Brain Regeneration: 12 Ways to Heal Brain Cells Transcript

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Introduction to Brain Regeneration

This is Doctor David Jacobs, and today I've got a very exciting topic. It's all about brain regeneration, how you can literally heal your brain, detoxify your brain, regenerate your neurons.

And this is really exciting. And so, you know, most scientists for years they believed that the brain was hard wired. And this is what was taught in medical school.

We used to think that after childhood you cannot repair, regenerate or replace damaged brain cells. But now we know the brain can change its structure based on how we use it, the structure of the brain and the nutrition we provide it.

You see, most of your brain cells are formed while you were in your mother's womb. Other neural cells of your brain develop during infancy. Until recent decades, doctors believed a certain level of brandy generation is inevitable because your brain has limited capacity to regenerate.

But now we know differently. New research from the last two decades suggests that your brain is actually able to create new cells throughout your life span, and brain regeneration is possible.

In fact, your brain actually still creates about 700 new neurons per day in the hippocampus. This allows the hippocampus to maintain its central function.

And we know the hippocampus is all about where memory is stored. It's in our temporal lobe and it's all about short, long term memory. The science of neurogenesis suggests that that exercise aerobic as well as strength training certain brain exercises.

And I'm going to talk about that today. I'm going to talk about an aerobics specific exercises that are really designed to train your brain and develop something called neuroplasticity, which is the ability of the brain to reorganize itself both in structure and how it functions.

So there are specific exercises you can do to support brain regeneration. And also stress plays a really big role in how your brain regenerates and heals.

And there's a lot of other lifestyle habits like the nutrition we provide, like, any sort of trauma we may encounter. Sleep quality is really important here.

And so this is key because the better that our brain is able to heal and regenerate, that actually helps prevent and can actually treat degenerative diseases like Alzheimer's and Parkinson's.

And it can reverse damage from traumatic brain injury. So this is really, really exciting. And there are a couple terms that we need to know. One is neurogenesis, which is the continuous generation of neurons.

And certain brain regions. New synapses. Synapses are little gaps between the brain cells. We know that new synapses can be really, really healthy. In fact, synapses and your synaptic density, or the amount of these little gaps between neurons, really plays a big role in the connectivity of your brain, the ability of neurons to communicate with a wide variety of other neurons, which enhances creativity, memory, recall, cognitive acceleration, your ability to think sharply and quickly.

In fact, they did a study on Albert Einstein's brain at Stanford.

Neurogenesis, Synapses, and Neuroplasticity

So after he died, he donated his organs to science. They looked at his brain, and they wanted to see what was different about Einstein's brain compared to the average individual.

That's about the same height, you know, the same brain volume. And what they found was that he had the same amount of neurons, but he had twice as much of these gaps, these synapses between the neurons.

And that was credited with giving him better connect, better brain connectivity, and the ability to think outside the box, to have really sharp and creative thoughts that allowed him to change the world with some of his ideas.

And so, synapses are really key, creating new synapses, strengthening certain synaptic gaps and certain neural pathways and weakening others that are not supporting us.

You know, there's a principle called use it. Are you lose it or lose it, right. If you're either, you know, when it comes to like muscle memory, for example, you have to either train certain certain movement patterns or you're not going to be efficient in those.

You're going to lose the strength and you're going to lose the skill in those areas. And it's kind of the same thing when it comes to synapses in our brain.

We're either using them like if, for example, if we're doing memory recall exercises, let's say we're trying to memorize, biblical scripture or we're, you know, studying for a test or whatever it is, or we're learning skills for a new job.

We're either training certain neural pathways or we're not we're not using those. And then we can obviously those those synapses will weaken. And, you know, we call that, synaptic clastic activity where they actually break down and we get atrophy in those areas and we become weaker in those areas.

Now, when it comes to developing healthy neurons, there is a compound called Bdnf, brain derived neurotrophic factor. We're going to talk a lot about that.

And that is a protein produced inside your nerve cells that helps your brain communicate and function properly. It protects neurons, encourages their growth, improves their functions, and helps them to survive by protecting them from premature cell death.

It also strengthens a signal between neurons by binding to the receptors at the synapses. Bdnf is essential for optimal brain function and a key player in brain regeneration.

It plays an important role learning and memory. It regulates various body functions, including eating and drinking. Now going back to synapses and how this all plays in.

Remember, synapses are junctions or gaps between neurons that allow communication synaptic plasticity. We're going to use this term. Plasticity is the change that happens at synapses and affects the quality of the communication between two neurons.

Short term synaptic plasticity is a rapid, subsecond change that reverts to normal quickly long term synaptic plasticity. So we get these long term changes.

Plasticity is just basically means changes that things can change. Again, depending on how well we're taking care of our body. We may have, you know, really strengthened synapses in a certain pathway that helps us remember, you know, certain things for a test.

And then once we stopped studying that particular subject, we start to lose that memory. And so that's kind of the idea of plasticity, this kind of this, this change, long term plasticity is a longer change that may last for minutes, hours, days or years.

Long term synaptic plasticity is critical for our brain's ability to store information and for our memory. So, you know, the the long term plasticity are things that we're going to remember for a long period of time.

Now, research has shown that Bdnf is critical for long term enhancement of synaptic efficiency. It improves neural development and synaptic plasticity.

Hence, it may lower the risk of neurodegenerative and psychiatric disorders such as dementia, Alzheimer's disease, Huntington's disease, and depression.

So stimulating nerve growth factor and brain derived neurotrophic factor. NGF and Bdnf really, really powerful for develop being a healthy well connected brain.

And so neuroplasticity again, that's the idea that the brain's ability to adapt, rewire and regenerate itself can take place when physiological changes occur to, you know, looking at the neuron, the actual physiological mechanisms, the DNA regulation and transcription, the microglia activity.

Microglia are the immune lymphatic cells of the brain. So we have something called our lymphatic system where we actually drain and detoxify our brain.

And microglia help get rid of bad proteins. They help break down bad proteins in the brain. For example, things like beta amyloid, which when that accumulates, that leads to that actually is toxic for neurons when it accumulates in high amounts and is associated with Alzheimer's disease, you have Lewy bodies that are that are deformed proteins that, when they accumulate, that can lead to things like Parkinson's.

So microglia are really important for helping to break down these, these proteins that damage neurons and, and reduce our ability to have positive neoplastic changes.

So microglia activity we need to have that working really, really well and efficiently. Membrane bound ion channels. So the brain the, the our nervous system is all is using, electrolytes and it's like an electrolyte.

It's basically like an electrical current running through our body.

BDNF, Stress, and Brain-Healthy Lifestyle Factors

And so the healthier the membranes and the ion channels are, the more accurate the message is, because we're going to get the right amount of depolarization and sodium, potassium and calcium.

Going in and out of the cells to allow for action potentials and allow for, the proper neurological messages to get through. And so when somebody's sick, when they, you know, have had a lot of inflammation, oxidative stress, they can have damaged cell membranes, they can have altered ion channels.

And you know, that those need to be fixed before we're going to get positive neuroplasticity to to really take hold neurotransmitters. You know, we need good neurotransmitter production and sensitivity.

You know, if we're not consuming enough amino acids, all of our neurotransmitters have amino acid backbones. Like for example, we know tryptophan is a precursor of serotonin.

We know fennel. Alanine is a precursor to dopamine. You know, so they're all based around, you know, you know, glutamic acid for glutamate and also for Gaba, which are neurotransmitters.

So we need to have these amino acids if we're not breaking down proteins effectively, if we don't have certain nutrients like magnesium, vitamin B6, we're not going to have the proper amount of neurotransmitters.

And then we need good sensitivity at the cell membrane. And so that's going to really depend upon cell membrane health, the right amount of hormones, you know.

So for a lot of people, if they're, for example, men who are low in testosterone, women who are low in progesterone or estrogen, that can affect neural plastic changes, and then dendritic spines, which are the health of, you know, basically the branching pattern of the neurons.

And so all of those things can impact your level of neuroplasticity. And we always say that we have this term that says neurons that fire together wire together.

So we can actually link, you know, movement patterns. We can link different thought patterns together. By and this is, this is a really powerful thing.

Neurons fire together, wire together. For example, we know stressful circumstances when we have stressful circumstances, we tend to remember those things when we have traumatic events. Why?

Because it's a heightened level of neurological activity, because we're in a deep state of fight or flight, and we're going to tend to remember those events because of the stress and how it made us feel.

Our heart rate changed. You know, and so because we thought we were at risk of something that tends to wire into our nervous system, and we remember that because, again, our body, we're really our neurological structure.

A lot of that has to do with survival, right? Trying to survive. And so things that, you know, are that we perceive as a risk, we tend to prioritize and remember those things, certain social interactions.

You may remember, for example, if you meet somebody, you know, that you thought, think is famous or that you always looked up to or you always wanted to meet, you know, if you were really anticipating that social interaction, you remember a lot more from that social interaction as opposed to somebody that you've met, you know, 5000 times.

You know, one of your friends who you know, you have an interaction with, and then you forget about that interaction several weeks later, a month later, because it wasn't quite as you know, there wasn't quite as much anticipation and excitement about it.

So these types of things, you know, again, neurons that fire together, wire together, we can rewire our brain for the better through positive inputs into each of these areas exercise, nutrition, our learning activities, our daily thoughts, our emotions are, you know, meditation and prayer can play a big role.

New experiences, novel experiences can be a really big thing to wire into our nervous system. I know in something called neuro linguistic programing, one of the key strategies is kind of like a foundational strategy for helping create positive neuro plastic change that helps you perform better and show up better in life is to visualize and remember a time in your life where you felt really, really successful, right?

It could have been, you know, maybe, you know, you got a good grade in school or you performed well at a sports competition or a, let's say you were in a play and everybody was cheering at your performance or whatever it was, you know, something you did at work, whatever it was.

So maybe something that your child said to you, you know, you could think of a lot of different things that may have at some point made you feel successful and proud of yourself.

And so you remember that and you try to take on in your head, remember all the emotions and just take all of them in all those emotions really try to amplify those emotions, you know?

So you're right in that moment you feel so good about the experience. You're feeling the whole rush of emotions from that experience, and then do some sort of gesture with your body, whether it's like making a fist and you again, you remember that that thought of how proud you are of yourself, how successful you are in this moment.

And then you make a fist and then you feel that yourself making that fist. Right? And then you continually

remember this thought, right? You do this practice over and over and over and over again.

And now you're linking these emotions of, hey, I'm I'm successful. I'm proud of myself. I am a success. I am a champion. I'm a winner, I'm an overcomer.

And you're linking it to this fist. And the idea is that if you do this continuously and you train your nervous system this way, that within a week or two, when you just make your fist, you feel this positive rush of emotions, and that's because now those muscles that are involved in making that fist are wired into this neurological network that's associated with you thinking this really positive, upbeat thought that you are successful, that this whole experience of emotions that you had from this successful experience.

And it's one of the most powerful things you can do for your life when you do that. Because now, every single time, like if you're feeling down, if you're walking into a presentation or an interaction with somebody or all you have to do is make that fist and then you get that Russia emotions again.

And so you can literally train these, that you can train new healthy behaviors in through this sort of using these plastic, this, this idea of neuroplasticity and interlinking it into something called neuro linguistic programing and programing your brain this way.

So I mentioned Bdnf brain derived neurotrophic growth factor. Again key neurochemical responsible for growth and maintenance of neural connections. It helps your brain adapt and learn and improves all forms of plasticity.

It's highly affected, you know, not only by visualization and your stress levels and things like that, but also it's very much affected by your nutrition.

We know sugar reduces beating Bdnf levels while fasting. When we get into fat, when we start intermittent fasting, we bring down our blood sugar, bring down our insulin, we start burning fat for fuel.

Our body takes the fatty acids, turns them into ketone sets in the liver, and the ketones now can cross are water soluble smaller molecules and fatty acids.

They cross the blood brain barrier, get into the brain and they stimulate the production of Bdnf. We know omega three fatty acids taking omega threes or eating wild caught seafood.

Wild caught salmon, for example, will help to upregulate Bdnf levels. We know that good sleep increases BD, and whereas poor sleep reduces the amount of Bdnf you can produce.

We know that exercise movement and exercise. So just getting out and walking or doing aerobic exercise or strength training, improves Bdnf levels. And again, we know chronic stress causes an imbalance or a lowering or reduction in Bdnf levels.

So we want to keep stress under control. We know blood sugar stability is super critical for healthy brain cells. So Bdnf is one of the key compounds along with nerve growth factor NGF for this for brain regeneration and neuroplasticity.

So we know low blood sugar and also high insulin or high blood sugar is going to impair your Bdnf levels, your nerve growth factor levels.

Toxins, Movement, and Gut-Brain Health

So the key is when we're eating foods, we want to consume foods that only cause a moderate rise of your blood sugar. And it should be for short term and a moderate rise of of insulin.

We don't want anything that's going to cause a rapid rise of blood sugar, a rapid rise of insulin. There should be very little rise in blood sugar and insulin, and then it should be a stabilization effect that happens within, you know,

roughly about two hours after your your meal, where your blood sugar comes back to about normal, about where it was before or pretty close to that.

And your insulin drops down to where it's pretty close to baseline as well. After about two hours after your meal, most people are consuming foods that cause massive blood sugar spikes, big insulin releases, and then they may either that insulin may drag the blood sugar down below a certain threshold that then causes hypoglycemic, reaction where your your blood sugar goes to low and now your brain is starving.

It doesn't have fuel that it needs. And so we start to get we start to see neuronal cell death because we're not getting enough glucose into the cells.

And we develop hypoglycemic responses where we have mood issues where we have irritability. We have a nausea oftentimes cravings. Right. The classic kind of hangry feelings that we get when we're hypoglycemic, there's actually a sign that neurons are dying in the brain.

So we're getting neuro, excitable toxic changes in the brain and neural death. And so definitely not what we want now for other people that are developing insulin resistance where their body is producing all this insulin, but the body's not responding.

And the blood sugar staying high and high blood sugar is really damaging as well, because the sugar molecules will bind to proteins and create something called an advanced glycation end product or an AGP.

And these advanced glycation end products are like shrapnel going through our bloodstream. They end up creating, atherosclerotic sclerotic plaques. They damage the endothelial lining of the blood vessels, creating plaque.

They damage all the little capillary beds going into the brain. So they reduce the amount of oxygen that's getting into the brain. So now we get neural neuronal cell death as well because of a hypoxic state.

Because the blood vessels are becoming damaged. So blood sugar stability is one of the key foundational things we can do in order to have good positive neuroplasticity, good high, high levels of Bdnf, nerve growth factor, and a high level of brain regeneration.

Other things that damage the brain neurotoxins, things like mercury, lead fluoride, which you know, we can find in toothpaste, water, you know, they're fluoride eating a lot of our water, a lot of dental products or even getting your teeth fluorinated.

I don't recommend that fluoride is a neurotoxin. We want to avoid that. Pesticides really bad for the for the brain, DDT, different pesticides, herbicides, glyphosate.

Really problematic for brain health. Aluminum. Arsenic, excessive alcohol illegal. You know, prescription. You know, using a lot of prescription drugs, very damaging to the brain state and drugs.

Right. One of the most commonly prescribed medications extremely damaging for brain cells. And it's going to limit your ability to have brain regeneration if you're taking one of these cholesterol lowering statin drugs.

So I definitely don't recommend those, PCBs, poly chlorinated biphenyls, aspartame. So aspartame, MSG, monosodium glutamate, a lot of these kind of flavor enhancers, flame retardants.

If you're buying new furniture, new cars, you're having flame retardants enter into it. That's why you have to off gas a lot of these things because the chemicals are very neurotoxic.

Polysorbate, cyclic aromatic hydrocarbons, which we find from anytime we're burning something, even barbecue. Right. The smoke coming out, it's polycyclic aromatic hydrocarbons, very damaging for the brain.

So we want to do our best to reduce our exposure to those. Another issue is a sedentary lifestyle. We know that when we're sitting for long periods of time, it dramatically reduces Bdnf levels and leads to reduced concentration levels, forgetfulness and confusion.

So movement is super critical. Movement is like a critical nutrient for the brain. When we move, something called proprioception happens, which is a sensory information process that travels from the muscles that are moving up into our brain.

And it's a key stimulus. All brain cells, all nerve cells need regular activation. You know, we need times of sleeping, for example, to detox the brain.

Boomer awake. We need activation. And movement is a great way to activate and provide this critical new train of proprioception up into the brain. Of course, beyond movement, just getting regular exercise, going out, doing a robotic exercise or strength training is going to improve the ability of the neurons to uptake oxygen.

It's going to improve their oxygen extraction and their ability to to to. It's also going to increase the amount of mitochondria within the neurons, make the mitochondria more efficient, better at using oxygen for fuel, burning fat for fuel.

It's going to reduce oxidative stress. We're going to increase our endogenous levels of antioxidants when we do regular exercise. So a lot of great benefits to moving and also getting regular exercise.

So movement will just be low very low intensity like just walking right. Just getting up from your desk, going and walking around your house. That's movement.

That's not intense unless, you know, you're really, you know, you're you're really atrophied and you're in really bad physical condition. For most people. It's not intense.

It's not intense enough to create improvements in our oxygen gen extraction and a great a huge increase in endogenous antioxidant production. However, it's still good.

It's still a really positive thing for the body. Where we're going to get the best benefits, of course, is also adding in exercise, right. Aerobic and or strength training, ideally both are some level of both.

If I can only do one, I would do strength training. I would do muscle you know weightlifting body you know and just do short rest periods in between sets.

And that way you're getting an Arabic benefit. So strength training really great. We also activate something called mile kinds which help to activate Bdnf and and nerve growth factor and help reduce inflammation in the brain.

So these these are hormones that come from our muscle cells that are being used when we're stimulating them at high intensity. And they have a profound effect that reducing inflammation in the brain.

So really powerful stuff. We also need to take care of our gut brain axis. There's a bi directional communication process between the brain and the gut.

So the gut is constantly sending signals to the brain. In fact, they call the gut the second brain constantly sending signals to the brain, and the brain sending signals down to the gut.

And if we have dysbiosis or bad bacterial balance in the gut, if we have problems in the gut, it's going to end up creating more issues in the brain where we may have a leaky blood brain barrier.

We call it leaky gut equals leaky brain, where we have leaky gut and there's damaged inflammation in the gut. And now large undigested proteins, bacteria, yeast, different things like that are getting into the bloodstream.

It also creates a weakening of the blood brain barrier. And now we get more inflammation in our brain. And obviously a reduction in Bdnf and a reduction in brain regeneration.

So really got to take good care of our gut as well. So so some of our top brain regeneration strategies obviously following a blood sugar stabilizing anti-inflammatory diet, practicing intermittent fasting and getting into ketone osis.

I'm going to talk more about that here soon. Regular movement and exercise reduce stress. Practice gratitude. We want to prioritize good sleep, support gut health.

There's certain aerobic exercises that I'm going to go through that are really powerful. We want to reduce our toxic load. And then we can do things like using magnesium, which is really powerful for helping to support, neuroplasticity, positive neuroplasticity, changes in the brain, use autophagy enhancing herbs to get rid of bad proteins in the neuronal cells and to help upregulate healthy protein formation, and then also using mitochondrial support.

Nutrients. So when it comes to diet, one of the first things we can do is get rid of bad fats. Well, I talked earlier about the health of the membranes, the membranes and the iron channels in, in the neurons and, and, and how the, the neurons conduct electrical energy.

And so a lot of that has to do with the fatty acid makeup of the membranes. We know that bad fats, when we're consuming trans fats and high omega six fats and damaged, rancid plant, rancid plant oils, right.

Plant or seed oils, I should say that is really hazardous to membrane health. That creates really weak, poorly functioning cell membranes.

Diet, Fasting, and Ketones for Brain Repair

So we want to get rid of things like canola oil, soybean oil, sunflower corn oil, safflower oil, grapeseed oil, margarine, cottonseed oil, peanut oil, trans anything that's partially hydrogenated vegetable oil.

Or if you see vegetable oil on anything, get rid of that. Those are really toxic to the brain. They shut down neural neuro regeneration and they turn on degenerative processes in the brain and said, we want a lot of good fats, things like butter, tallow, ghee, coconut milk, coconut oil, avocados or avocado oil, olive oil, extra virgin high polyphenol, extra virgin olive oil.

One of my favorite things fish oil for the omega threes. Eggs, pasture raised eggs. Great source of healthy fats. Vitamin A, vitamin D, vitamin E all your fat soluble nutrients to support healthy membrane function.

So that's where we start. Other anti-inflammatory foods. Grass fed, pasture raised meat, poultry and wild game y grass fed because we know grain fed is going to have a lot more of the omega six fats, and it's also going to have a lot more toxins.

They're feeding these animals, you know, unless it's organic, they're typically feeding them, pesticide laden grains. And also a lot of the grains that they're feeding them have mycotoxins on them as well, which are both really toxic to the brain.

Pesticides and mycotoxins. And so when the cows are able to eat grass, or the animals are able to eat a lot of grass, now they're getting a lot more omega threes, a lot less toxins.

And, they are also producing more, more fat soluble nutrients as well. And more things like conjugated like acid in the meat, in the dairy. And so we're getting those we're going to confer a lot of those benefits.

Also Greens and Wild Pasture also has unique adaptogens and unique, phytonutrients in it that will also confer into the meat. And we're able to get a lot of those benefits as well.

So really powerful stuff there. Lemons, limes, berries, fruit in general is good, but some fruit is a lot higher in sugar and we want to keep that under control or only eat, you know, minimal amounts of it.

And then other fruit is very high in nutrients, lower in sugar. So berries, lemons, limes are good good sources. There. Now I enjoy things like like apple sometimes or pineapple or watermelon.

It's so neat. A whole lot of it. Because again, it's higher in sugar, but it does have good nutrients. Avocados are fantastic for the brain, very blood sugar stabilizing food.

And they also have things like magnesium, potassium, folate in them, a lot of key nutrients. Lutein, Zayas, Anthony's carotenoid, antioxidants that are very supportive of brain health.

Most of the fat is mono unsaturated, which is very healthy for the brain. Also, extra virgin organic, extra virgin olive oil, like I talked about, very rich and things like alio candles, as well as hydroxy tirer sol, which are powerful polyphenols that have been shown to be very supportive to brain regeneration and really down regulate brain inflammation.

So very powerful stuff. Green tea. Great thing to be drinking to support brain health. It has, it has catechin antioxidants that are really powerful for supporting the neurons supporting mitochondrial function, helping reduce oxidative stress.

It has l-theanine which is naturally calming on the brain. So very supportive. They're non-starchy vegetables. So broccoli, cauliflower, kale, spinach.

You got things like celery, cucumbers all can be really, really healthy here. Herbs like tumeric and ginger which have powerful compounds that support, autophagy brain.

So, so the breakdown of bad protein in the neurons and also reducing oxidative stress and inflammation in the neurons and supporting stem cell production.

Right. In fact, there's a compound in tumor called, tumor roan, which has been shown to help support neuronal stem cell production actually, which actually can heal.

You know, it's it's like in young embryonic cells, in the brain. Right. So getting rid of the senescent or old decaying cells and, and adding in new young, healthy stress resilient cells is super powerful.

Some of these herbs really help with that. We know wild caught fish or seafood can be really healthy. So like wild caught salmon has xanthan in it, which is a powerful antioxidant that supports neurons.

It's also got omega three fatty acids, the long chain omega threes, EPA and DHA, which are incredibly powerful for cell membrane health. So you get the right amount of, you know, the right ions moving in and out of the neurons to help form proper, neural plastic changes in the brain.

So really powerful stuff. A lot of herbs Basil, oregano, thyme, rosemary, garlic, onions, chives are great. Coconut oil, coconut fats in general. The MCT is in there really great for for brain health and reducing inflammation in the brain.

Fermented vegetables can be really, really powerful as well. They've got probiotics, enzymes, organic acids, butyric acid for example, which helps reduce inflammation in the brain.

So some powerful stuff there a lot of really good things. Obviously the things we want to avoid are going to be refined grains, whole grains, you know, just grains in general.

You want to get rid of all of our deep fried foods. You know, your French fries, your pretzels, your donuts, bakery stuff, you know, all that kind of stuff.

You guys know the stuff we need to get rid of, fast food, commercial salad dressings. A lot of them have corn oil, soybean oil, cottonseed oil, peanut oil.

You know, we want to make sure we're getting rid of all of that trans fats, margarine. So we got to get rid of those things. Now. Intermittent fasting Plato has a great quote.

He says I fast for greater physical and mental efficiency. Intermittent fasting is powerful. When we go, when we take time between meals, it it tells our body that we need to become more efficient.

So we start to break down fat and use it for energy rather than relying on sugar in our muscles as well as in our bloodstream and in our liver. So we actually start to dig into our own body fat and use it for energy.

Now, when it comes to our brain, our brain actually can't use long chain fatty acids for fuel. And actually because they can't cross the blood brain barrier.

So our body then our liver converts these long chain fats into small chain fats. We call those ketones. So it converts them into something called beta hydroxybutyrate which is the main ketone body.

We find in the bloodstream. And that has been shown to support, and enhance the mitochondria within the brain to down regulate inflammation in the brain.

It's actually what we call an epigenetic modulator. We're able to modulate and balance out, you know, certain certain genetic components or certain genetic expression in the brain that reduces inflammation and oxidative stress, turns off, degenerative pathways in the brain and turns on brain regenerative capabilities.

So intermittent fasting is great. A great way to start is just a 12 hour overnight fast, but then we can move it up to 14 hours. 16 hours. 18 hours, you know, and the way that what I, what I typically will recommend is doing a 16 to 18 hour fast, 2 to 3 days a week.

At least you could do it every day. Feel great with that, but doing it at least 2 to 3 days a week and then one day a week doing a 20 to 24 hour fast.

Meaning you're bumping it up to where you're doing like a lunch to lunch fast. For example, you eat lunch one day, you fast until lunch the following day.

That is a really powerful way to stimulate ketones, to bring down inflammation, to support brain regeneration. Now, in order to do that, first you've got to change your diet.

You've got to get your blood sugar more stable. You really need to be focusing on eating a lot of these higher protein, polyphenol rich foods, healthy fats, and getting rid of the sugars and starches.

And then your body become more fat adapted, where you'll be good at burning fat for fuel. And then going longer periods of time between meals is really not that hard, because your body's good at creating ketones, and ketones give you a natural, satiety effect where you no longer have cravings.

You feel really good, stable, and you don't have the hypoglycemic responses. So you got to get your body fat adapted. While you're doing that, you could do a 12 hour overnight fast and eat 3 or 4 meals a day in in a 12 hour time period, let's say from 7 a.m.

to 7 p.m. after you do that for a few weeks, you should be really good to be able to bump your fast to 14 16 hours where you're eating, let's say between 10 a.m.

and 6 p.m., three meals, and then from there you may even be able to experiment. Go 18 hours from, let's say, eat your meals between 12 p.m. and 6 p.m.

or like me, I usually eat between 1 and 7, and I usually do two meals in that time span. Sometimes I'll have like a third one that's a little bit smaller in between.

If I did like a really intense workout, but you may just be able to do 2 or 3 meals in that kind of six hour eating window. And then from there you can experiment with doing just one meal and then fasting, you know, through the night and then fasting all the way till whatever that one meal was, whether it's a dinner, a dinner, fast breakfast or breakfast or lunch, lunch, depending on the time of day that works best for you.

And that is a incredibly powerful stimulator of brain regeneration. So highly recommend it. Get a huge boost in brain derived neurotrophic factor. You get a huge boost in autophagy where your brain, the neurons are able to break down these old, damaged, senescent cells and damaged proteins within the cell and clean it up and detoxify and recycle the proteins and create new, healthy mitochondria.

And we know that ketones, when we're able to get fat adapted and use ketones for fuel source, they are they we produce less free radicals. And so they're they're a really clean energy source for our brain.

And they also they also cause something called, mitochondrial uncoupling where our body becomes, basically it's able to waste certain amounts of energy and we actually increase mitochondrial efficiency and we increase the amount of mitochondria within the cell.

So we get mitochondrial biogenesis effects. And the more healthy mitochondria you have within your cell, the healthier your cell is going to be. That's what produces all the energy.

So we want as much healthy mitochondria within ourselves as possible.

Sleep, Novel Exercises, and Detox Support

Neurons have more mitochondria within our neurons than we have in almost all cells of our body, outside of our reproductive organs or testes and ovaries.

And so your average neuron has roughly about 10,000 mitochondria. So really, really dense with mitochondria. We want those to be as healthy as possible.

So again I mentioned movement. Movement is so critical. Getting out and just walking moving around. Not only is a great for Bdnf, but it also improves circulation.

So it brings more oxygen into the brain, stimulates lymphatic drainage. Very good for lymphatic function. And getting rid of the older damaged proteins in the brain enhances oxygenation in the brain, reduces stress and tension in the body, improves mood and happiness will actually help improve, serotonin production and sensitivity in your brain.

Dopamine production and sensitivity, Gaba production and sensitivity. So you can have calmness, feel really good control of yourself and feel happy and improves mental clarity and memory as well.

So getting out and moving regularly and then also adding in exercise where you're doing either aerobic or strength training or ideally a little bit of both, and in particular, definitely doing some sort of strength training where you're working on building lean body tissue so powerful for your body being in a state of gratitude can't be.

I mean, being in a in a grateful state is so powerful for neuroplasticity. And the more, grateful that you can be, you will just notice that you have better quality of life in all areas, and that you're just a lot healthier because you are putting out more endorphins, more positive serotonin, dopamine.

You're getting better neurotransmitter sensitivity. And you are you're also releasing more oxytocin, which helps to balance out the negative effects of cortisol.

And, you know, too much cortisol, too much norepinephrine, the stress hormones. It helps balance that out and it helps stimulate brain cell regeneration.

So when you're grateful you get more oxytocin, you get more endorphin release, which again, cancel out the negative effects of stress that all of us experience at times in life.

So gratefulness is so powerful for your body and then great. And then getting a good night's sleep. We know that sleeping is so critical for detoxifying bad proteins in the brain.

And our lymphatic function, you know, really drives up at night. That's when we again, we drain our brain and detoxify our brain. We know that being a side sleeper actually is that position enhances lymphatic flow, right.

So kind of the fetal position is the best sleeping position to stimulate brain detoxification. And then setting yourself up with good sleep hygiene. So you want to keep your room as dark as possible.

You want to have your room cool. Maybe an overhead fan, use a sleep mask when you're sleeping. Don't consume caffeine within eight hours of sleeping. Don't eat within three hours of sleeping, so don't eat late at night.

Get sun exposure during the day, particularly early in the day. That actually helps set your circadian rhythm and helps set you up for good sleep at night.

Again, you want to exercise regularly. That's super important for lymphatic function and good sleep, but not too late. So kind of like with eating. You don't want to eat within three hours of sleeping.

You'll want to exercise within three hours of sleeping. You want to avoid bright light after sunset, and instead you can wear blue light blocking glasses.

You can dim your lights. You want to get yourself out of bright blue light. Okay, so candle light or orange light bulbs are really good because that is less melatonin inhibiting, whereas bright lights, blue lights deplete or inhibit your melatonin production.

You can also wear blue light blocking glasses, which are basically orange colored glasses that help block out the damaging effects of blue light and help with optimal melatonin release.

And you want to wind down at 9 p.m., so you shouldn't have goals after 9 p.m., you should be trying to relax your brain and set you up for really good sleep at night.

Probiotics can be really beneficial. Probiotics have been shown to help improve Bdnf levels and neurotrophic growth factor levels. And so, probiotics also help modulate the immune system, protect against infections, support digestive health, allowing you to absorb more nutrients from your food, create less and or toxic debris from the food that you consume.

And again, powerful for brain health. Neuro back exercises. These are activities that shake up your routine and use your senses in unusual ways. So they are, you know, not they're they're novel exercises.

So it could be something like brushing your teeth or doing any sort of daily activity, like shaving or styling your hair with your non-dominant hand. So if you're cutting your hair with your non-dominant hand, or brushing your teeth with your non-dominant hand, that challenges your brain to have to work harder and to set up new synaptic pathways.

And that is a really powerful way to support brain health. Having an ongoing chess game, you might do this at home or at the art or at your office. Leave a chess board out so any worker can come along, assess the situation, and make a move anonymously so you can just kind of have a chess game going and you're just nobody else is really playing.

You're just kind of go up, you look at the board and then you make a move, and then maybe you come back a few hours later and you do it again. So it's challenging you to think strategically.

Strategic thinking is a really powerful stimulator for anaerobic exercises and getting a wide range of different types of whether it's games or activities that challenge you to think strategically, is really powerful stimulus for your brain.

You can visit a farmer's market and look at the different shapes, colors, aromas and tastes. All the different, all the different, visual senses. Your smelling, your your auditory sense, what you're listening to.

In fact, there's a great book called called How to Think Like Leonardo da Vinci. And the Vinci would just look at an object and he would draw it and he would like, basically look at all the depths and all the, you know, unique shades of color on whatever object he was looking at.

Then he would take time and he would just listen and just take in what he was listening to birds chirping, you know, different insects, you know, wind rustling and he would just focus in on what he was listening to.

So he would really focus in on heightening his his experience with each one of these emotions, one at a time. Then he would think about what he was smelling, what he was seeking in from a smelling perspective. So we can get positive inputs from all of these different pathways into the brain, and we can utilize those.

So that's really powerful. We can also do things like, you know, if we walk the same path every day, we can take a new path. If we drive the same route to work or to drop our kids off every day, we can take a different route, and it will actually challenge and shape our brain in a new pathway.

And that's called neuro aerobics. We can also do things like, for example, balance exercises, you know, so just standing on one leg, doing things on one leg, can be a really powerful stimulus for, for for neuroplasticity.

Also cross crawl movements when we're going like right from our right hand, taking our right hand, touching our left knee right, bringing our knee up and touching it, left hand touching our left knee.

So that kind of crawl motion, when babies are doing that, they're actually stimulating the production, a lot of different synapses and creating better connectivity in their brain.

So they're actually maturing their brain as they crawl. So really powerful. And we can actually get improvements, even as an adult, by doing cross crawl movements, by doing kind of, cross body movements using the transverse plane and rotating our hips and doing cross body movements is a really powerful way to enhance the connectivity of our brain.

So all great things to do. And of course we want to we want to help support our body's natural detoxification pathways. So we toxins enter through our lungs, through the air we breathe, through what we put on our skin, or what is exposed to our skin and through our digestive system.

Then our liver is our primary detoxifying organ. It helps deactivate and prepare toxins for the removal from our body. So a lot of people think we store toxins in our liver.

We shouldn't. Right? We we we we we don't unless we have problems with our liver and we start developing fatty liver. And then we'll store toxins in the fat that's on our liver.

However, if the livers functioning well, we keep our blood sugar stable, our insulin levels stable. Following the kind of practices I've already talked about, then the liver is able to deactivate toxins and then send them out through our skin, through sweating, send them out through our urine, send them out through our colon, through excretion, and then through the air we breathe through our lungs.

That's how we get rid of toxins. And so we want to make sure that all those pathways are working really, really well. And there's things you can do dry brushing, hydrating your body really, really well.

Infrared sauna can be powerful. Castor oil packs can be great for helping support detoxification. I mean, there's a lot of different things that we can we can talk about with that.

We just don't have time in today's presentation. And then if there's one compound that I've found to be really critical when it comes to overall brain health, it's magnesium.

I mean, I could talk about a lot of things. B vitamins are really critical. Glutathione can be really, really important. Omega three fatty acids, tumeric.

And we talked about a lot of things. But magnesium I found that is one of the biggest deficiencies, right along with vitamin D and vitamin D is also really important for for brain regeneration.

But magnesium I see to be so critical, really important for blood sugar balance, optimal circulation, getting oxygen extraction.

Magnesium, Polyphenols, and Hyperbaric Oxygen

So allowing the blood vessels to have the right tone so we get enough blood flow and oxygen extraction into the cells for cellular energy production, for a calm and balanced nervous system, for relaxed muscles, for bone density, for joints and ligament flexibilities, deep sleep.

I mean, you know, if you've ever taken magnesium, you know that it makes a difference in these areas. And so I'm a huge advocate of magnesium. And the RDA for magnesium for adults is usually between 300 to 420mg daily.

But I typically recommend people get 450 to 800 plus milligrams of magnesium daily. And so 204 hundred is usually good for children depending on age and body size.

But most people do well with a regular magnesium supplement, and I recommend taking it until you get to bowel tolerance, where you start to get loose stools and then you back down.

You take a smaller dose until your bowels come back to being normal, and then you kind of stay at that dose, right? And most people are going to need somewhere around 400 to 600, maybe more milligrams daily.

But when you get it right and it makes a huge difference, it makes such a big difference in the way that you think, the way that you store memories, your sleep quality really, almost every area of your life.

So get a good form of magnesium. The worst forms are that magnesium oxide, di hydroxy oxide, aspartate and carbonate. And the best types are magnesium malic, glistening chloride, tolerate or irritate citrate and L3.

And when it comes to your brain, if you're looking for the best brain benefits, so that's going to mean deep sleep. That's going to mean mood. So support, you know, reducing anxiety, supporting positive healthy mood.

Helping keep your nervous system really calm and relaxed. I like magnesium L three and eight as the best magnesium mallet also works well with that listening, but three and eight having that in your routine.

Really powerful when it comes to overall health of of your brain function. And then some great foods and great polyphenol compound that help support, getting rid of senescent old, damaged decaying neurons and supporting, the breakdown of damaged proteins within the neurons are going to be things like quercetin, which we get from red onions, cranberries and elderberries.

Ginger, which has six shaggy old powerful polyphenol that reduces inflammation, supports, neuronal autophagy. Curcumin, which is in tumeric, as well as, tumor own.

That's in the tumeric that I mentioned earlier as a trial, which we find. And things like blueberries, grapes, red wine, only the the red wine only in small moderation and ideally from like a dry farm where you get high amounts of

polyphenols, lower sugar content.

So I like dry farms wine but not drinking it too often, maybe once or twice a week. Like a cup. Once or twice a week. EGCg, which we find in green tea, oolong tea, dark chocolate.

That's the catechin antioxidants. This is where dark chocolate can be really helpful. It's rich in these catechins. Green tea has, as well, citrus, bergamot, which we find in Earl gray tea as well as bergamot orange can be really helpful.

And then carnis cynic acid, which we find in oregano, sage and rosemary. So getting those Mediterranean herbs into your diet really powerful. Now a bonus stimulus could be something like hyperbaric oxygen, especially if you're really dealing with a lot of brain degenerative, symptoms.

If you have, you know, early phase, you know, mild cognitive decline, I would definitely recommend going to a center or even renting or buying a hyperbaric oxygen chamber that you can use, which helps push.

So you basically you've got an oxygen mask on that's pumping in 100% oxygen, and then it's taking you almost like you're going underwater, creating this pressure change that allows all this oxygen to diffuse into the plasma.

And it's able to actually cross right into the cells. So you get you have to flood your cells with oxygen, which powerfully reduces inflammation free radical damage in all the tissues of your body.

It allows everything to heal faster. I have a lot of people use this after surgery to help heal faster, for example. But really powerful for your brain.

So great brain benefits that come from this and can be really, really powerful strategy for brain regeneration. So hopefully I know we went through a lot today.

Hopefully you guys got a lot out of this training. We'd love to hear your feedback. This is a really powerful topic, something obviously I'm super excited about. And you can learn more.

I've got a very well detailed article on all of this with scientific studies and everything you need. Just go to doctor jackers.com, look up brain regeneration for that.

Thanks so much and everybody be blessed.