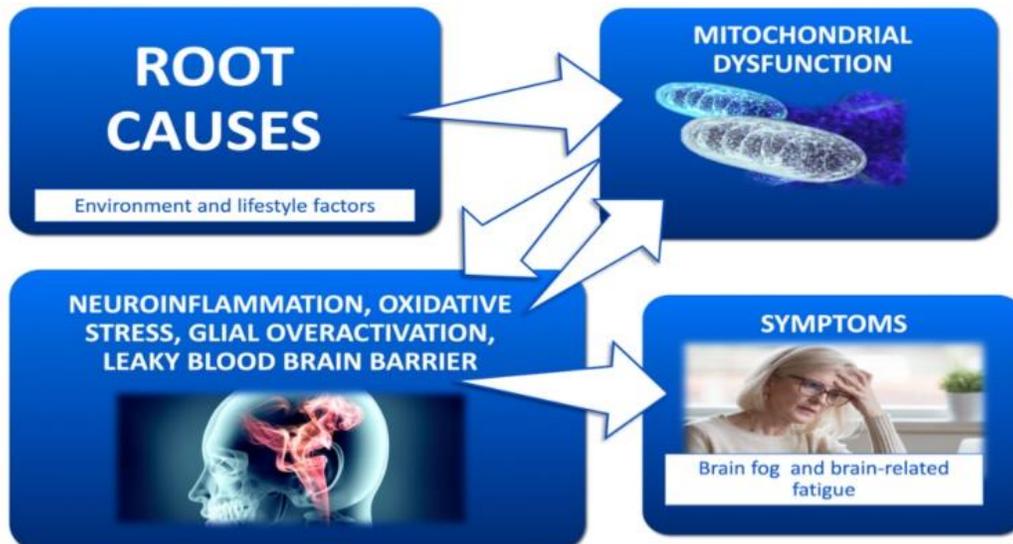
Brain-Related Symptoms Common in People with Fatigue



Again, all of these different symptoms are connected. Why are they connected?

Because they are driven by the same sorts of cellular dysfunction: leaky blood-brain barrier, glial activation, mitochondrial dysfunction, neuroinflammation. These are the key cellular drivers of pretty much all of these different brain-related symptoms.

I also want to make sure that we don't lose sight of root causes.



Root causes are the fundamental underlying causes of these problems that generally first result in mitochondrial dysfunction and then evolve into other things such as neuroinflammation,

oxidative stress, glial overactivation, and leaky blood-brain barrier. That is when we start to get symptoms like brain fog, anxiety, depression, brain-related fatigue and so on.

If we want to fix the symptoms, there are two steps:

1. Eliminate the root causes

2. Reverse the cellular dysfunction



When we get down to the root cause level, there are a lot of different potential causal factors in these brain-related symptoms. To mention a few, poor circadian rhythm habits, toxins, side effects of various prescription and over-the-counter drugs, gut issues, psychological stress, food intolerances, poor sleep, and so on.

Causes of Brain Symptoms and Fatigue

Here are some of the most important layers of root causes as well as some of the mechanisms that mediate these different things like mitochondrial dysfunction and neuroinflammation.

CIRCADIAN RHYTHM DISRUPTION



Circadian rhythm is intimately tied to brain function.

There are the nine mechanisms that we talked about in video one about how a disrupted circadian rhythm can lead to fatigue, mitochondrial dysfunction, neuroinflammation and these brain-related symptoms.

9 WAYS THAT A DISRUPTED CIRCADIAN RHYTHM LEADS TO BRAIN FOG AND FATIGUE

1. Weakens mitochondria and makes them susceptible to damage
2. Causes gene expression changes that control mitochondrial function
3. Reduces autophagy
4. Leads to energy stores in the brain not being replenished
5. Disrupts hormones (leptin, thyroid hormone, cortisol, ghrelin, etc.)
6. Damages blood sugar regulation
7. Causes neurotransmitter imbalances
8. Endocannabinoid system depletion
9. Hinders the clearance of toxins from the brain

A disrupted circadian rhythm impairs all of these mechanisms from doing their job and ultimately results in mitochondrial dysfunction, neuroinflammation, oxidative damage, and so on. **There are a lot of different layers of cellular dysfunction that occur in the brain as a direct result of disrupted circadian rhythm.**

So this is a little reminder to make sure to go watch Masterclass #1 and implement the 6 strategies we talked about there.

Now, you don't have to follow all six of the strategies from video one. You can follow as many or as few of these recommendations as you like. Just understand that your degree of results will parallel your level of commitment. The more of them you follow, the better results you will get.

TOXINS

Toxins are intimately tied to mitochondrial dysfunction and fatigue. There are a number of different toxins that have already proven mitochondrial toxicity and that we know shut down and damage mitochondria, and cause neuroinflammation, excitotoxicity and glial activation in the brain.



THE CONNECTION BETWEEN EXPOSURE TO CHEMICAL TOXINS AND FATIGUE

- Dr Majid Ali estimates that roughly 40% of his patients with chronic fatigue suffer from heavy metal toxicity.
- David S. Bushcer, M.D. Stated that 70% of his patients with chronic fatigue had a chemical trigger - either they moved into a new home, there was remodeling at the office, or a pesticide application and now they have chronic fatigue.
- Researchers at Uppsala University Medical School in Sweden report that patients with chronic fatigue nearly always contain abnormal levels of mercury within their cells.

Here is an overview of some very common known toxins that are linked to fatigue as well as brain and mitochondrial dysfunction.

COMMON TOXINS FOUND IN OUR ENVIRONMENT THAT ARE LINKED TO FATIGUE



We are all exposed to these things. Exposure is rampant; there's no way of completely avoiding it. There are also dozens more chemicals with proven toxicity to human cells, mitochondria, and brain cells that we are all regularly exposed to.

INFLAMMATORY DIET

Another key driver of these brain-related symptoms is a poor diet or an inflammatory diet. Chronic inflammation has a variety of negative effects that result in brain fog and fatigue.

CHRONIC INFLAMMATION HAS A VARIETY OF NEGATIVE EFFECTS THAT RESULT IN BRAIN FOG AND FATIGUE:

- Inhibits mitochondrial function (energy production)
- Promotes a leaky blood brain barrier
- Causes neuroinflammation
- Causes abnormal cortisol levels
- Depletes the endocannabinoid system
- Throws off neurotransmitter balance (especially orexin, endorphins, GABA and dopamine)



Chronic inflammation directly suppresses mitochondrial function and energy production in the mitochondria throughout the body, including the brain. If you have chronic inflammation, understand that that is a signal that is being picked up by your mitochondria, which are stress sensors, and they're shifting more into defense mode in response to that chronic inflammation.

It also promotes a leaky blood-brain barrier, causes neuroinflammation and abnormal cortisol levels, depletes the endocannabinoid system, and throws off neurotransmitter balance.



Front Behav Neurosci. 2018; 12: 78.

Published online 2018 Apr 26. doi: [10.3389/fnbeh.2018.00078](https://doi.org/10.3389/fnbeh.2018.00078)

PMCID: PMC5932180

PMID: [29755330](https://pubmed.ncbi.nlm.nih.gov/29755330/)

The High Costs of Low-Grade Inflammation: Persistent Fatigue as a Consequence of Reduced Cellular-Energy Availability and Non-adaptive

Chronic or persistent fatigue is a common, debilitating symptom of several diseases. Persistent fatigue has been associated with low-grade inflammation in several models of fatigue, including cancer-related fatigue and chronic fatigue syndrome. However, it is unclear how low-grade inflammation leads to the experience of fatigue. We here propose a model of an imbalance in energy availability and energy expenditure as a consequence of low-grade inflammation. In this narrative review, we discuss how chronic low-grade inflammation can lead to reduced cellular-energy availability. Low-grade inflammation induces a metabolic switch from energy-efficient oxidative phosphorylation to fast-acting, but less efficient, aerobic glycolytic energy production; increases reactive oxygen species; and reduces insulin sensitivity. These effects result in reduced glucose availability and, thereby, reduced cellular energy. In addition, emerging evidence suggests

There are 3 key mechanisms of how an inflammatory diet can cause fatigue and brain symptoms:

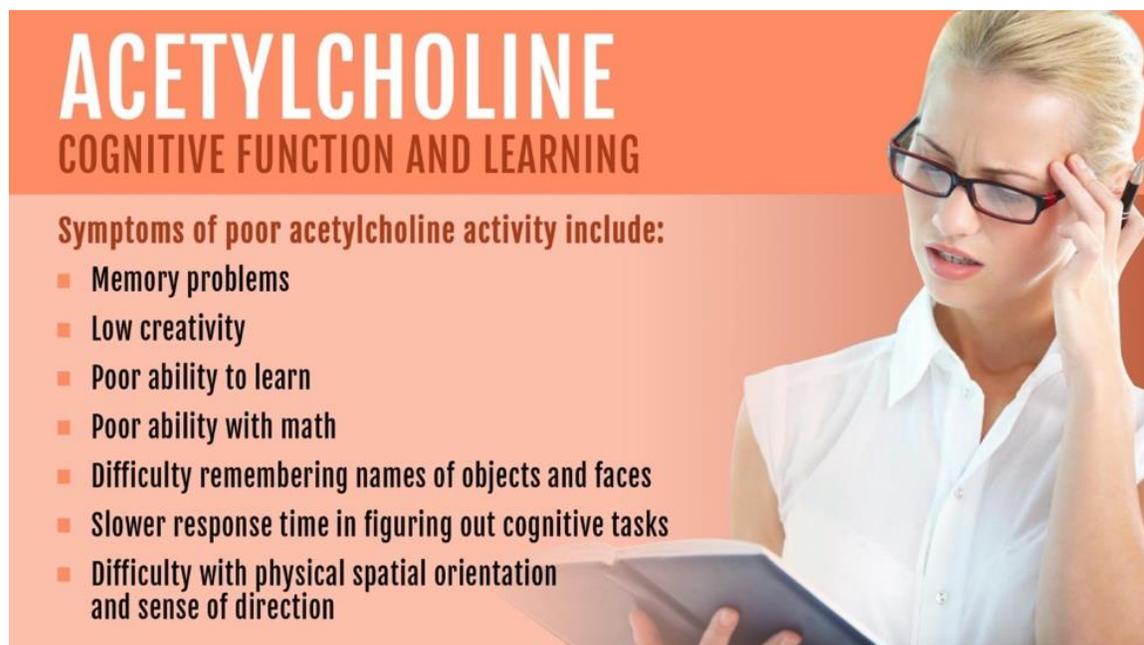
1. There was a 2018 study looking specifically at the ability of low-grade inflammation to cause persistent fatigue as a direct result of how inflammation suppresses mitochondrial energy production. In other words, how inflammation shifts mitochondria more into defense mode and takes them out of energy mode.
2. In addition, a general overconsumption of food can promote an inflammatory state. Like circadian rhythm disruption, it suppresses levels of that key regulator of energy production called NAD⁺.
3. It also causes insulin resistance and oxidative stress, and insulin resistance itself will drive cellular damage, which will cause inflammation and shut down mitochondria. Fat accumulation—simply accumulating lots of excess body fat—will also result in higher levels of chronic inflammation because the fat cells themselves produce something called adipokines that lead to higher levels of systemic inflammation.

All of these factors lead to less energy production by the mitochondria in your brain.

NEUROTRANSMITTERS

Another key factor that plays a role in these brain-related symptoms is neurotransmitter imbalance. There are various neurotransmitters that impact our cognitive function, our mood, and our energy levels.

To give you a brief overview:

An infographic with an orange background. On the right side, there is a photograph of a woman with blonde hair, wearing glasses and a white shirt, looking at a tablet with a thoughtful expression. On the left side, there is text in white and orange. The title 'ACETYLCHOLINE' is in large white letters, with 'COGNITIVE FUNCTION AND LEARNING' below it in smaller orange letters. Underneath, the text 'Symptoms of poor acetylcholine activity include:' is in orange, followed by a list of seven symptoms in white, each preceded by a small orange square bullet point.

ACETYLCHOLINE

COGNITIVE FUNCTION AND LEARNING

Symptoms of poor acetylcholine activity include:

- Memory problems
- Low creativity
- Poor ability to learn
- Poor ability with math
- Difficulty remembering names of objects and faces
- Slower response time in figuring out cognitive tasks
- Difficulty with physical spatial orientation and sense of direction

SEROTONIN

MOOD, JOY, AND PLEASURE

Symptoms of poor serotonin activity include:

- Anhedonia (difficulty finding pleasure or joy in life's activities)
- Loss of interest in passions, interests or hobbies
- Depression
- Anger
- Depression when there isn't enough sunlight
- Loss of enthusiasm for one's favorite activities or favorite foods
- Fibromyalgia or unexplained muscle pains
- Frequent worry or anxiety
- Loss of interest in and ability to find pleasure in relationships and friendships
- Difficulty falling asleep and staying asleep



GABA

RELAXATION AND CALMNESS

Symptoms of poor GABA activity include:

- Chronic feelings of anxiousness, dread or panic (without reason)
- Chronic feelings of physical and/or mental tension
- Racing thoughts/restless mind
- Hard time shutting off your thoughts when trying to sleep
- Not able to focus and direct your attention well
- Worrying about things you didn't use to worry about



ENDORPHINS

PAIN REDUCTION AND STRESS RESPONSE

Symptoms of endorphin deficiency include:

- Chronic pain, headaches or migraines
- Pain killing medications fail to bring much relief
- Emotionally sensitive
- Very low pain threshold (light touch, sounds, and bright lights can trigger it)
- Not enjoying life and/or feeling depressed
- Possibly diagnosed with fibromyalgia



DOPAMINE

PLEASURE, REWARD, MOTIVATION/DRIVE & STRESS TOLERANCE

Symptoms of poor dopamine activity include:

- Lack of drive and motivation
- Difficulty bringing tasks to completion
- Feeling worthless or hopeless
- Being angry or irritable without it being necessary or for small things
- Difficulty handling any increase in stress load
- Anti-social tendencies and/or lack of concern for family/friends



OREXIN

ENERGY AND WAKEFULNESS

Symptoms of poor orexin activity include:

- Daytime sleepiness (note: narcolepsy can be the result of extreme orexin deficiency)
- Fatigue and sleepiness after meals rich in carbs or fats
- Chronic low energy levels or fatigue/exhaustion
- Propensity for weight gain
- Vivid images when falling asleep or waking up
- Feeling unable to move or speak when falling asleep
- Poor quality sleep at night

There are a variety of different causes of neurotransmitter imbalances. A lot of this comes back to the same sorts of root causes that lead to these different types of brain-related symptoms that we've been talking about.



VAGAL TONE

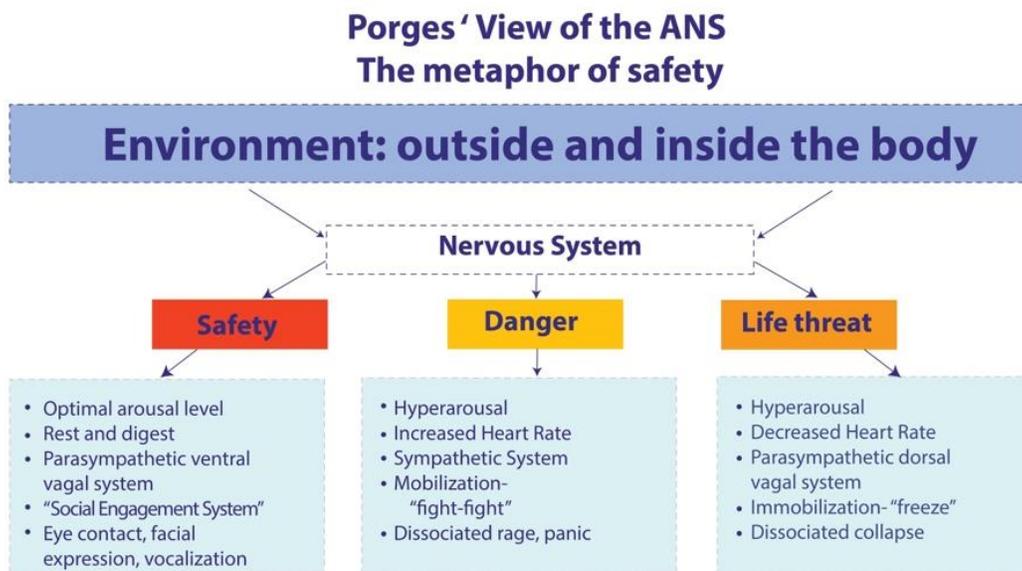
The Vagus nerve is a critical nerve in our autonomic nervous system that is responsible for putting our entire body into a state of rest and relaxation and rejuvenation and out of stress mode.

THE OLD MODEL - THE AUTONOMIC NERVOUS SYSTEM IS DIVIDED INTO TWO PARTS

1. The sympathetic (“fight-or-flight”) nervous system – involved in our stress response.
2. Parasympathetic (“rest and digest”) nervous system – involved in the body’s ability to be calm, restful and relaxed, as well as to perform vital regenerative processes (e.g. sleep, rest) and regulate balance in heart rate, breathing, digestion, and more.

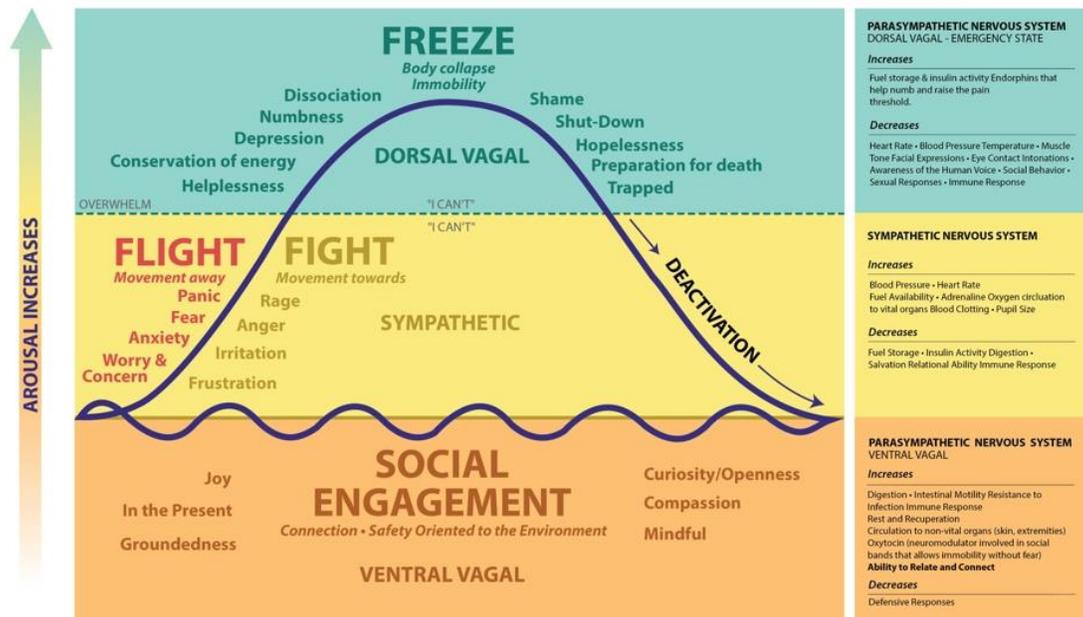
These two systems are in a tug of war – **WHEN ONE IS MORE ACTIVE, THE OTHER BECOMES LESS ACTIVE.**

THE NEW MODEL - THE POLYVAGAL NERVOUS SYSTEM



The newer model is the polyvagal nervous system, or the polyvagal autonomic nervous system, and this is primarily from a researcher named Stephen Porges, who has been doing work in this field for several decades. There are now many other researchers who have gotten involved over the years.

Basically, the polyvagal nervous system is a more sophisticated model in which the nervous system is not just simply something that is either in stress or rest mode, but is instead a sort of threat sensor network. It is a network to detect what level of danger you are in: are you safe or are you under threat? And in response to that, it regulates a number of key processes.



So in polyvagal theory, you have three key systems:

1. The ventral vagal system
2. The sympathetic nervous system
3. The dorsal vagal system.

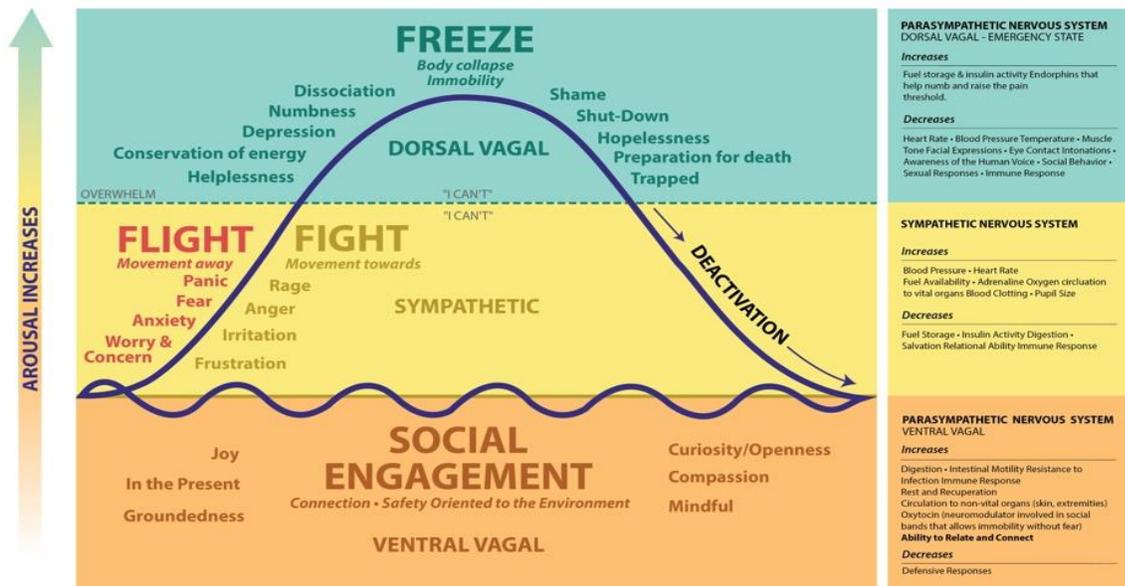
The ventral vagal system is not just rest and relaxation but is also a social engagement system. It is associated with perceiving yourself as being in a safe environment, and feeling safe is associated with joy, being in the present moment, groundedness, and engaging with others. It also affects your facial expressions such as smiling and making expressions that lead to positive social engagements, curiosity, openness, compassion, being mindful, etc. This is really where you want to spend the majority of your time.

You can also be engaged in sympathetic dominance which is the classic fight-or-flight instinct. This engages the body into a stress mode state where you are mobilized to either fight or run away.

In the third situation, you have a dorsal vagal response, which is a freeze response. This is associated with overwhelming stress or trauma. This is where the polyvagal theory gets more

complex than the simple stress versus relaxation model. This response is associated with numbness, lack of emotion, conservation of energy, or fatigue, depression, helplessness, shamelessness, social isolation, feeling trapped, feeling hopeless, etc.

The dorsal vagal response is also associated with past trauma. Some of you are probably having light bulbs light up in your heads and are beginning to connect some of the dots here because you've had some trauma in the past or are dealing with a situation that has led you to feel disconnected from your body, dissociated, numb to life, depressed, or incapable of feeling emotions. Perhaps you know somebody that fits these characteristics and who is fatigued.



You have this constellation of symptoms that are associated with a dorsal vagal activation dominance and being taken out of this ventral vagal.



It doesn't matter whether you're in a sympathetic dominance state—a tense, fight-or-flight, stress reaction, anxiety state—or if you're in a dorsal vagal dominance state of being depressed, fatigued, or emotionally flat.



Either way, **the goal is to get back to ventral vagal dominance, back to these positive emotional states and ways of being in the world.**



Now that we have looked at the polyvagal theory, what we're really talking about is how low ventral vagal tone is linked with a variety of issues. As you can see in the image above, a lot of different diseases and symptoms have been linked with low vagal tone.

There are a number of key drivers of poor vagal tone:

1. Chronic stress
2. Poor gut health
3. Past trauma
4. Genetics or epigenetics from the mother

5. Lack of Re-Charge Rituals

One interesting thing that I want to bring up, especially since we're talking about chronic fatigue, is that there is actually a personality trait that is strongly associated with fatigue and chronic fatigue syndrome, and that is **self-critical perfectionism**.

People who are self-critical perfectionists have this constant negative chatter going on in their heads which is actually, if you think about it, self-critical perfectionism --is actually a sort of low-level chronic stress to your brain and nervous system.

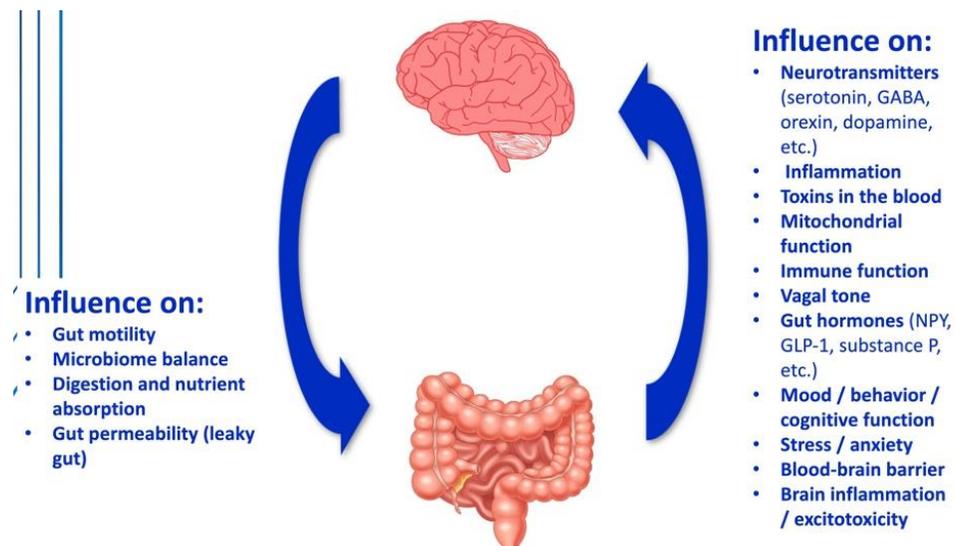
Lots of research has associated this personality trait with FATIGUE.

Why?

If you think back to the polyvagal theory, **self-critical perfectionism is basically perceived as a threat which constantly signals to your brain that it is not in a safe environment** and that it shouldn't relax. The brain is constantly berated throughout the day about doing things wrong and feels chronically unsafe as a result. That is the fundamental reason why there is so much research linking this personality trait to a clinical burnout, to chronic fatigue syndrome, and to fatigue more broadly.

GUT-BRAIN AXIS

Another key driver of these brain-related symptoms is the gut-brain axis. Many people don't realize it, but the gut and the brain are actually in constant communication with one another.



There are numerous ways that the brain and the gut maintain constant communication, and problems in one necessarily causes problems in the other.

REVIEW ARTICLE

Front. Neurosci., 16 March 2018 | <https://doi.org/10.3389/fnins.2018.00155>



Interplay Between the Gut-Brain Axis, Obesity and Cognitive Function

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Obesity continues to be one of the major public health problems due to its high prevalence and co-morbidities. Common co-morbidities not only include cardiometabolic disorders but also mood and cognitive disorders. Obese subjects often show deficits in memory, learning and executive functions compared to normal weight subjects. Epidemiological studies also indicate that obesity is associated with a higher risk of developing depression and anxiety, and *vice versa*. These associations between pathologies that presumably have different etiologies suggest shared pathological mechanisms. Gut microbiota is a mediating factor between the environmental pressures (e.g., diet, lifestyle) and host physiology, and its alteration could partly explain the cross-link between those pathologies. Westernized dietary patterns are known to be a major cause of the obesity epidemic, which

There's even research on this specifically linking the gut-brain axis with things like obesity and cognitive function—things like brain fog, for example.

Psychobiotics and the Manipulation of Bacteria–Gut–Brain Signals

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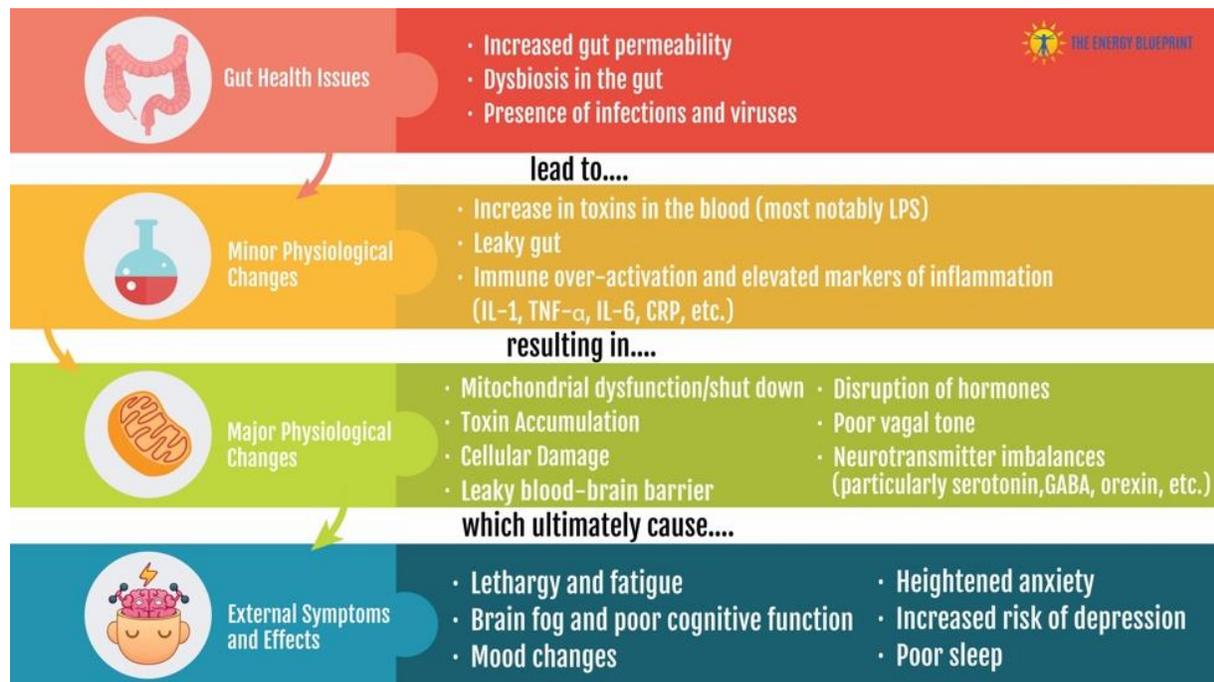
Abstract

Go to:

Psychobiotics were previously defined as live bacteria (probiotics) which, when ingested, confer mental health benefits through interactions with commensal gut bacteria. We expand this definition to encompass prebiotics, which enhance the growth of beneficial gut bacteria. We review probiotic and prebiotic effects on emotional, cognitive, systemic, and neural variables relevant to health and disease. We discuss gut–brain signalling mechanisms enabling psychobiotic effects, such as metabolite production. Overall, knowledge of how the microbiome responds to exogenous influence remains limited. We tabulate several important research questions and issues, exploration of which will generate both mechanistic insights and facilitate future psychobiotic development. We suggest the definition of psychobiotics be expanded beyond probiotics and prebiotics to include other means of influencing the microbiome.

Here is another study called, “Psychobiotics and the Manipulation of Bacteria-Gut-Brain Signals.” It has been shown in a number of studies that the balance of bacteria in the gut, and

the presence of certain kinds of bacteria, can either lead to brain-related dysfunction or improved mood and improved brain function.



Here is how this typically plays out. If you have things like dysbiosis in the gut (an imbalance of good and bad bacteria) and the presence of a lot of bad bugs that shouldn't be there, then these things coupled with a leaky gut can lead to changes such as an increase in toxins in the blood and specifically something called lipopolysaccharide (LPS), which is also known as endotoxin.

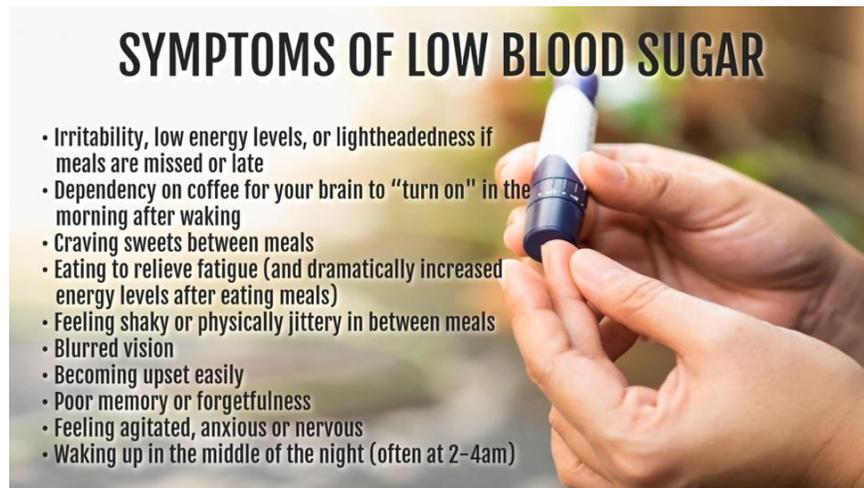
Just the simple presence of LPS now leaking into the bloodstream can directly shut down mitochondria, and there is research showing that LPS shuts down mitochondria and is directly linked to fatigue. It can also result in cell damage, a leaky blood-brain barrier, disruption of hormones, poor vagal tone and neurotransmitter imbalances, all of which ultimately lead to fatigue, brain fog, mood changes, anxiety, depression, poor sleep, and this constellation of fatigue and other brain-related symptoms that we've been talking about.

In summary, gut health is a huge factor in brain health.

BLOOD SUGAR

Another key driver of these brain-related symptoms is blood sugar imbalances and blood sugar regulation issues.

Here are a few symptoms of low blood sugar:



SYMPTOMS OF LOW BLOOD SUGAR

- Irritability, low energy levels, or lightheadedness if meals are missed or late
- Dependency on coffee for your brain to “turn on” in the morning after waking
- Craving sweets between meals
- Eating to relieve fatigue (and dramatically increased energy levels after eating meals)
- Feeling shaky or physically jittery in between meals
- Blurred vision
- Becoming upset easily
- Poor memory or forgetfulness
- Feeling agitated, anxious or nervous
- Waking up in the middle of the night (often at 2-4am)

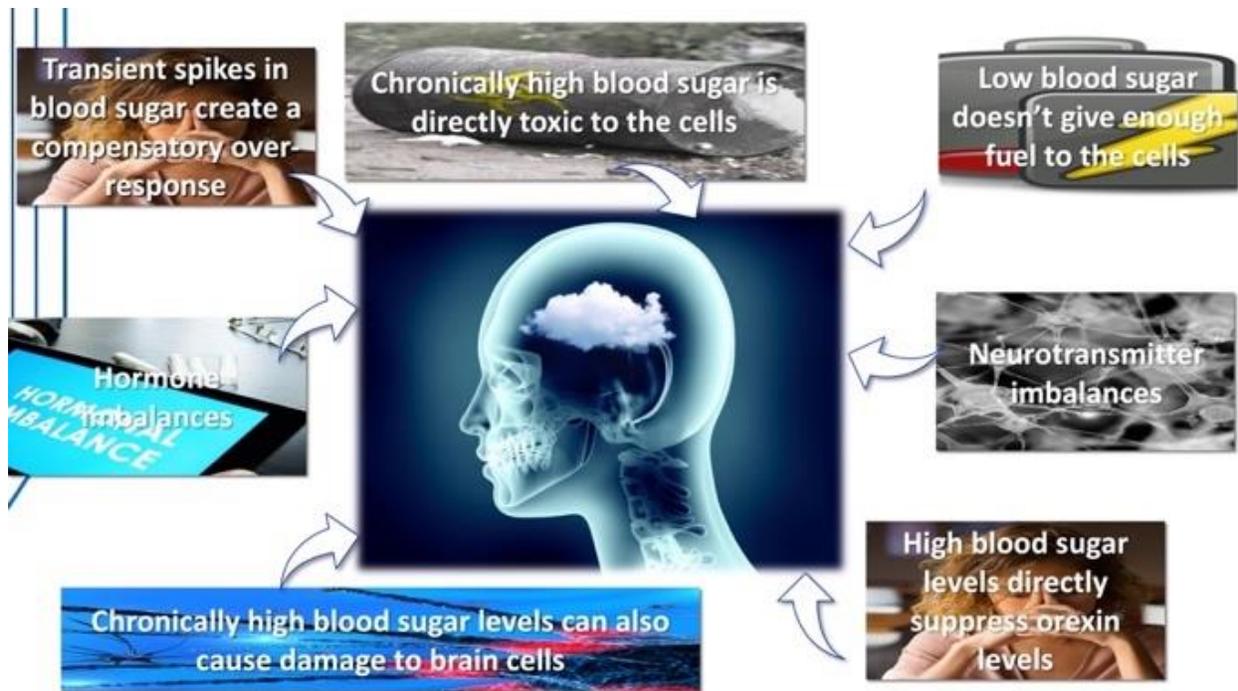
Here are a few symptoms of high blood sugar:



SYMPTOMS OF HIGH BLOOD SUGAR

- Fatigue or sleepiness after eating
- Almost constant hunger
- Excess body fat and waist girth larger than hip girth
- General daily fatigue for most of the day
- Cravings that are not relieved by eating what you crave
- Need for sweets after meals
- Frequent urination
- Aches and pains that appear in different places
- Difficulty falling asleep
- High fasting blood sugar levels on blood sugar test

There are a variety of different ways that blood sugar regulation issues can impact our brain function.



First of all, chronically high blood sugar is directly toxic to the cells of the brain. Low blood sugar doesn't give enough fuel to the cells of the brain. Transient spikes in blood sugar create a compensatory over response which can then result in low blood sugar levels and your brain not getting enough fuel.

Blood sugar regulation is also critical for neurotransmitters and the precursors of neurotransmitters to be transported across the blood-brain barrier effectively, and when you have blood sugar imbalances, that doesn't happen as effectively so it can indirectly lead to neurotransmitter imbalances as well as hormone imbalances. In addition, high blood sugar levels also directly suppress orexin levels in the brain, the key wakefulness and energy neurotransmitter. Just being in that state is constantly telling your brain to produce less of this neurotransmitter that is responsible for wakefulness and energy.

CAFFEINE

Caffeine is another key driver of these brain related symptoms, especially for people that wake up groggy and find that their brain just doesn't work until they get their first morning cup of coffee.

That is a sign of caffeine dependence, and it's not a good sign. It's a sign that your brain has been wired into some negative neurotransmitter adaptations.

Now I want to be clear: **I'm not opposed to coffee consumption or even caffeine use more broadly, but it is possible to overuse it and get your brain into a dependent state where you start to really get some negative effects on your brain function, your mood and your energy levels as a result.**

Don't get scared. I'm not going to tell you to go off coffee completely, but if you are dependent on it and are suffering some of the consequences of that, I want you to be aware of it.

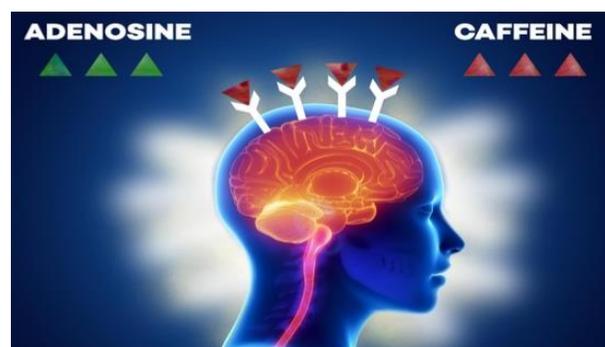
Let's talk about exactly what is going on here.



Adenosine is a neurotransmitter in the brain that is called an inhibitory neurotransmitter, which means that it is responsible for calming things down, making you tired and sleepy. Normally, the brain has a perpetual balance of stimulatory and inhibitory neurotransmitters, and it maintains you in the right state of consciousness, i.e. either in an energized wakeful state or in a sleepy state when it's time to sleep.

Adenosine is one of the sleepy neurotransmitters, but it is present to some extent throughout the day. When adenosine hits these adenosine receptors on the brain, it triggers tiredness, low energy or sleepiness.

What caffeine does is actually hit the same adenosine receptors. The only difference is that it doesn't trigger the same cascade that adenosine does; it just fits into the receptor and plugs up the receptor so that adenosine can't get in. By blocking what is normally an inhibitory neurotransmitter that would decrease your energy levels, it creates an energizing effect.





There are two problems that result from this situation. When it happens irregularly or infrequently, it's really not a problem at all. You get the caffeine in the receptors, it plugs them up and gives you a temporary boost to your energy levels, your mood and your performance: everything is great.

Here's the problem.

When you use caffeine daily, and especially multiple cups of coffee or other caffeine-containing substances daily, you get a couple of really nasty negative neurotransmitter adaptations.



One negative effect is that you get more of the adenosine receptors, so the brain basically senses that it's being overstimulated and isn't maintaining the proper balance of stimulation to inhibition. In response, it tries to increase the inhibition by increasing the amount of adenosine receptors on the brain.

This does a couple things:

1. It makes it so that you have a caffeine tolerance and you now require more caffeine to get the same buzz and the same stimulant effect.
2. But it also makes it so when the caffeine wears off and the adenosine comes back in, your energy levels crash hard as well as your brain function.

Now, here's the fascinating part. **Many studies have now discovered that caffeine-related performance improvement, the boost that you feel from drinking coffee, is nonexistent without a person going into caffeine withdrawal first.**

One study found that “appropriately controlled studies show that the effects of caffeine on performance and mood widely perceived to be net beneficial psychostimulant effects (people perceive themselves to be getting a boost) are almost **wholly attributable to reversal of adverse withdrawal effects associated with short periods of abstinence from the drug.**” Let me rephrase this so you get it.

Effects of caffeine on performance and mood: withdrawal reversal is the most plausible explanation.

James JE¹, Rogers PJ.

Author information

Abstract

RATIONALE: Although it is widely believed that caffeine can enhance human performance and mood, the validity of this belief has been questioned, giving rise to debate. The central question is whether superior performance and mood after caffeine represent net benefits, or whether differences between caffeine and control conditions are due to reversal of adverse withdrawal effects.

OBJECTIVES: To provide a focussed review of relevant experimental studies with the aim of clarifying current understanding regarding the effects of caffeine on human performance and mood.

METHODS: To avoid the shortcomings of standard placebo-controlled studies, which are ambiguous due to failure to control for the confounding influence of withdrawal reversal, three main experimental approaches have been employed: studies that compare consumers and low/non-consumers, pre-treatment and ad lib consumption studies, and long-term withdrawal studies.

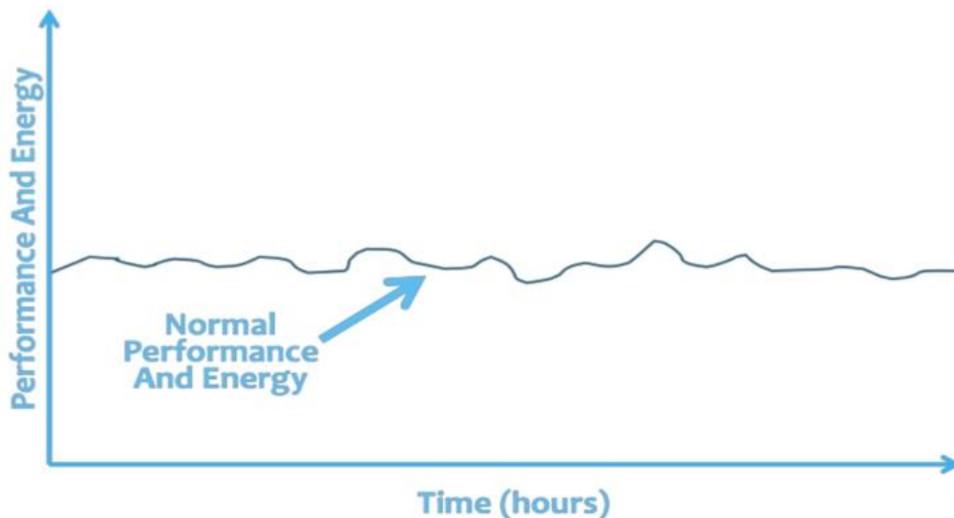
RESULTS: Of the three approaches, only long-term withdrawal studies are capable of unambiguously revealing the net effects of caffeine. Overall, there is little evidence of caffeine having beneficial effects on performance or mood under conditions of long-term caffeine use vs abstinence. Although modest acute effects may occur following initial use, tolerance to these effects appears to develop in the context of habitual use of the drug.

CONCLUSIONS: Appropriately controlled studies show that the effects of caffeine on performance and mood, widely perceived to be net beneficial psychostimulant effects, are almost wholly attributable to reversal of adverse withdrawal effects associated with short periods of abstinence from the drug.

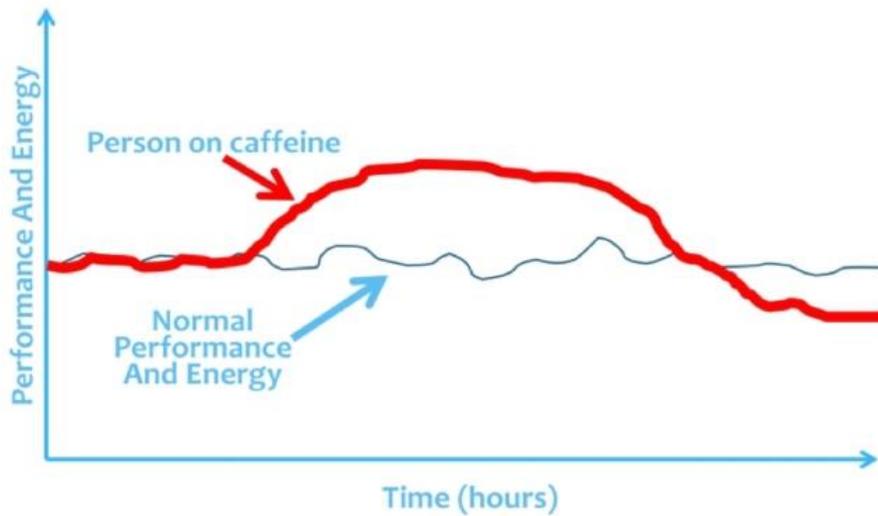


So what does this mean?

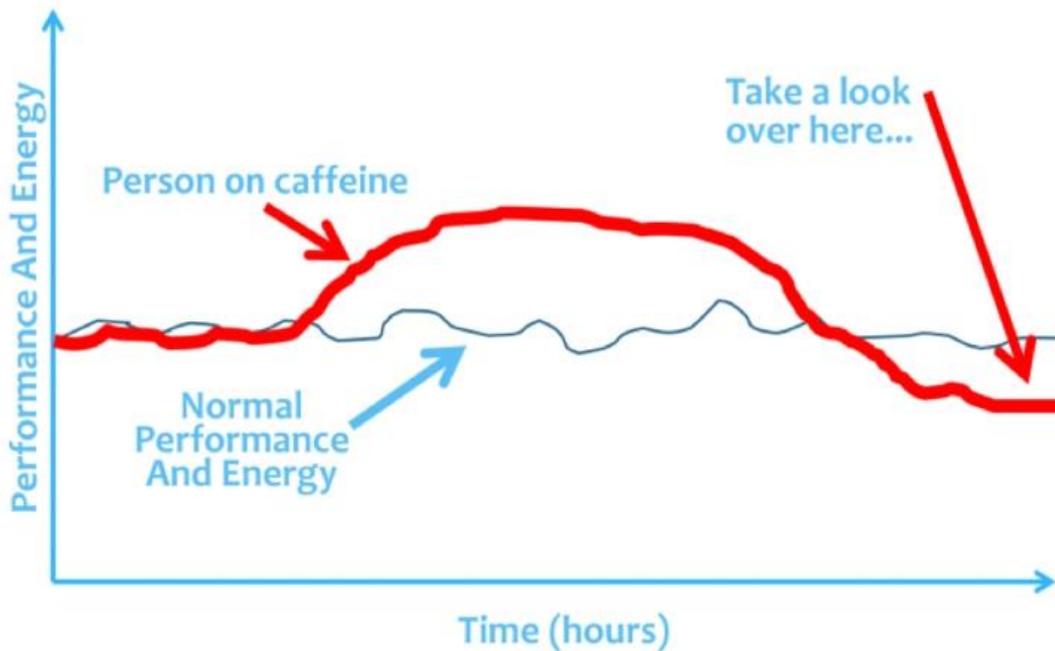
This is normal performance and energy levels of a person who is not on caffeine. It wanes a little bit, but let's say that it's a flat line throughout the day.



When you put that person on caffeine, you get a nice boost to energy levels and mood, but then it goes back down.

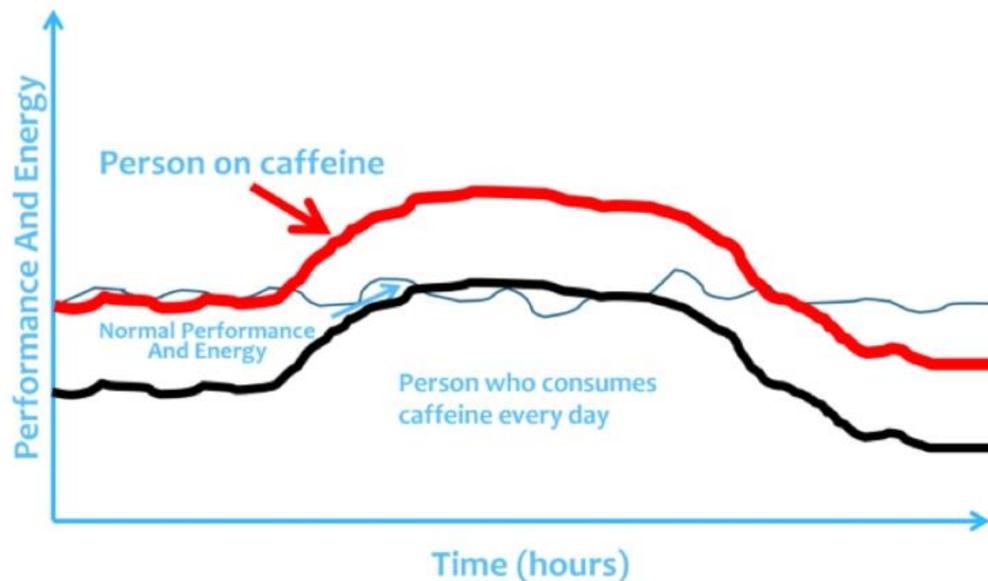


The first issue is that there is a crash; there is a little dip in energy levels, but that's not the real problem.



Here's the real issue. Most people think that their daily coffee habit is helping them function. They have the experience of waking up groggy with no energy and in a state of brain fog. And then they have their coffee—they feel like it switches their brain on, that it turns their energy

levels up and they feel that boost. Well, here's the deceptive part and the part that most people don't realize is happening.



The graph above shows what happens when a person consumes caffeine every day in large amounts and becomes dependent on it. They don't go from a normal to a higher level of function. Instead, they actually decrease their baseline level of energy and mood and performance, and then the boost that they feel, that boost that they notice, is actually just taking them back up to what used to be their normal.

And that's what that study was getting at: the boost that people feel they said “is wholly attributable to the reversal of withdrawal effects.” What that means is when you become dependent on the substance, you get these negative neurotransmitter adaptations that lower your baseline levels of energy, mood and performance. Then when you take the caffeine, it boosts you back up. It reverses the withdrawal symptoms, it reverses this negative effect, and you get back up to normal.

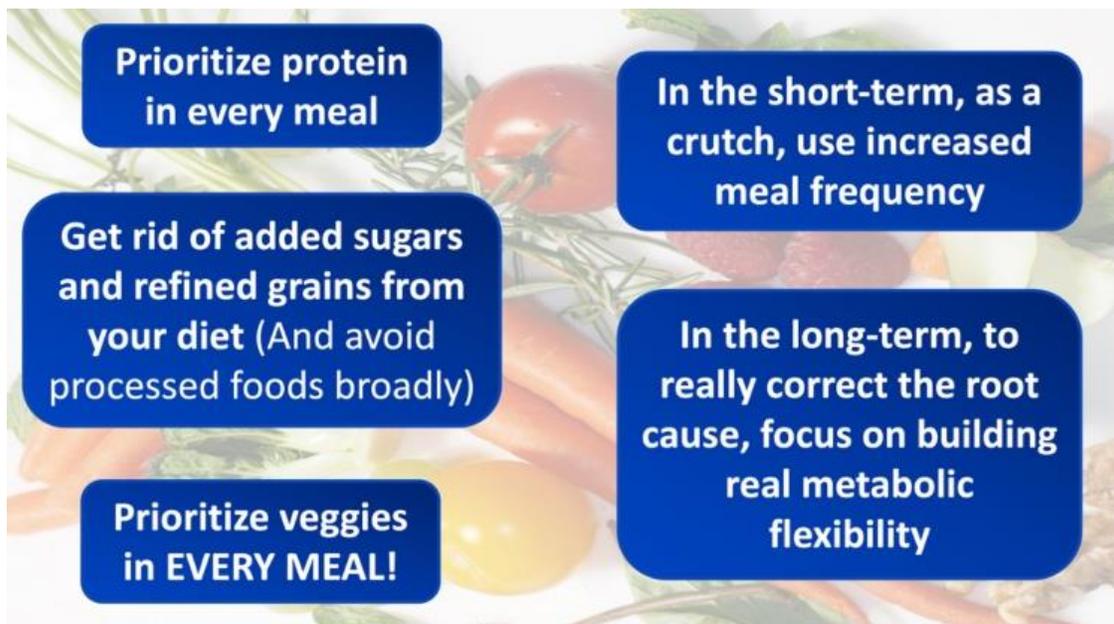
You're basically just constantly in a state of trying to cure your caffeine withdrawal symptoms by consuming more caffeine.

PRACTICAL STRATEGIES TO SUPERCHARGE YOUR BRAIN ENERGY AND GET RID OF ANXIETY, DEPRESSION AND BRAIN FOG

Let's talk about how to fix this situation by eliminating these different types of brain dysfunction and getting rid of brain fog, anxiety, depression, brain-related fatigue, and supercharging your brain energy levels.

1 - OPTIMIZE YOUR BLOOD SUGAR LEVELS

This is a simple thing but can make a world of difference. This is a shockingly common driver of brain fog and anxiety for many people, and there's a very simple fix for it.



1. Prioritize protein in every meal that you eat. Whether you're vegan or an omnivore, it doesn't matter: get your protein from somewhere. You want to be shooting for somewhere between 20 to 40 grams of protein per meal. Get rid of added sugars and refined grains from your diet, and avoid processed foods more broadly because they wreak havoc with your blood sugar levels.

2. Prioritize veggies in every meal. Most people are not consuming nearly enough of the non-starchy, leafy, colorful vegetables. In the short term, as a crutch, used increased meal frequency and regular meals, so make sure that you're eating let's say every three hours at very regular intervals, at consistent times each day, and that you don't miss your meals. Just understand that the increased meal frequency is a crutch; it's not necessarily what you want to be doing forever.
3. Ideally, you want to build what is called metabolic flexibility, which means that your body and your cells have the capacity to easily shift between burning food from the meal that you just ate versus tapping into stored glycogen, carbohydrates, and body fat for fuel, and that they can do that seamlessly without missing a beat, without impairing your brain function, and without impairing your energy levels. That is a key sign of mitochondrial health and metabolic health more broadly.
4. One more little tip. If you not only prioritize protein and veggies in your meal but actually consume both of those things at the beginning of your meal in favor of lots of carbs or fats, that has also been shown to stabilize blood sugar levels even further.

These are very simple, easy recommendations, but you'd be shocked how following these simple recommendations can make a world of difference in your brain function.

2 - OPTIMIZE YOUR CIRCADIAN RHYTHM

This is something that we talked about extensively in video one, but I just want to mention it again because it's so powerful in increasing your brain health and helping to combat these various brain-related symptoms. We talked about six different strategies to optimize your circadian rhythm and sleep in video one. If you haven't already, make sure you watch that video and start implementing that information.

3 - CYCLE COFFEE AND CAFFEINE USE

Use coffee and caffeine wisely. Again, I'm not saying that caffeine is bad, or that you need to avoid coffee forever, or that coffee is terrible for you. I'm saying that if you consume it too frequently or too much of it, you develop negative neurotransmitter adaptations in your brain that decrease your baseline levels of energy and mood.

What we want to do is ideally use it intelligently so we can get the health benefits associated with it without the negative adaptations that decrease our energy levels. Here's how to do that.



How To Consume Coffee So You Don't End Up Feeling Sleepy All The Time

- Use It For One Or Two Days
- Then Take One Or Two Days Off Of It

Very simply, cycle it on and off: consume it for one or two days, and then take one or two days off.

During your off days you can use decaf if you love the ritual and the taste of coffee. Alternatively, use it when you actually need a boost because you have a demanding day of work, a demanding workout that day, a job interview, a test at school, or something like that. That's the time to get the extra boost and just understand that all of the times then you thought you were getting a boost from it.

We're actually just taking you back up to what should be your normal level of energy and mood if you were not dependent on caffeine and if you did not have negative neurotransmitter adaptations from that. If you wean yourself off it, you can undo those negative neurotransmitter adaptations and get back to a higher level of normal baseline levels of energy and mood.



There is also research showing that taking the amino acid L-theanine can combat or neutralize the decrease in brain blood flow that you get from consuming caffeine normally. So you can consume something like for example, green tea or matcha

green tea, which contains a lot more L-Theanine, or you can take an L-Theanine in supplement with your coffee and that will combat some of the negative effects, some of the the jitteriness and the decreased brain blood flow that you get normally from coffee consumption.

4 - NEUROINFLAMMATION RESET

One of the key things that we're trying to do when fixing these brain-related symptoms is to undo the different kinds of cellular dysfunction that we talked about, i.e. neuroinflammation and oxidative stress, excitotoxicity, glial overactivation, and mitochondrial dysfunction. Neuroinflammation is a big part of that, so how can we turn off brain inflammation in a very powerful way?

- An anti-inflammatory diet
- Circadian rhythm and sleep
- Recharge rituals and vagal stimulation.
- You can also implement other powerful strategies to reduce brain inflammation like red and near-infrared light therapy, meditation and yoga.

For fast results, here is a selection of some of the most powerful foods, herbs and supplements that have been proven to shut down neuroinflammation.



All of these things have amazing research showing that they improve brain health and combat neuroinflammation. Just to give you a quick sampling of that, there are a number of papers showing that sulforaphane can powerfully improve brain health and combat neuroinflammation.

5 – HEAL YOUR BLOOD-BRAIN BARRIER

Eight keys to healing the blood-brain barrier:

- Healing the gut
- Avoiding and detoxifying the toxins that actively promote leaky blood-brain barrier
- Improving mitochondrial health in the brain and decreasing neuroinflammation and excitotoxicity
- A whole-food, anti-inflammatory diet rich in colorful plant foods
- Avoiding common poor lifestyle habits
- Finding and eliminating food intolerances with an elimination diet
- Avoiding chronic stress and using recharge rituals multiple times daily
- Having extremely strong circadian rhythm habits

Let's talk about just a few of these, and I'll give you some simple quick things that you can start doing now. There are a variety of different compounds, some of which overlap with some of the ones we talked about before, that have been shown to help heal and protect the blood-brain barrier.

- [Curcumin](#)
- [Rutin](#)
- [Tea polyphenols](#)
- [CBD](#)
- [Luteolin and palmitoylethanolamide combination](#)
- [Resveratrol](#)
- Coffee
- [DHA](#)
- [Alpha lipoic acid \(ideally R-ALA\)](#)
- [Gotu kola](#)
- [Alpha GPC or Citicoline](#)
- [Acetyl L-Carnitine](#)
- [B vitamins](#)
- Butyrate
- [Whole coffee fruit extract/powder \(Chlorogenic Acid\)](#)
- [Collagen](#)

- [Ellagic acid](#)
- [Vitamin D \(best source is the sun\)](#)
- [Sulforaphane \(best source is Broccoli Sprouts\)](#)
- [Shilajit](#)
- [Berberine](#)
- [Astaxanthin](#)

These are many different supplements, some of which are expensive, so I want to give two options here: the all-out approach and the low-cost approach to healing the blood-brain barrier.

The all-out approach is to basically use a lot of those things that I just recommended.

THE ALL OUT APPROACH TO BLOOD-BRAIN BARRIER HEALING

	Luteolin and palmitoylethanolamide		Ginkgo
	Whole coffee fruit extract		Resveratrol
	Gotu kola		Rutin and Hesperidin
	Alpha GPC and choline CDP		R-ALA
	PQQ		ALCAR
	CBD		Sulforaphane
	Shilajit		Astaxanthin
	Red light therapy		Gut healing strategies

The low-cost approach is to focus on the lifestyle habits that are free or very low cost.

THE LOW-COST APPROACH TO BLOOD-BRAIN BARRIER HEALING



Focus on circadian rhythm
and sleep optimization



Focus on Re-Charge Rituals
and vagus activation



Focus on mitochondrial
health and decreasing
neuroinflammation



Matcha green tea



Grow and eat lots of
broccoli sprouts

For people who are on a budget, I want to make sure that I'm giving you options to powerfully improve your brain function and energy levels, no matter your financial circumstances. :-)

6 - THE MITOCHONDRIA RECHARGE

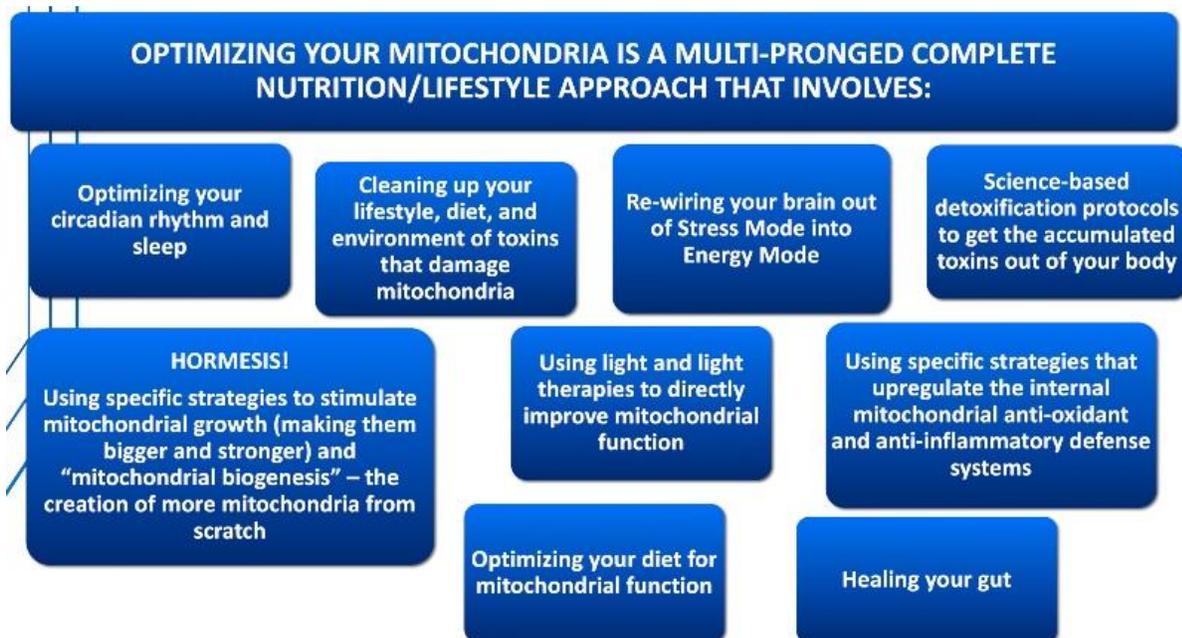
We have already talked about a few powerful ways to improve your mitochondrial function. In video one, we talked about circadian rhythm, which has a huge impact on your mitochondrial health. In video two, we talked about hormesis and how it literally builds up your cellular engine and makes your mitochondria bigger, stronger and healthier.

Interestingly, in just the last few years, there is more and more research coming out showing that mitochondria may be the central players in this whole cascade of dysfunction that leads to these different brain-related symptoms we've been talking about.

The image shows a screenshot of a Scientific American article. At the top, there is a navigation bar with 'Subscribe' on the left, 'SCIENTIFIC AMERICAN' in the center, and 'Gift' and 'Sign In | Stay Informed' on the right. Below this is a secondary navigation bar with categories: 'THE SCIENCES', 'MIND', 'HEALTH', 'TECH', 'SUSTAINABILITY', 'EDUCATION', 'VIDEO', 'PODCASTS', 'BLOGS', 'PUBLICATIONS', and a search icon. The article title is 'Brain's Dumped DNA May Lead to Stress, Depression' under the sub-header 'MENTAL HEALTH'. The main text is highlighted in pink, and two red arrows point to specific parts of it. The highlighted text reads: 'But our fight-or-flight response places extreme demands on the mitochondria. All of a sudden, they need to produce much more energy to fuel a faster heartbeat, expanding lungs and tensing muscles, which leaves them vulnerable to damage. Unlike DNA in the cell's nucleus, though, mitochondria have limited repair mechanisms. And recent animal studies have shown chronic stress not only leads to mitochondrial damage in brain regions such as the hippocampus, hypothalamus and cortex, it also results in mitochondria releasing their DNA into the cell cytoplasm, and eventually into the blood.'

There is a field of research led by a Canadian researcher named Martine Picard called mitochondrial psychobiology. They're doing amazing research like you see above, where they look at the mitochondrial response to psychological stress and put these pieces together in an absolutely profound way. They're really showing that the mitochondria are the central regulators where all of these different stressors coalesce and converge, and that the strength of

your mitochondria ultimately determines your disease risk, your rate of aging, your energy levels, and so on.



In the image above, I have listed a number of different factors that can improve our mitochondrial health, and it all comes back to hormesis. There are a lot of different things to discuss here.

Sauna

Sauna use is a type of hormesis that we covered in the last video.

I'll show you a little bit more research showing specifically the effects on brain health. We talked about energy levels, pain and a number of other beneficial effects of sauna use in the last video, as well as the ability to prevent cardiovascular disease and all-cause mortality.

Influence of citalopram and environmental temperature on exercise-induced changes in BDNF.

Goekint M¹, Roelands B, Heyman E, Njemini R, Meeusen R.

Author information

Abstract

PURPOSE: Serum brain-derived neurotrophic factor (BDNF) is known to increase with exercise. This increase is believed to originate from the brain and it is suggested that monoamines are involved in BDNF regulation. Heat exposure could influence the supposed BDNF output from the brain. Therefore, we hypothesized that administration of a selective serotonin reuptake inhibitor could influence the exercise-induced increase in BDNF, and that peripheral BDNF will be higher when exercise is performed in the heat.

METHODS: Eleven well-trained males performed 4 experimental trials on a cycle ergometer with citalopram or placebo treatment (20 mg in 12 h) in an environmental temperature of 18°C or 30°C. Blood samples (BDNF and cortisol) were taken at 4 time points: at rest, after 60 min at 55% W(max), after a time trial of 30 min at 75% W(max) and following 15 min of recovery. Heart rate and core temperature were measured.

RESULTS: Performance on the time trial was 20% worse in 30°C compared to 18°C ($p < 0.01$), without influence of citalopram. Serum BDNF was found to be lower under citalopram treatment, while basal cortisol levels were increased ($p < 0.05$). Exercise triggered an increase in both BDNF and cortisol ($p < 0.001$). BDNF followed the same pattern as core temperature during exercise, with higher levels of both variables in 30°C. Cortisol was also increased in 30°C compared to temperate conditions ($p < 0.01$).

CONCLUSION: Exercise caused a rise in serum BDNF and cortisol. This increase was enhanced with exercise in the heat. Since permeability of the blood-brain barrier increases with exercise in the heat, the hypothesis was raised that this causes a higher cerebral output of BDNF. Serotonergic stimulation did not increase peripheral BDNF, which was even lower with citalopram administration. Future research should focus on mechanisms behind BDNF increase with exercise.

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Let's look specifically at how sauna use impacts brain health. Numerous different studies have shown, for example, increases in brain-derived neurotrophic factor, which is a key chemical in the brain that helps support good brain health.

Age Ageing. 2017 Mar 1;46(2):245-249. doi: 10.1093/ageing/afw212.

Sauna bathing is inversely associated with dementia and Alzheimer's disease in middle-aged Finnish men.

Laukkanen T¹, Kunutsor S², Kauhanen J¹, Laukkanen JA¹.

Author information

Abstract

BACKGROUND: there are no previous studies linking repeated heat exposure of sauna and the risk of memory diseases. We aimed to investigate whether frequency of sauna bathing is associated with risk of dementia and Alzheimer's disease.

SETTING: prospective population-based study.

METHODS: the frequency of sauna bathing was assessed at baseline in the Kuopio Ischaemic Heart Disease population-based prospective cohort study of 2,315 apparently healthy men aged 42-60 years at baseline, with baseline examinations conducted between 1984 and 1989. Hazard ratios (HRs) with 95% confidence intervals (CIs) for dementia and Alzheimer's disease were ascertained using Cox-regression modelling with adjustment for potential confounders.

RESULTS: during a median follow-up of 20.7 (interquartile range 18.1-22.6) years, a total of 204 and 123 diagnosed cases of dementia and Alzheimer's disease were respectively recorded. In analysis adjusted for age, alcohol consumption, body mass index, systolic blood pressure, smoking status, Type 2 diabetes, previous myocardial infarction, resting heart rate and serum low-density lipoprotein

This study showed an absolutely massive effect where the people who used the sauna four to seven times per week had a 66% reduced risk of dementia and a 65% reduced risk of Alzheimer's disease compared to those who used the sauna only once per week.

Red and Near-Infrared Light Therapy

There are over 5,000 studies on this topic showing a wide variety of amazing beneficial effects on the body.

This is truly a hidden secret within the health realm that if you don't already know about, you need to know about because this is absolutely powerful medicine.



There is even research showing that it can help heal people who have had traumatic brain injury. There is also research showing that it can combat neurological diseases like Alzheimer's, Parkinson's, and dementia.

Now again, this is something that I recently wrote a book on; you can buy the book on Amazon if you'd like.

But I also want to give you a selection of different low-cost things that you can do to improve your mitochondrial health if you can't afford to get one of those devices, which costs a few hundred bucks.

THE TOP 22 INGREDIENTS TO HEAL AND REGENERATE YOUR MITOCHONDRIA

1. Astaxanthin
2. NT Factor
3. Rhodiola Rosea
4. R-ALA (R-Alpha Lipoic Acid)
5. PQQ (aka Pyrroloquinoline Quinone)
6. Magnesium Citrate and Magnesium Malate
7. Creatine
8. D-Ribose
9. CoQ10
10. Citrus Bioflavonoids
11. Quercetin
12. Green Tea Extract
13. Turmeric 95% Tyrosine
14. Taurine
15. Triphala
16. N-Acetyl-Cysteine
17. L-Citrulline
18. MCT Oil Powder
19. D.I.M. (Diindolylmethane)
20. Shilajit
21. ALCAR
22. Sulforaphane



Here is a selection of some powerful ingredients to improve your mitochondrial health. You'll notice a lot of overlap between some of the things we talked about to heal the blood-brain barrier and combat neuroinflammation. Just to give you a quick overview, there's research on every one of these things.

[Neurochem Res. 2008 Jan;33\(1\):194-203. Epub 2007 Jun 29.](#)

The effects and mechanisms of mitochondrial nutrient alpha-lipoic acid on improving age-associated mitochondrial and cognitive dysfunction: an overview.

[Liu J¹.](#)

[+ Author information](#)

Abstract

We have identified a group of nutrients that can directly or indirectly protect mitochondria from oxidative damage and improve mitochondrial function and named them "mitochondrial nutrients". The direct protection includes preventing the generation of oxidants, scavenging free radicals or inhibiting oxidant reactivity, and elevating cofactors of defective mitochondrial enzymes with increased Michaelis-Menten constant to stimulate enzyme activity, and also protect enzymes from further oxidation, and the indirect protection includes repairing oxidative damage by enhancing antioxidant defense systems either through activation of phase 2 enzymes or through increase in mitochondrial biogenesis. In this review, we take alpha-lipoic acid (LA) as an example of mitochondrial nutrients by summarizing the protective effects and possible mechanisms of LA and its derivatives on age-associated cognitive and mitochondrial dysfunction of the brain. LA and its derivatives improve the age-associated decline of memory, improve mitochondrial structure and function, inhibit the age-associated increase of oxidative damage, elevate the levels of antioxidants, and restore the activity of key enzymes. In addition, co-administration of LA with other mitochondrial nutrients, such as acetyl-L: -carnitine and coenzyme Q10, appears more effective in improving cognitive dysfunction and reducing oxidative mitochondrial dysfunction. Therefore, administrating mitochondrial nutrients, such as LA and its derivatives in combination with other mitochondrial nutrients to aged people and patients suffering from neurodegenerative diseases, may be an effective strategy for improving mitochondrial and cognitive dysfunction.

For example, alpha-lipoic acid: there is a lot of research showing how it can improve mitochondrial and brain function.

Review

Lipid Replacement Therapy: A natural medicine approach to replacing damaged lipids in cellular membranes and organelles and restoring function ☆☆

There is also amazing research on lipid replacement therapy, using NT factors or phospholipids, showing that it can help maintain mitochondrial membranes and help protect them from damage.

Table 2. Some clinical effects of dietary LRT supplement NTFactor on fatigue scores.^a

Subjects/patients	n	Av age	Time on LRT	Fatigue Scale reduction (%) ^b	Reference
Chronic fatigue ^c	34	50.3	8 week	40.5**	Ellithorpe et al. [354]
Aging, chronic fatigue ^d	22	68.9	12 week	35.5*	Agadjanyan et al. [166]
Chronic fatigue syndrome ^d	15	44.8	8 week	43.1*	Nicolson & Ellithorpe [144]
Obesity, fatigue ^d	35	42	8 week	24*	Ellithorpe et al. [251]
Aging, chronic fatigue ^e	67	57.3	1 week	36.8**	Nicolson et al. [230]
Lyme disease, fatigue ^f	17	52.4	8 week	26*	Nicolson et al. [231]
Gulf War Illness, fatigue ^g	16	42.2	8 week	34.6*	Nicolson et al. [147]

There is even research on specific kinds of fatigue such as chronic fatigue, chronic fatigue syndrome, obesity-related fatigue, aging-related chronic fatigue, Lyme disease, and Gulf War

illness. There are several studies from between one week to eight weeks to 12 weeks showing that you can massively reduce your level of fatigue and increase your energy levels.

So there is an all-out approach, but for people who don't have any budget, these are the things that you should do to massively improve your mitochondrial health.

THE ALL OUT APPROACH TO MITOCHONDRIAL REGENERATION

	Turmeric 95%		Diindolylmethane		Hypoxia hormesis
	Niacin		NT Factor		Smart exercise
	Nicotinamide Riboside		Astaxanthin		Sulforaphane
	Taurine		Red light therapy		Rhodiola Rosea
	Triphala		Sauna		R-Alpha Lipoic Acid
	N-Acetyl-Cysteine		CoQ10		PQQ (aka Pyrroloquinoline Quinone)
	L-Citrulline		Citrus Bioflavonoids		Magnesium Citrate and Magnesium Malate
	Niacin		Quercetin		Creatine
	Shilajit / fulvic acid		Green Tea Extract		D-Ribose

If you are on a strict budget, here's the low-cost approach to mitochondrial regeneration.

THE LOW-COST APPROACH TO MITOCHONDRIAL REGENERATION



Focus on Re-Charge Rituals
and vagus activation



Blueberries



Astaxanthin



Focus on circadian rhythm
and sleep optimization



Cacao



NT Factors



Turmeric



Pomegranate



D-ribose



Green tea



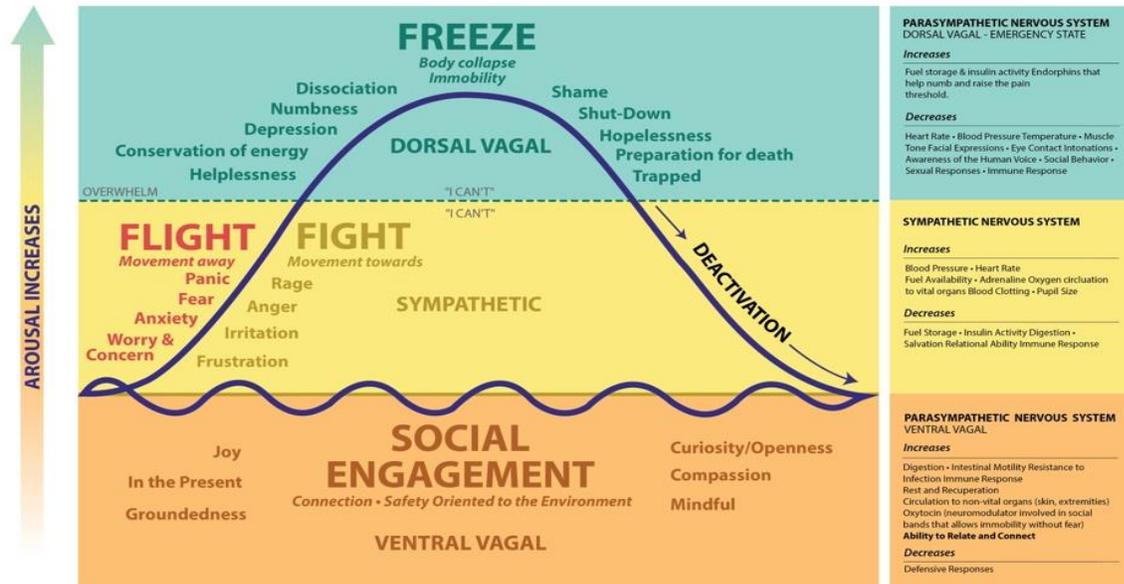
Broccoli sprouts

If you did this handful of things and nothing else, just these things would make a huge difference in your brain function and your energy levels.

7 - VAGAL RECHARGE

This is the last strategy. We want to recharge that vagus nervous system. We want to send a signal to the ventral vagal part of the polyvagal system that we are safe and that we can take our brain and our nervous system out of chronic stress mode and put it into relaxation mode.

The way we do this is through something that I call recharge rituals and vagal nerve stimulation. Recharge rituals are the crux of rewiring your brain out of stress and fatigue mode.



Again, this polyvagal system shows us that it doesn't matter if we're up in the green section of dorsal vagal depression, fatigue, shut down, shame, hopelessness, feeling trapped, feeling unsafe, or if we're in this sympathetic fight-or-flight state: **either way, we want to get back down to this ventral vagal dominance where we feel safe, socially engaged, curious, open, compassionate, joyful, and in the present. This is where we want to be most of the time.**

How do we do that? Lower our sensory load.

ACTIONS THAT INCREASE YOUR SENSORY LOAD

- Always being on the go doing things without taking breaks to recharge
- Listening to loud music while driving or exercising
- Getting involved in exciting, fast-moving or violent movies (or games) before going to bed
- Staring at a computer monitor for most of your workday
Staring at the TV for hours
- Listening to overly stimulating background music
- Being indoors under artificial light (especially fluorescent lighting) for most of the day

So think about the activities you may be doing and how you can change them

Here are some things that increase your sensory load.

All of these things tax, stimulate and overstimulate the brain, subtly pushing you towards a chronically stressed state. How do we get out of this mode? Vagal stimulation is one of the absolutely most powerful things you can do.

12 OF THE MOST POWERFUL WAYS TO STIMULATE THE VAGUS NERVE



Meditation



Singing/chanting



Yoga or Tai Chi



Positive social relationships



Deep, slow breathing



Laughter



Massage or self-myofascial release/foam rolling



Laying down



Gargling or stimulating the gag reflex



Valsalva maneuver or enemas



Chewing gum



Sun exposure

Here you can see a wide variety of different things that have been shown to powerfully stimulate the vagus nerve. Recharge rituals are basically combinations of these different strategies.

If you're freaked out by the term rituals, don't worry: you don't have to join a cult or anything like that. I just want you to start doing some of these different things in a very well-defined, systematic, organized, ritualistic sort of way, where you do them every day at a particular time without exception.

Simply having a couple of rituals every day can make a huge difference in your brain health, your brain symptoms, your sleep, and your energy levels.

The Daily Re-Charge Ritual

The last thing that I want to do is to give you a very simple practice that I want you to start doing every day. It will take you about 10 minutes, maybe 15, depending on how long you do each part. This little practice will supercharge your brain for the day ahead and help to reset your brain and nervous system, take it out of chronic stress mode, put it into relaxation and rejuvenation mode, and dramatically improve your energy levels.

DAILY VAGAL RE-CHARGE RITUAL



- Breathing practice (3-5 minutes)
- Self-massage or foam rolling or massage from your partner (2-5 minutes)
- Sing a song you love (ideally dance, and pretend you're a music icon and give a performance to someone you like) (3-10 minutes, if you want to do 2 or 3 songs)
- Secret Smile Meditation

Here's what it consists of: a little breathing practice for three to five minutes; a self-massage or foam rolling massage; singing a song that you love. Now, this maybe sounds like a bizarre recommendation, but believe it or not, singing is one of the most powerful ways to stimulate the ventral vagal system, to get you into a state of relaxation and to increase your vagal tone. Find a song that you love, sing it, and don't be shy. Don't be afraid to get goofy and wild. The more you can smile, laugh, laugh at yourself and have fun with the whole thing, the better it will be, and the more you will take your brain out of stress mode.

And now I'm going to give you something called the Secret Smile meditation. This is something I learned from a mentor of mine, and I've done a special variation of the practice for you. [You can listen to that and do the practice HERE.](#)

It's a 5-15 minute practice that I want you guys to do every day, and it's going to absolutely supercharge your brain energy levels and your brain function for the day ahead. (Note: The guided meditation is 15-minutes long, but after you get used to it, you can do it yourself in a sped up 5-10 minute way.)

So that's your new morning ritual I want you to do.

Your New Morning Ritual to Charge Your Vagus Nerve and Supercharge Your Brain Energy:

1. [Breathing practice to relax your body, which you can learn HERE. \(Video Link\)](#)
2. Self-massage/foam rolling/myofascial release. [I've recorded a video for you on how to do this HERE.](#)
3. Then find a song you love and have a blast singing it.
4. [Then do the Secret Smile meditation, which you can get HERE. \(Video Link\)](#)

What's Coming in Masterclass #4

In our fourth Masterclass video, I'm going to show you why you need to put all of the pieces together to create a system that puts you into high energy mode as soon as you wake up and keeps you there all day long.

We'll learn what that system is in the next video, where I'll be unveiling the six steps of the Energy Blueprint System; the essential steps that you need to beat fatigue and dramatically increase your energy levels.

If you're really serious about overcoming fatigue or supercharging your energy levels, I'm going to be releasing the full 60-day Energy Blueprint Program in just a few days. So if you've enjoyed the 10 or so strategies we've covered in this free training so far, get ready because I literally have over 100 more amazing energy boosting strategies in the full 60-day Energy Blueprint Program.

In that program, I'll show you cutting-edge, science-backed strategies to maximize your energy levels and we'll work together step-by-step for a full 60 days to lock in the most powerful habits, to rewire your body out of fatigue mode and build a high energy brain and body. Masterclass video four comes out on Monday, April 15th, so mark your calendar because you're not going to want to miss this. Go start implementing the strategies from this video, and get ready because I have even more amazing stuff coming to you in the next video. I'll see you then!