Introduction and Guest Background

Thanks for tuning in to the Reverse Brain Disorder Summit. And joining me now is my good friend, Doctor David Jokers, who is a doctor of Natural medicine and runs one of the most popular natural health websites in Doctor jokers.com, which has gotten over 1 million monthly visitors.

His work has been seen on the popular media, such as the Doctor Show as well as hallmark, Home and Family. Doctor jokers is the author of the bestselling book The Keto Metabolic Breakthrough and the Fasting Transformation.

He is a world renowned expert in the area of ketosis, fasting, inflammation and functional nutrition, and he's the host of the popular Doctor Jokers Functional Nutrition podcast.

Doctor jokers lives in canton, Georgia with his wife Angel and his twin boys, David and Joshua and his daughters. Joyful and shine. Welcome, David. Good to see you.

Yeah, absolutely. Jason, thanks so much. Always great to connect with you. Yeah. Well, this is a this is a topic I know you have a lot of familiarity with.

You work in this with the fasting intermittent fasting ketosis world. And there's a lot of that that is tied into brain health. Right. And I think in the last few decades in particular, we're really recognizing sort of this brain, gut, gut, brain bidirectional relationship and how much our food choices, and perhaps even the absence of making choices with food, can impact brain health.

So, maybe just just start me off on that level. Like, what is it about this brain gut relationship that seems to have such a profound benefit? Why do we want to focus on our food so much?

The Gut-Brain Connection

Yeah. For sure. Well, you know, for all of us, the quality of our life is going to come down to how healthy our brain is. And that's really what gives us energy, mental clarity, drive in life, passion in life, the ability to feel pleasure, the ability to stay focused, to not be so distractible you know, so many people in our society, they are just, incredibly distracted.

So the ability to focus and get things done and, and to feel good about ourselves. And so we really need to prioritize good brain health. And you're right, there's such an intimate connection between the gut and the brain.

In fact, there is a nerve cranial nerve ten, and it's called the vagus nerve. Vegas is actually Latin for wanderer. So it comes from the brain. The brain stem, which is the lower part of the brain, travels all the way down into our heart, lungs and then down into our digestive track.

And the vagus nerve is the major branch of our parasympathetic nervous system. So we think about two parts of our autonomic nervous system. So our nervous system we have I'm going to break this down into the autonomic and somatic nervous system.

The somatic is the part that we control. Like if I want to move my hand, you know, I have to kind of think that thought move my hand. That's a somatic nervous system.

Autonomic is basically what it sounds like. Automatic, right. We don't have to think about our heart beating. We don't have to think about digesting our meal.

Our body just does it. Our body produces the stomach acid, the enzymes. You know it and it goes goes to work. Starting to digest food. So so there's these two branches and within the autonomic branch we have a sympathetic nervous system.

And a parasympathetic sympathetic is our fight or flight. Parasympathetic is our rest. Digest and heal branch of our nervous system. And so the vagus nerve is really the main it's kind of the main conduit of that parasympathetic part of our nervous system.

So it runs down into the gut. It's what stimulates the production of stomach acid, of bile, of pancreatic enzymes. And and it should be in this kind of organic synthesis.

Symphony almost, you know, like we're basically produce just the right amount of stomach acid. Stomach acid comes down into the, into the small intestine.

It triggers certain receptors that now allow bile to flow out and allow pancreatic enzymes and bicarbonate to come out to help neutralize and alkalis the bolus or the digested food that's now in the small intestine.

And we should have kind of this very good organization, that takes place with this and the vagus nerve really drives that. So the brain is constantly the brain and gut are constantly communicating in that way.

We also know that the gut, they call it the second brain. Right. And and one of the reasons why is we have tons of neurotransmitters that help regulate activity in the gut.

We have serotonin, melatonin, which, you know, we think about as our sleep hormone. Melatonin plays a really key role in helping regulate activity in the gut as well.

We produce dopamine and we produce a lot of different key neurotransmitter. We also produce in our brain right there in the gut. And then also the bacteria or our microbiome are producing nutrients that help communicate with the brain, or help support brain function.

And there's also endotoxins. There's toxins that are produced by gut bacteria, pathogenic bacteria, parasites, Candida. For example, Candida produces something called glial toxin and acetal aldehyde.

Acetal aldehyde is basically like a form of alcohol that actually will damage the brain glial toxin as well. Very, very toxic for the brain. So having a healthy microbiome and a healthy, well functioning vagus nerve activity is extremely important for that gut brain kind of bidirectional activity.

And when we have disorder in our gut, we're going to end up with more brain inflammation. And what are the symptoms of brain inflammation? Things like depression, mood disorders, brain fog, trouble processing.

Right. Slower processing, distractibility, ADHD, trouble sleeping, and then long term, obviously this can turn into things like, mild cognitive decline and eventually into dementia, Alzheimer's, Parkinson's, a lot of links between gut dysbiosis, leaky gut syndrome and Parkinson's and ALS.

Right? All these different types of, neurodegenerative types of conditions. Yeah. This is this is I mean, you're painting a huge picture for us, right?

I mean, this is really, really key. And I think as much as we've started to understand some of these mechanisms over the past few decades, there's undoubtedly a lot more that we can learn, right?

I mean, there's there's just so much, that we still have yet to discover. But when it comes to brain, I think it's it's really important that we've now kind of recognized, certainly in the integrative and functional medicine world.

And I think even in the sort of more conventional world, that it's not just about the brain itself. Right. There's other aspects to brain dysfunctions, whether it be heavy metals, whether it be infections, whether it be dysfunctions,

metabolic dysfunctions in particular.

Right. And that's really what I want to get into with you. But dysfunctions throughout the body that can really start to impact the brain and vice versa. Right.

So this is the the catch 22 is that, peripheral dysfunctions can impact the brain in such a way that the now the brain's dysfunction or caught in this dysfunctional loop that's now impacting other places in the body in other aspects and systems.

Right. So, and eventually we get to the point of, of disease, sort of labeling and diagnoses. And now we've got to unwind this kind of mess that we found ourselves in.

And I find, I think probably why you kind of are the primary expert in this realm.

Blood Sugar, Insulin Resistance, and Brain Health

Metabolic dysfunctions and metabolic function in general is a key aspect to, well, really all disease in all healthy function. But but let's start there because, you know, blood sugar regulation, I mean, sounds so fundamental, sounds so basic.

You know, unless you have insulin resistance or diabetes or perhaps cardiometabolic issues that you, you know, about, you might not even be paying attention to blood sugar regulation.

Right? This is not something that most people are going to monitor on a regular basis, unless they have a reason to, or unless they've found this educational piece and said, oh my gosh, I have no clue what my blood sugar regulation is, let me find out.

But talk to me about blood sugar regulation and how it's impacting brain health in general, for sure. Well, when we think about the brain and we think about individual neurons, they really need three key things to, to be able to, live and thrive.

And that is they need oxygen, they need activation. So actually movement itself is a key nutrient for neurons. And then they need some sort of fuel source.

And that can be glucose or it could be ketones. So the a neuron can't run 100% on ketones. But they can get, you know, roughly close to about 50% of their energy off of ketones.

And I'll break down what the ketone is here shortly. But you know, for most of us, we were taught, especially taught throughout school, that they really they need glucose, right, in order to produce energy.

And so we've got to keep our blood sugar stable. And we also need to make sure that our body's very insulin sensitive. Insulin is this hormone that our body produces in order to get glucose out of the bloodstream and into the cells.

This is really important because when we eat, you know, a large amount of carbohydrates or sugar or something like that, our blood sugar goes up and that's no sugar molecules.

Once you get up over a certain threshold, sugar molecules will actually bind to proteins and they'll create something called advanced glycation end products or age.

These, these are sticky proteins that drive up oxidative stress. And they're very damaging to different tissues of the body, like the endothelial lining of the blood vessels.

So they create damage. And they that's really one of the major insults that ends up causing plaque and eventually some sort of cardiovascular disease or cerebrovascular disease where somebody ends up with a stroke has to do

with this high amount of Aids.

So insulin comes out and insulin is like a superhero hormone. Its job is to get the glucose out of the bloodstream and into the cells, where we can now use it to produce energy.

And it's very, very important in the brain. We need that insulin. We need good sensitivity from the receptors. And so what happens is when we're eating the right amount of sugar, the right amount of fats, proteins, are staying active and living a healthy lifestyle.

Our cells become very sensitive to insulin. So when we produce the insulin, it grabs the glucose. And like a key going into a door, unlock the door allows the glucose to go in, where now it can be used to produce cellular energy and all is well, right?

However, when we start consuming too much sugar, not moving our body enough okay, that that's a big factor. Maybe we're under a lot of stress. We we're not sleeping well.

Maybe we have, you know, high level of toxicity. All of these factors can cause blood sugar imbalances. Where now our sugar goes way up, we produce insulin, and we have to produce more and more and more insulin in order to get the sugar out of the bloodstream.

Right. And over time, our cells start to not respond well to it. And, from that we can develop insulin resistance. Now, some individuals will actually get a condition called reactive hypoglycemia as well where and this is so when we think about blood sugar regulation, we want just the right amount of sugar in our bloodstream.

If we have too much sugar and too much insulin, that is a big problem. If we have too little sugar and perhaps either too much or too little insulin, like in the case of somebody with type one diabetes.

They may, you know, shoot insulin in and that drags their blood sugar down, but then they're not producing insulin however. So we need the right amount of insulin.

We need the right amount of sugar when the sugar comes down too low and we're hypoglycemic now, we don't have enough fuel for those neurons. And the neurons start to die.

And we get neuro excitable toxicity where when one neuron dies because it's starved to death, it actually dies and it releases, it spills out all these different neurochemicals that now damage they actually almost like infecting, and they damage and overload the neurons around them and cause them to have an exciting toxic reaction.

And so in this kind of spreads in different regions of the brain. So it's really important that we're protecting these neurons with proper blood sugar stabilization.

And the way that people will know, if they have healthy blood sugar is, first off, when you eat your meal, you should feel very, very stable and you should feel very mentally clear for at least 4 or 5 hours after you consume your meal.

If you're noticing that you have a lot of cravings, if you're feeling irritable, if you are feeling dizzy, lightheaded, maybe you have headache. A few hours after your meal.

That is a sign that most likely your blood sugar has dropped to low and you're having this sort of hypoglycemic reaction. And in these individuals, they eat a meal, and then their body puts out way too much insulin.

They still have a level of insulin sensitivity to where, the insulin interacts with the cell. It brings the sugar in to the cell, but it brings too much sugar into the cell.

And now your blood sugar is low. And so after the sugar is used as an energy source, now there's not a whole lot left. And so a few hours after that meal, now your blood sugar is down.

And now the neurons are starving. They need more fuel and they're not getting enough of it. Sugar is like a quick energy source, so we need a continual continual supply of it.

We need a lot more on a regular basis and in a in a shorter interval. Then we do it for burning fat or ketones as an energy source. And I'll go into that here shortly.

But when we're looking at blood sugar dynamics so important that we're keeping that stable. So hypoglycemia is a big problem. And then another big problem is high blood sugar hypoglycemia and insulin resistance.

And the way that you know that you're hypoglycemic or if you have insulin resistance is you eat a meal. And this this isn't 100%, but it's very common with people that have insulin resistance.

They eat them, they eat a meal, and then they still crave sugar right after the meal. So they eat a big meal. They eat a lot of food, plenty of food, yet they're still craving sugar.

And then they'll eat something that has sugar in it, and yet they're still craving it. And the reason why is their body is having so much trouble, actually getting the sugar into the neurons.

And so the brain itself thinks we're deprived. We don't have enough sugar, we don't have enough energy. We need to consume more. So we're having cravings to try to drive to the individual to eat the, the, the sugary, the carbohydrate rich food.

However, we're still, even though the blood sugar is elevated, we're not actually able to clear it and get it into the neurons where they can be used for energy.

So if you notice that that's most likely related to, insulin resistance. And then also when you eat your meal, you're just really fatigued right afterwards.

It's almost like you need to take a nap, like you just didn't feel like you got the energy push that you should have gotten from, from the food that, that you ate.

And so you're craving food. And then also you're really, really tired. Now, another, telltale sign is if you have abdominal obesity, right? So if you look down and you can't see your feet, right.

So for a woman, obviously they may have breasts, but, you know, kind of push your breast society, if you look down, you can't see your feet because your belly's hanging over.

That's a sign of insulin resistance. That extra abdominal fat is a classic sign also for women. Oftentimes they'll develop conditions like PCOS, polycystic ovarian syndrome, as well as cystic acne.

If you're noticing just kind of chronic acne, that's a sign of insulin resistance. If you've got polycystic ovarian syndrome for men, oftentimes they develop low testosterone.

They've got the belly fat. Sometimes they'll even develop, some breast tissue. Because when you have high insulin, when you have insulin resistance, you actually activate this, hormone called aromatase, which, takes testosterone and converts it into estrogen.

So these are males that have lower testosterone, higher levels of estrogen, and they start to develop a little bit of, breast tissue as well as the abdominal obesity.

So these are kind of classic signs that you may have insulin resistance. And if that's the case your brain is really suffering. It's not getting the fuel that it needs on a consistent basis.

And it's something that we really need to look at in more detail. Right. And these are you're talking about these conditions that over the long haul can really set up, pretty severe brain disorders and degeneration and later in life.

Right? I mean, that's that's the thing is that there's no there's no discontinuation here. You know, this is a continuum that, if not resolved over the course of of years can really create some, some damage down the line.

And you mentioned, you know, when it comes to blood sugar, obviously, I think that the obvious thing to, to focus on here is the food choices that we're making. Right?

This is this is a big one. But before we get into that, I want to get to the less obvious one maybe, which is when to eat, how much to eat, and not eating.

Right. And then we can get into kind of what to eat. But but to me, this is one of the bigger areas that I find, no matter who it is and no matter to to some degree, no matter what you're eating, perhaps the most impactful thing you can do is to change when you're eating and how much you're eating, and that can really, really make a difference.

I've noticed some people that don't particularly eat a great diet and I wouldn't advocate for that. And yet they they do some intermittent fasting and they're eating.

Their eating schedule is really, really good. And they're staying relatively healthy. Their blood markers look good. Like it's really, really wild. What what can happen when you when you keep your portion control and your eating schedule on point.

So maybe talk to me about that and what's really going on there. Yeah. This is very very important. So when we think about the neurons again I said that they can create energy from glucose as well as ketones.

And so ketones are this water soluble byproduct of fat metabolism. So fatty acids, most of the cells of our body can use fat as an energy source. And it's really a potent great energy source.

We can produce more cellular ATP, which is our cellular energy, and we produce it with less reactive oxygen species, being produced as a metabolic byproduct.

So it's more of a clean or fuel source. However, fatty acids are too big to get across the blood brain barrier. So what our body does is it actually takes the fatty acids, converts them in the liver into a smaller, water soluble molecule called called a ketone.

And that ketone then travels in the bloodstream up into the brain, crosses that blood brain barrier where it has a really powerful effect on the on the brain tissue, on the neurons.

Not only can they use it as an energy source, but also just then your presence of ketones beyond a certain threshold point, which, when we look at it on blood, tends to be about 0.5 million.

So, if you're testing, like your blood ketones, just hitting that threshold and going above that threshold actually turns off inflammation in the brain.

So it provides fuel for the brain, turns off inflammation.

Fasting, Ketosis, and Metabolic Flexibility

We have something called the neuro inflammasome, which is kind of this, inflamed inflammation amplifying pathway in the brain that turns up all immune activity and all inflammation in the brain.

It's kind of the way the brain is, has been designed to help prevent against, infection from killing it quickly. The problem is when we have blood sugar imbalances, when we're exposed to a lot of toxins, when we have different infections in our in our in our body, we turn that up, right?

And for most people, when they're not taking good care of themselves. Right. Again, if you go out in the street and

you see somebody with, you know, a big belly, right?

That person's brain is is degenerating, right? It's it's inflamed and degenerating. So we need to turn off that, inflammation process. The presence of ketones in the brain actually does that epigenetic modulator where it turns off that inflammation.

On top of that, it actually turns up the production of mitochondria. We know that the brain, outside of the reproductive organs, of testes and ovaries is the most dense area.

The neurons are the most dense area for mitochondria. Mitochondria are produce all the energy in our body, and the brain itself consumes a tremendous amount like it's I believe it's like 20% of the energy needs of the entire body is just done by the brain alone.

And that's because of all the mitochondria that are in there. The more healthy mitochondria, the larger number of healthy mitochondria personnel in your body and particularly in your brain, the healthier and the more stress resilient you're going to be.

So when the ketones are elevated and your insulin levels are down, and it really needs to be this dynamic where you have elevated ketones and you have lower levels of insulin.

If insulin is really high and ketones are high, that can that's, you know, that could actually be a pathological state. In some cases, people will do like exogenous ketones or something like that.

There can be some benefit to that. However, you're going to really get the best benefit when insulin is down. And that's because you're either consuming, you know, very low carb, blood sugar stabilizing foods or you're fasting, right?

Or doing intermittent fasting and restricting and compressing your eating window. And we'll talk about that in just a minute. But when that happens, when you have that dynamic now, we really, turn up the production of, of the mitochondria and the mitochondria, activate higher levels of uncoupling proteins.

And these uncoupling proteins create more heat. They, they create they turn up my top ag, which is where they break down old damaged mitochondria. So all of us have damaged mitochondria within the cells of our body.

The key is we want to take the raw materials there and recycle them and turn them into new healthy mitochondria. The longer these mitochondria just sit in a cell, the worse that cell is going to function.

And over time, if the mitochondria aren't broken down, that cell could actually turn into what we call a senescent cell or a zombie cell, where it's like a cell that's taking up space, but it's really not doing us any good.

And in some cases, it may actually be doing a lot, a lot more damage. Right? It may be attracting more inflammatory activity or producing more inflammatory activity.

So we want to get rid of these senescent cells. And the ketones will help us do that. So how do we upregulate the amount of these ketones in our system?

Well, a couple ways. Number one is making sure that our diet is very blood sugar stabilizing. So we want to get rid of all of our processed sugars and carbohydrates.

In general, I'm a fan of minimizing, if not fully eliminating grains. And, you know, most starches or at least, you know, controlling your intake when you are consuming starch.

And then number two is getting rid of bad fats. It's going to be all of our seed oils corn oil, soybean oil, safflower oil, cottonseed oil, peanut oil.

All of these types of oils really drive up inflammation. And by driving up inflammation, they also damage our insulin sensitivity, and they'll end up creating higher amounts of blood sugar.

And just, a vicious cycle of inflammation and high blood sugar and insulin resistance. So we've got to get rid of those, and we replace them with healthy fats coconut oil, avocados, high polyphenol, extra virgin olive oil, grass fed beef tallow is really good grass fed butter, pasture raised eggs.

Those are all really, really healthy fats that we want to be consuming. And then we want to make sure that we're consuming, as much as possible, trying to get grass fed, wild, caught, pasture raised animal products.

We want food that is high in nutrients or low in toxins. So the more organic that we can go and the more you know, when it comes to animal products, we're looking at like grass fed, pasture raised, wild caught as opposed to farm raised, conventionally raised.

We're going to get a lot more nutrient density, a lot less toxins when cows, for example, eat grass or when they eat just kind of wildlife, like wild, wild, foliage.

Right. And things that are just growing on a pasture, they are actually up taking all the trappings, the, you know, adaptogenic qualities of those plants, they're taking up the omega three fatty acids.

They actually create something called conjugated linoleic acid, which is very anti inflammatory, supportive of insulin sensitivity and metabolism. They have higher amounts of vitamin A, vitamin E, all your fat soluble nutrients in their dairy as well as in their meat.

So that's why we want to do that. Plus they have a lot less toxins when they're eating conventionally raised grains. They have higher amounts of omega six fats, low conjugated little like acid, low, fat soluble nutrients.

And then they have a whole lot. They bio accumulate pesticides, herbicides, things like that. So you get all these toxins in there. So as much as possible we're trying to go organic with, you know, our produce as well as with our animal products to minimize the toxins, maximizing nutrients.

When you consume meal, you want to make sure you're consuming roughly 30 to 50g of protein in that meal. Minimum 30g. Okay, it may be more than 50g if you're like a high level athlete.

If you really need a lot more protein. And it depends how many meals you're consuming in a day as well. But somewhere in that range, it's usually a good sweet spot.

Can you want to get that ideally from, again, those grass fed animal products, wild caught fish. You also want to get roughly about 30g, 30 or 40g of healthy fats.

Now that could be extra virgin olive oil. Avocados, right? Those healthy animal products like I talked about. And then you want a lot of colors, the colorful foods.

So your colorful fruits and vegetables have polyphenols in them. And polyphenols really support your gut microbiome. They have powerful anti-inflammatory effects, cell regeneration effects.

They help create, new, healthy mitochondria within your intestines to create a stronger and more stress resilient intestinal lining. So you want to make sure you're getting a lot of these polyphenols and typically are polyphenol rich foods.

A lot of them will also have fiber in them, obviously have things like extra virgin olive oil, which is very polyphenol rich, that doesn't have fiber.

But, you know, if you're consuming berries, if you're consuming dark green leafy vegetables, if you're consuming bell peppers, tomatoes, red onions, things like that, you're going to end up getting a lot of the fiber that your body

needs as well.

So that's what you're trying to focus on with your meals. And then really compressing your eating window. And so most people are eating, you know, from the time they wake up to the time they go to bed and they're kind of snacking throughout the day.

And when they're doing that, they're constantly releasing, you know, they're constantly creating, elevations in their blood sugar. And then also they're constantly stimulating insulin.

And that's going to create kind of an inflammatory spiral and lead to insulin resistance. So what we want to do is we want to eat 2 to 3 meals a day in a compressed eating window.

So that eating window should really be somewhere between 6 and 10 hours. So a ten hour eating window would be like, you wait till 8 a.m. in the morning to eat your first meal, and then you eat three meals between 8 a.m.

and 6 p.m.. Okay, if you know you get home late and you have to, you know, eat dinner at 7:00, then consume your first meal at 11:00, right. So 11:00 to let's say, you know, 8:00 or something like that.

So that way you're again, you're compressing it in a, you know, 6 to 10 hour eating window. And by doing that, you have a longer fasting window overnight.

And that's going to allow your insulin to go down your body to start burning fat for fuel. And creating these ketones. And you're start reducing inflammation, your brain and your body.

Yeah. You know, it's funny when, when, when I think some people learn this information that fat is is a good fuel. You know, in terms of ketones, there's sometimes a response of, okay, well, I'm just going to consume a lot of fat, right?

I'm just going to pound the butter and drink the olive oil, and I'm just going to load my meals full of fat because it's a healthy, clean fuel and it's good for my brain, it's good for my mitochondria.

And I'm going to get into ketosis and all these things. And I find that, well, some of that's true. There's this balance that that's being missed in this, right?

Not only from the fiber perspective and the plant perspective and how important it is to get those, those plants in the diet. But also in terms of the fasting, right.

Like most of us, I put myself still in this category is that there's, there's if I, if I were to fast a little bit more, my body's going to burn the fat that it has.

I've still got some extra stores. Right. Like if we went to winter, I'd be okay. Right? I'm not. I've got a little extra on me still that I can, I can tap into.

And to me that becomes the key, right? It's this metabolic flexibility that I know you talk about a lot. It's like the ability to to be able to use glucose as a fuel source effectively and efficiently, right, so that we're not spiking it and doing this huge roller coaster of blood sugar and insulin all over the place.

So it's like even when I have some fruit, my body knows how to use that fuel effectively. I'm not spiking insulin all over the place. And then when I go into this fasting window, I'm able to burn the fat that I have on my body, right?

That the fat that surrounding my liver and and the internal organs right and able to use and tap into those extra stores that that's that's eviscerated throughout my muscles.

Right. Like there's fat everywhere around the sheets. And it's just talked in every nook and cranny. Right. And and that's what we can tap into when we get into this fasting window.

And to me, again, that becomes the magic. It's it's actually in this not eating aspect. That's where we, we really learn how to use fat as a fuel source instead of just, well, let me consume more fatty sources, because while you may, even if you have the ability, your body is is is efficient at burning those fats as fuel, you're still not tapping into maybe some excess fat that you have, particularly around the visceral right in the internal organ systems that we know that is the most damaging, most, problematic fat when it comes to overall health. Right?

So, so when we can tap into our own fat stores and use that as brain fuel, that becomes not only effective from a health perspective long term, but it's also pretty darn convenient.

You know, I've done some, some flying and some, some things in my life where it's like, I don't really want to eat on this food that's around me, or I just, I don't have anything at at my fingertips here.

And I got fast for a little bit longer. I can actually, as I get better at fasting with that ten hour or that, that, ten hour feeding window, 14 hour fasting, 16 hour fasting window, and occasionally even 2440 eight hour fasting.

Now, I get I develop a better relationship with hunger. So this little hunger pang and these little hunger hormones that. Come on, I can now have a better relationship and go, oh, yeah, that's that's hunger. You know? I'm okay.

I'm not going to die. I don't actually need that. Those chips are those crackers that are that are in the cupboard. I may feel like them sometimes, and I may get that little urge sometimes, but I don't need them. Right.

Instead of this overwhelming urge and sense of like, I gotta eat something that is primarily coming from signals, from the gut bacteria, from the the hormones, you know, that that are driving this, this desire to eat.

And so, I think to me, again, that's a really big key is this fasting. So, and you just tell me how you work that into your life. And what do you recommend for those that are maybe dealing with a little bit of metabolic dysfunction and, and trying to get a better rhythm when it comes to their eating?

Yeah. That is such a really good point. And we want to have that metabolic flexibility again, like you said, where we can burn fat for fuel. But when we do consume sugar we're using that as an energy source and we're using it quickly.

And so a couple tools that really help. We talked about that blood sugar stabilizing diet plan. When we do that, that creates more satiety and turns, teaches our body to burn fat for fuel more effectively.

And that reduces hunger, creates more satiety, where we don't have the cravings. So we're not driven as much for food. I always tell people I honestly very rarely actually ever feel hungry.

Building a Brain-Supportive Diet

It's usually when I start eating right. It's actually a trigger now for me. I can fast for, you know, pretty good, good period of time because I train my body like today, like I on Wednesdays every every week.

I do a 24 hour fast where I eat lunch Wednesday, and then I fast until after my workout on Thursday. And then I break the fast. And I very rarely feel like like they'll be like a little bit of, like a little bit of hunger.

Like when I'm feeding my kids, you know, and everything at dinner. But it's not real hunger, like it's something I'm used to. It's like, oh yeah, this would be nice to eat.

And, my body's trained to eat dinner at that time, so it's kind of a conditioned response, but it's actually this hunger hormone called ghrelin that's being released from my stomach up into my brain.

And I've trained it to tell me, okay, now it's food time, let's eat. But I just say, you know, I'm not I'm not hungry, and I drink a little bit of water.

And actually drinking some water expands my stomach. It reduces and inhibits the production of that ghrelin. I no longer feel hungry. And then I actually get a great sleep that night.

And then I'm able to go through my day, you know, the next day I work out, and I'm honestly not even hungry after that workout until I start eating. And then I trigger my body to say, okay, now food is available.

Now we need to make sure we're getting our calories because we don't know when we're going to consume food again. So then I eat a really good meal. And so that's kind of how you can train your body.

And that's really where you want to get. And that's what happens when your body starts becoming good at burning fat for fuel. So what I recommend people do to start is start with the blood sugar stabilizing diet, making sure you're getting your protein, your fats kind of in the ratios I was talking about.

And that's really important. A lot of people like to talk about what foods, but actually getting those ratios, at least in the beginning, understanding those ratios is really important for creating that sense of satiety.

So getting the right amount of grams and things like that very important. And then we'll click on to add to that too. Because what you're saying is really important, right?

Is this I find that when we get into something like that, we take this loose description and we kind of say, okay, let me just start with this and let me see how this does. Right.

And then we can play with that a little bit to find the right, maybe the right precise ratios where I feel good. And that may take some playing around with too.

But and monitoring I think what you're saying is so important because, monitoring and weighing your food or at least, looking at, you know, some kind of nutritional facts to be able to, to kind of get a sense for these things.

So a little bit of work at first, but once you start doing that, then you can start to recognize what you're eating and how how many grams of protein and fat and, and carbohydrates and fiber and that kind of thing.

All of a sudden you become your own expert in the types of foods you're eating, right? So it's a little bit of work maybe at first, but eventually becomes second nature. Totally.

It doesn't take long. And really that the idea of getting well is, is really like mastering your own health. And it's almost like getting a degree, you know, getting like a master's degree in your own health by understanding the unique food triggers that drive you and also understanding how to balance your blood sugar.

So important. And so you get that down. You eat three meals, and I recommend starting with a 10 or 12 hour eating window. So you might eat your first meal at 7:00 am, finished by 7 p.m..

Or you know, you can start with a like especially if you if that's seems like it's really easy for you which which it really is, especially once you get this, this sort of, blood sugar stabilizing diet down.

Then compress it to ten hours, eat your first meal at 9 a.m., second meal at, let's say, 1 or 1 or 2:00, and then your last meal at 6:00 and finish by seven.

And that's actually very easy. If you get the right ratios of protein and fat, you get a lot of fiber and polyphenols in there should be pretty easy. And then, you know, you should rest really well.

From there. You can start experimenting by compressing that eating window even more. So now you can try an eight hour eating window. And this is probably the most common way that people practice intermittent fasting or time restricted feeding is an eight hour eating window where they'll eat their meals between, let's say, 10 a.m.

and 6 or 12 p.m. and 8 p.m. something along those lines. And so now you're eating 2 or 3 meals in that eight hour

eating window, okay. And then you can experiment and push it to six or maybe four, maybe one day a week.

You'll do, you know, just one meal like I do now. I will say that, young menstruating females. Okay, they tend to have a little bit more, more trouble with not not across the board, but for some of them, they may have more trouble with a really tight eating window.

So they may have to experiment a little bit based around their cycle. Like the week before they menstruate. They may need a larger eating window 12 hour, ten hour, or 12 hour eating window.

And also they may need more carbohydrates because they need higher amounts of insulin in order to produce, you know, higher amounts of sex hormones, estrogen and progesterone to have the proper, you know, hormone flow and have a proper, menstruation and also right around ovulation as well, oftentimes.

And this and this makes sense, right? With like kind of evolutionary biology perspective of of bearing children like the we want the, the, the, the females in that sort of childbearing years.

You know, we can't have them starving and, and fasting all the time. Right. Whereas the males can get away with that a little bit more. The females need to be nourished.

Right. Exactly. A potential new life coming into this world. Right. So, so it's it's like from that perspective, you know, especially some and everybody's constitutions different.

Right? So some may need more nourishment and support and less of the sort of fasting, aggressive fasting. And just it just makes sense intuitively. Absolutely.

What we're eating and the timing of what we're eating is sending a signal to the brain that we're either in a period where food is abundant or food is scarce.

And when we're young and we're growing really, really fast, we need to be sending a lot of signals that food is abundant in order to have proper growth and development.

Okay. Now, obviously in our society today, we have an epidemic of childhood obesity. So honestly, there's a lot of kids out there that could use a lot more movement.

You know, because they're, you know, inside on screens all day or whatever it is, and they're eating processed foods. So today's day and age, a lot of these kids actually could do intermittent fasting.

But in general, especially if you have a lean, active child, you know, we don't really worry about that, right? Just let them eat real foods, run around, do things like that.

As we become adults, we stop growing in the same way, and therefore we need less. We need to communicate to our body less often that food is abundant.

We still do need to communicate that from time to time. We need to cycle through feasting and famine, times of famine, but actually activating, you know, basically sending the signal that we're in more of a time of famine stimulates more cleansing, healing and tissue regeneration.

And that's really what we're trying to accomplish as we become adults. Unless we're like high level athletes, you know, as we're aging, this is what we want to do.

And this is really what helps prevent against neurodegenerative conditions is signaling that, okay, turning on autophagy, where our body breaks down old damaged cellular organelles and recycles them into new healthy mitochondria, new healthy Golgi apparatus, right.

All these different organelles within the cell. So that is what signaling that we're in a famine. And the way that our

body knows we're in a famine is, is a few things.

The presence of amino acids in our bloodstream and also the presence of insulin. Right. So if insulin is elevated, our body says, okay, food is abundant right now.

We're going to store fat because we, you know, a famine might be coming, whereas when insulin goes down it says, okay, now we're in a time of famine. And so now we need to break down proteins within the cell so we can use them for energy.

And also we can recycle and create a more stress resilient cell. Right. A more, you know, thrifty cell basically that that's more efficient. And so this is the signals that our body does now when a woman is menstruating for her to basically that we want to tell the body that we're in a time where you where carrying a baby would be a good thing.

Fasting Strategies and Menstrual Cycle Considerations

And so for sending too much signals of famine, we, the woman will stop ovulating. Right? Or if she's getting too much exercise, we call that exercise amenorrhea, right where the woman stops menstruating because her insulin gets so low and she's overwhelming her body with stress.

Fasting. Even though as healthy as it is, it's actually a stressor on the body. We call it a war medic stressor. It's a stressor that can make our body stronger and more resilient, but nevertheless, it's a stressor.

And so this is why a menstruating female needs to be careful with this. And so usually the way that we'll do this is the first week once once the woman starts bleeding like my my wife follows this where when she menstruate.

Okay. That first basically 7 to 10 days great time to do intermittent fasting. She'll do a one day fast. My wife does every quarter for months or so. She'll do like a three day fast.

And she like, she likes to wait until she mentioned rates and then she'll do it. And then as she gets a little bit closer to ovulation, she's eating again.

Right. And eating a little bit more carbs. Sweet potatoes or root vegetables, fruit, things like that. And then after ovulation, she can do a fast intermittent fasting, compressing that eating window.

And then the week before menstruation, she's doing less, eating window compression a little bit more carbohydrates. Right. You know, obviously healthy foods, but, but less strict, less rules as far as that goes.

And really just trying to make sure she gets a lot of calories. And when she does that, she knows she has less cravings. Her cycle, she has very little symptoms.

And she said endometriosis. Actually, when I first met her. So she had really intense cramping. And now it's like she's like, oh, I just started menstruating, right?

She's like, oh yeah. It was like two hours of like minor cramps. And then that's it. You know, I love what you're pointing to here, which is to two key concepts that I think, are huge takeaways.

One is the cyclical nature of things and slowing the cycle, not just a woman's cycle, but the cycle of life and the cycle of, of all things, cycle of the season, cycle of the day.

Right. There's a time for feast and there's a time for famine. I think there's, some pretty important texts that talk about these type of things at the time for everything under the sun.

Right. Like there is a time for this stuff. And so, I find particularly with the women that I've worked with and honestly, a lot of men too, that when it comes to intermittent fasting, losing excess weight, fixing the sort of metabolic, issues and insulin resistance that sometimes slower is better, that trying to push too hard, it's too much.

Catabolic stress on the body. Right. Because when you fast, as you mentioned. Right. Cortisol rises now good things. Right too. Like we have lot of testosterone. Yeah.

Melatonin rises. Great hormones. Right. Like there's amazing beautiful things happening. And also cortisol, it's kind of the opposite of maybe what some people might expect is this catabolic destructive hormone also very important to balance blood sugar and things.

But but going slow can be the more effective, more direct route to get where we want to go. And I find that to be the case, especially for women, in childbearing years, that it's like going to heart is just not good.

But but the other, the other side of of going to heart into the fasting is that when we start to introduce fasting and we lose weight and hormones get under better regulation and better balance, all of a sudden menstruation can return for, for, somebody that's in perimenopause.

Right. Or, or the symptoms start to go away, everything starts to improve. So this is where again, it's not like intermittent fasting or time restricted feeding is bad or good.

It's it's all about in the context how hard you're going, what feels right for you. And again, even within the menstrual cycle, you know, adjusting things and finding the right time for when things are cleansing and detoxing in and moving out, great time to to add some fasting in there.

And when the body's building up, making a new egg, getting everything ready, that's the time for building, right? So it's just really, really cool to point to these, these cycles that we can pay attention to, within our own, our own systems.

Yeah, absolutely. I mean, it's so key. And then when it comes to neurodegenerative conditions, fasting has been shown to increase brain derived neurotrophic growth factor.

BDF, which is like Miracle-Gro for the brain. It enhances the synaptic activity or the little gaps between the neurons, which which enhances the overall connectivity of the brain and connectivity it has been shown to be associated with.

Obviously lower rates of cognitive decline, but also just faster thought process and being able to link deeper, more intimate thoughts like they studied Einstein's brain.

At at Stanford. I don't know if you heard about this, but they they looked at him. They wanted to see if he had the same if he had more. They thought their original hypothesis was that he had more neurons, bigger brain than. Yeah. So he had more neurons.

And therefore he was able to kind of obviously come up with these incredible equations and think way beyond the box. But he actually had these same amount of neurons as somebody else that was his age and also his, you know, basically about the same size as him.

But what he had was more than twice as many synapses, these little gaps between the brain. And you can have up to like 30,000 per neuron. And it's amazing to even think about.

But these are like little branches that come out of the neuron. And connect with other neurons. And the level of connectivity in the brain is associated with better cognitive, capabilities.

And so we know that ketones help stimulate Bdnf. So when you're fasting, you're elevating ketones, which stimulates the production of BDF. And that really helps.

There's also other things that you can do. Like for example, omega three fatty acids have been shown to help support Bdnf levels. So getting rid of those bad fats like we talked about consuming more of these wild caught fish, grass fed butter, things like that have more of the long chain omega threes.

EPA and yeah, obviously you can supplement with those as well. You know, there's other things like what about some herbs? I know you got a ton of resources on your website.

I know you got some of these these lifestyle hacks and morning routine hacks. So what are some of these things to that we can we can introduce for sure.

Well some of the best herbs, things like rosemary. Believe it or not rosemary is fantastic for the brain. Helps boost acetylcholine, which is when your key neurotransmitters is in your hippocampus associated with, memory formation.

So, Rosemary, great lion's mane is, you know, getting a lot of press these days for its ability to stimulate nerve growth factor, which helps with sleep, helps with cognitive, you know, cognitive speed and processing and memory.

So lion's mane, really a lot of the mushrooms, cordyceps, reishi, all of those can be really, really beneficial. Ashwagandha. So almost all the adapt the genic herbs that you hear about out there really powerful for Bdnf production for, helping to balance the glutamate to Gaba ratio.

And this is something ketones do as well. So we have glutamate as an excitatory neurotransmitter. It helps us think sharply and quickly, helps us process memories, react to stress.

Really important. But if it gets out of balance with the breaks Gaba then we have problems. Kind of like if you're driving your car and you know your brakes don't work well, right? It's dangerous.

It's the same thing in our brain. And most people, because they're eating an inflammatory diet, they're under a lot of stress or being exposed to a lot of toxins.

They're indoors, on screen, surrounded by emfs. They're not getting out in the sun. They're not getting their body grounded, which, you know, those are a powerful things that help.

They have too much glutamate, not enough Gaba. So they have a distorted ratio. And that's what blood sugar imbalances do as well. And that creates neuro cytotoxicity like I was talking about before our neurons die.

And then they release toxins that now damage all the neurons around them. And it becomes almost like dominoes going down. Right. And that becomes a serious problem in all cases of neurodegenerative neurodegeneration like dementia, Parkinson's, Alzheimer's, these are people that have had widespread neuro cytotoxicity for a long period of time, a long period of time.

And so, you know, getting your body into a state of ketosis through intermittent fasting, through a blood sugar stabilizing diet, through exercise, exercise.

I don't even talk about that.

Lifestyle Factors for Brain Resilience

But that's super important for getting insulin down, for telling your body to burn fat, for fuel. So getting your body moving and exercising regularly, building lean body tissue, weightlifting, you want to build that muscle tissue, the better your percentage, you know, the more lean body tissue you have and lower body fat percentage you have, the better your brain is going to be.

So building muscle is super important. Plus, when you actually do muscle building exercises, the muscle tissue themselves actually secrete. Believe it or not, your muscle tissue is almost like an endocrine organ.

We didn't think about it this way, but we know fat. Fat is fat releases adipose kinds like leptin and adiponectin and things like that that play a critical role and actually help help with brain function.

But also the muscle tissue does too. Muscle tissue produces myocytes, which stimulate Bdnf in the brain. And so now you get, again, better connectivity of the brain when you're exercising and building muscle tissue, getting out in the sun, you know, sunshine itself, whether it's in the middle of the day, we're getting the UVA UVB rays.

That's obviously great for vitamin D production. And optimizing your vitamin D is really critical for brain health. We know that across the board, people with neurodegenerative conditions have lower levels of vitamin D, and the vitamin D again stimulates that.

Bdnf stimulates nerve growth factor. Also getting like early morning sun or the sun set. You know there's a there's a proverb that says if you want to have great energy during the day, watch the sunrise.

And if you want to sleep well at night, watch the sunset. And you know, it's a feel good, you know, statement, right? And for those of us that that really love nature, like you and I, it's like, oh yeah, that makes so much sense.

We look at the actual physiology, what's happening there. Sunrise is when you have a lot of red light, near-infrared and far infrared rays. And so of course, you see more of the red light, right?

The Nir and the far infrared are out of the, visible spectrum, but they have very powerful anti-inflammatory effect. They stimulate the mitochondria. And again, the brain neurons are the most mitochondrial dense tissues outside of the testes in that ovaries.

So they're the ones that benefit the most. So it helps create really healthy neurons, helps reduce inflammation pain in your body okay. And that's super critical.

In fact you know I didn't even talk about pain but pain if you're in chronic pain we know that chronic pain itself the actual signals of pain to generate the brain faster and pain could be obviously due to like a trauma or an injury.

But for many people, pain is actually a lack of good stimulation, lack of good tissue stimulation, muscle stimulation, lack of, getting the right visible spectrum. Right.

The red light, not not enough getting not getting enough. Red light near infrared. Far infrared. These are things that all of our ancestors were exposed to.

That people that I know. You traveled all around the world and looked at, you know, all these healthy cultures, they're getting all these rays. They're up at sunrise, they're working outside, they're looking at the sun.

They're getting the near in the far infrared. We're we're waking up and we're going right to our computers. Right. They were out there, out at sunset getting all of these wavelengths and we're not.

And so it could be chronic pain outside of like a major trauma could actually be thought of as a lack of myo kind machine as well as proprioceptive activity of the muscles and a lack of, getting the proper.

It's basically like mal illumination. We're not getting the proper stimulation, of of these, these, these rays of, of light. Right. So we're getting poor light stimulation, we're getting artificial lights.

Not enough of these natural natural light exposure and then heat and cold too. Right. We could honestly go on and on, right? We can go on and on. I just getting uncomfortable, you know, with, with, temperature changes.

Right. So whether it's cold showers, cold baths, whatever it is, like my kids and I. So we just had a little bit, you know, for Georgia, it wasn't too bad.

I mean, the weather got to, like, I don't know, 50 degrees at night, but our, our pool, we have this saltwater pool. So the water was colder, but it was like a beautiful day outside.

So we all jumped in. It was like cold water, right? Colder than what we're used to. You know this, it's still pretty cold.

I mean, he's not, you know, if he's not warm, the water wasn't 50, the water's 68 or something like that.

But it's, you know, it's colder than what we have been swimming. So we kind of got that little shock. And it was just wonderful. Right? It's so invigorating.

Stimulates your endorphin, stimulates dopamine. You get these cold shock proteins that a break down old damaged mitochondria. You get this amazing stimulation.

And it's something I try to do on a regular basis with cold showers and then also heat stimulation like you're talking about. So getting in, whether it's a sauna or working out in intense heat, you know, doing something where you can sweat and be and get your body really, really hot.

This is something all of our ancestors did in our society. We're not doing it. And that lack of getting uncomfortable makes us weaker and more fragile.

And then we're more exposed to chronic pain, brandy generation, things like that. We want to really create a strong, stress, resilient body where no matter what comes at us, our body can adapt, become stronger through it, and, and thrive through it.

Yeah. I mean, you know, that as we wrap up here, just kind of what's what's coming to me now, the the thread that you've weaved throughout this conversation is one of getting comfortable, being comfortable, being uncomfortable.

And to find the opposite, right. Find the light and find the dark. Find the cold and find the hot. Find the eating and then the not eating. Right? I mean, this is really, really profound.

Way to look at the world is kind of we want to be on both sides. We don't want to get caught in the middle with everything where we're constantly eating.

We're constantly in this 68 degree, you know, comfortable room with kind of indoor lighting, but not really, you know, bright outdoor light with red light and UVs.

You know, it's it's really about getting back to the polar opposites of things, finding the balance, finding the rhythm and getting a little bit uncomfortable in that process.

And I find that for me, like, like most things, you know, it's uncomfortable at first and then it starts to get like there's a you actually do get comfortable in that discomfort in a way that's hard to put words to because it seems like they're opposites, but but in a way that they're not.

Right. It's like sometimes, I mean, you talk to anybody who does enough cold thermogenesis, cold pools, cold plunges, etc. they start to crave the cold.

At first, almost everybody dislikes that, that ice cold water, and they're just like, what the heck is this? You're crazy to do it. And then eventually they start to crave it, and it's because the body's responding.

And it's the same thing with fasting. It's the same thing with exercise, right? It's like when you when I don't exercise for a while, whether I'm on vacation or for whatever reason, I'm caught at work and I just don't get to do the regular exercise.

Getting back into the flow is a little bit of an effort. And then I notice more so than it is when I'm in the rhythm, and then when I'm in the rhythm, it's like, I can't not work out.

It's it feels so good to my body. So there's a little bit of this discomfort at the beginning of things that we got to kind of push through or, or embrace.

As the body adapts to becoming more fat burning as the body adapts to handle the cold and handle the heat as the

body adapts to the silence. You look at anybody today, and we're so overstimulated that sitting in silence with ourselves is uncomfortable by itself. So.

So yeah, it's just it's interesting that you kind of weave that through this conversation. But when we do the when we do that, you mentioned that we become antifragile.

We become so resilient. And really that's the key, right. For the long term brain health. And that's that's where most people, are kind of worried about right.

That neurodegeneration and the Alzheimer's, the dementia, the things that are going to catch up to us later in life and we now know that they don't just come on, sometime late in life because of some genetic, issue.

Now there's a whole lifestyle that is, has preempted that that condition. And so, doctor has been fantastic. We went all over the place. I really hope that people got a lot out of this. I think they will.

You mentioned so many things that I think people can put into action. And yet you've got a ton of other resources, too, for people. So. So tell people where they can find more of your work and, and, anything you've got.

Yeah. For sure. Well, you can find me at Doctor jokers.com to have a great podcast. Doctor Joker's functional nutrition podcast, and have a great book on fasting.

It's called The Fasting Transformation, so you can check that out as well. Awesome. Well, thanks so much for joining us, Doctor Jackers. And again, keep up all the good work. Really appreciate it.

Thanks again Jason.