

The Fasting Method #158 - Fasting Q&A with Dr Jason Fung: Fasting With Low BMI, Oxalates, Metabolic Flexibility, Cancer Treatment and Fasting, Magnesium Supplementation, and More.

Megan [00:00:06] Before we get started with today's episode, I would like to quickly read you our podcast disclaimer.

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[00:01:13] All right. And now we'll get started with today's episode.

Lisa [00:01:19] Good morning everyone. Hello, my name is Lisa Chance. I'm a fasting coach here at TFM and we are here today with our very own Dr. Jason Fung for our monthly Q&A. And a warm welcome to our podcast listeners who will be able to listen to this Q&A with Dr. Fung in a few weeks, after our Community members. This is a monthly Q&A with Dr. Jason Fung where he answers questions submitted by our TFM Community members. So hello, Dr. Fung, good morning. Nice to see you.

Dr. Jason Fung [00:01:49] Good morning. Good to see you.

Lisa [00:01:51] All right. First off the bat, we have a question-- again, I believe we've had one similar to this about someone's esophagus. They have an ongoing history of having problems with their esophagus being impacted while eating, and they have found that fasting seems to help. They wonder why. Does fasting help with choking complications after you're finished?

Dr. Jason Fung [00:02:15] It sort of all depends on what the problem is. So there's lots of esophageal problems: there's motility problems, there's muscle problems, but there's also things like reflux. So there's lots of different issues that can sort of come along with it. The most common esophageal problem probably is esophageal reflux. That's where the stomach acid comes back up; the acid which is in the stomach doesn't normally end up in the esophagus. The stomach is built to handle it, but the esophagus is not. So, therefore, what happens is that the esophagus gets burned, sort of. In that situation, you might think that fasting might be of benefit because one of the things is that, if there's less in there, then it may go sort of the proper way forward rather than back up, right? So the stomach acid is supposed to go down through the small intestines where it gets neutralized by the pancreatic secretions, as opposed to back up into the esophagus where it's a problem. So that may encourage the proper motility, for instance, after fasting. There's not many good studies that I know of that have looked at this, but, again, it depends on what specifically is the problem. But, certainly, if it helps, then I don't see any reason why you couldn't use it.

Lisa [00:03:28] Okay. This person is asking-- and, again, it's a question that's very similar to what we've had in the past about activated charcoal. This person seems to have migraine issues, which I relate to very much. So whenever they're trying to do a fast of 36 or longer, they start having issues with migraines. And they've tried several things for detoxification, such as liver supplements, B vitamin-- which is what I take, B2. I also take... What is it? Co...

Dr. Jason Fung [00:03:58] Coenzyme Q10?

Lisa [00:04:00] Yes, that's it. CoQ10. They wanted to know if the activated charcoal would help. It seems like, when they go 36 or longer, their headaches become worse. It's been suggested that they just do shorter fasts, but that doesn't result in any weight loss. They want to know how they can move past this.

Dr. Jason Fung [00:04:20] Yeah, that's a good question. And it's not clear why some people do get the headache. So it is very common actually to get headaches when you start, but most people just-- it just sort of goes away after a little bit. And sometimes it's just the body starting to handle, sort of, the transition to fasting a little bit easier because there's, you know, differences in the way you metabolize, like, where you're getting your energy from and your hormones are changing. So, certainly, any of those could be a trigger, for example, for migraines. So, even though headaches are common, they typically go away. If they don't, then it's a little bit more problematic as to what benefits. Activated charcoal - it's one of these things that doesn't have a lot of studies behind it. It's used in most poisonings because the activated charcoal goes in and it sort of absorbs a lot of the stuff, and then it binds it so you don't absorb it, and then it goes through the stools. So it's used medically in a lot of poisonings, generally harmless. I mean you see a lot of-- I see these breads, for example, that are all black and that's just from charcoal. It's sort of a gimmick because I don't think it changes the taste much. But the charcoal as detoxification agent is used mostly for medical stuff, so it's not clear whether it has benefits elsewhere. But, again, if it's helpful, then it's probably safe. Like I said, it's even used in sort of everyday-- you know, I think several fast food chains had these black buns, which was just a-- sort of gimmicky, but people liked it because it was very striking. So, yeah, if you want to use it, that's fine, but it's not clear what is the actual cause.

[00:05:50] Electrolytes can sometimes be a problem. So, salt, magnesium, potassium shifts can also sometimes contribute. So we often recommend that people also try to supplement some of those electrolytes and see if that is helpful. Or you use one of these sort of fasting alternatives. So not like a strict fast but something a little bit more-- you allow some calories through that so that you avoid that whole problem, but you still stay very low carb, for example. You might have something like fat fasting or any of these other things. They have these other ones called the Fasting-Mimicking Diet, which is another fasting alternative, which is-- it's a product that you buy, but it's like a five-day, very low calorie and it's like soups and all this stuff. So it's, again, supposed to give you a lot of the benefits of the fasting without actually fasting. So, again, if the fasting itself is too difficult for those reasons, then you can try those alternatives, right? So fat fasting, fasting mimicking, bone broth, that sort of thing.

Lisa [00:06:52] One thing I found with some of my clients-- first of all, migraine sufferers tend to lose 40% more salt in their urine than a regular person. I mean, they really go through their salt. And, sometimes, with my clients with migraines, I have them do 36 as an autophagy fast, and then the last 36 with something like bone broth or something like

you suggested. And then they can get the 72 in completely for the longer fast. So thank you.

[00:07:20] This person wants to know, "How many meals between fasts is ideal for weight loss? 2MAD (two meals a day) or three meals a day?"

Dr. Jason Fung [00:07:32] There's really no good answer to that. I mean, it's very individual. That is, some people find that they can just sort of roll one right to the next, so taking a couple meals and then starting another fast is fine. Other people find it more difficult, or they find that they can't do it, or something like that. So it's quite an individual thing. It's not like a one size fits all, like, we all have different responses to different things. So even different diets, people will respond differently to the same diet. That is, some people will lose weight and some people will gain weight. So very opposite effects, but the same diet. So, therefore, it's hard to-- you know, the best thing is to try it for yourself, because just because somebody finds it beneficial doesn't mean that you'll find it beneficial. So I would experiment to see what there is. And keep in mind that the human body is very smart, so it's going to figure out where it's going to take its energy from. So remember body fat is really just a store of energy. Food energy is calories, so, if you don't eat, then your body is going to go into its stores of calories (either sugar, like glucose, or body fat) and take what it needs, right? So if you have enough, then there's no problem. It's when you don't have enough, if body fat percentage is very low, then you have a problem. But how easy it is or how hard it is all depends upon the person. It's the same with fasting. Some people go no problem, like, five days, no problem, and other people will be like, "I can't even go like 12 hours," sort of thing. One, it's a matter of getting used to it, but I think that people are just very individual and so, therefore, you have to find out what works best for you.

Lisa [00:09:07] My hardest fast was 12 hours. [laughter] I was so addicted to carbs. It was like I was really white knuckling it. But once I got fat adapted, I was fine. I know! People ask me that and I'm like, "Are you kidding? Those 12 hours were miserable."

[00:09:22] So, this person says, "I understand how excess carbohydrates can be stored as fat (due to insulin). What I'm having a hard time understanding is, if we go low carb and increase our fat intake, how is dietary fat utilized and stored? Isn't dietary fat stored as fat? I'm confused about how we are able to burn body fat while eating more dietary fat."

Dr. Jason Fung [00:09:52] Yeah, and they're absolutely right. So the way that dietary fat is metabolized is that it basically goes straight into body-fat stores. So if you eat butter, for example, it's going to get absorbed in the intestines as a chylomicron, which goes into the lymph system, which then goes into the fat cells. So, yeah, dietary fat is going to go straight into fat. So the point is not to eat more fat. And this was always a point of contention when keto was very, very popular. People would be saying, "Oh, you just need to add fat to everything. You should eat fat bombs and stuff." And I had said, "Well, there's no point eating it just for the sake of eating it." That's not helpful, right? So you are going to increase the storage of body fat. The whole point of getting your carbs down [unintelligible] is to allow your body to burn body fat. But if you're, at the same time, replacing that with a whole lot of extra fat, then you're going to sort of be burning it but adding it. So then, yes, you're not going to lose weight. Don't just eat more fat, right? That's not the point. And that was sort of the downfall of a lot of the keto people who just ate fat. Like, you know, they eat low carb, so then they're like, "Okay, so I'm going to eat extra butter on this for no reason because it's good." The fat helps you stay full. So, therefore, you can, you know, sort of replace the carbs. Like, you're not trying to add more fat. You're trying to get the

body to burn its own body fat. But yes, if you take too much dietary fat, it's going to add them at the same time. So some people say, "Well, why can't you eat low carb plus low fat?" You can, and it works extremely well, for six months! Because the problem is, if you eat very low fat and low carb (and there were several people who had this diet), it works really well. You lose a lot of weight until you became completely sick of it, because, if you eat protein all the time, it's very unpalatable. Like, it's just really, really hard to stick to that low fat, low carb, right? There's only three macronutrients. So if you don't eat carbs and you don't eat fat, you're eating protein, which is all, you know, skinless chicken breast all day long and egg whites, right?

[00:11:59] There was a clinic near me that did it for a while. Like, everybody started off losing 60 pounds and then everybody went off. You know, they came out and they said, "I can't look at lean steak and egg whites anymore. I ate it straight for like six months," and they just couldn't take it anymore. So you have to balance which-- you know, a severely restricted diet like that, you know-- because that's two thirds of everything basically gone. You can eat just protein, and just protein doesn't taste very good. Protein typically comes with fat. So, therefore, being a little bit more liberal on the fat and keeping the carbs down is sort of beneficial.

[00:12:36] But, yeah, absolutely right. You shouldn't be eating more fat, you should be trying to allow your body to eat its own fat. That's how you lose weight. Taking more fat in doesn't do you any good. If you need to take the fat to feel full and keep it a palatable diet, then you do a sustainable weight loss, yes, but don't add fat for no reason. So the fat bombs, which were just like, you know, little snacks and stuff that people had - no, no, no. Don't eat it for no reason. You want to eat it because it's going to make you full and because you feel good eating it and so on, but don't overdo it.

Lisa [00:13:08] Okay. "What are your general recommendations for fasting protocols for people who have insulin resistance but have a lower BMI? Maybe mention when the cut-off is if fasting isn't for somebody with an extremely low BMI."

Dr. Jason Fung [00:13:25] Yeah. There's one thing you have to be careful of with very low BMIs is that you can sometimes get this LADA (latent autoimmune disease) in adults, which is more of a type one diabetes. So remember insulin resistance and type two diabetes are, essentially, too much insulin, whereas too little insulin is like type one diabetes. So they both lead to high blood sugars but they're quite different because, if insulin is too high, then fasting (which is a dietary strategy designed to lower insulin) is useful if it's too high. But if it's too low, then fasting is not necessarily going to be useful or effective. So, in those cases, you have to be very careful what you're dealing with, in which case, you can sometimes measure things like fasting insulin and so on. And you also have to be careful, if you are losing a lot of weight, that you're not dealing with something a little more sinister, such as cancers and so on. So you do have to be a little careful.

[00:14:19] If it is, you know, if it's okay, then you have to be, again, careful about body mass index because body mass index only looks at weight. It doesn't look at muscle mass versus fat, which is very different of course. So you have to make an assessment. We have lots of people in our clinics who are South Asian and they actually get a very high incidence of type two diabetes. Their body mass index is typically in the normal range but, when you look at them, you see that they have this little potbelly, they have a lot of visceral fat, and low muscle mass. So their body mass index is low, but only because they don't have a lot of muscle, and they typically have more visceral fat. In which case, then, of course, it's perfectly fine to go ahead, which is very different than if people, you know, have

a lot of muscle and low fat. Body mass index doesn't distinguish between the two, so you always do have to make some assessment. Is there too much body fat? Is there too much fat in the liver? Then, yeah, those things are going to be good and you can go ahead. But if it's not, then maybe it's something else that's going on and you have to be aware of that.

Lisa [00:15:26] Yeah. The whole LADA thing is interesting. I'm still learning about that, to be honest with you.

[00:15:32] So this person says, "I was wondering if miso soup breaks a fast, just miso paste and water. It would be a great source for me for salt as I prefer a savory drink to sour. Is that acceptable?"

Dr. Jason Fung [00:15:47] I think it's fine. There is some protein in there, right, with the miso. It's mostly-- it's very salty, but there is protein in there, soy protein, and all that sort of stuff, just the way it's made. But again, it's sort of like bone broth; it has very little effect on your insulin. So, for most people, I would go ahead and say it's fine to go ahead and take. If you're doing something a little bit more specialized, say for autophagy and so on, where you really want the protein to be very low, then that might be something that might not because, with autophagy, for example, in response to protein. So if you're eating protein, it's going to turn off autophagy. So then you have to stick to sort of a cleaner, sort of, water-only fast, as opposed to bone broth or miso soup. So it's in the same range. There is a little bit of protein in there. For like 90% of people, you're going to get all the benefits of that. So, yeah, go ahead and use it.

Lisa [00:16:40] This person says, "I got a CGM so that I could see my glucose response to various foods (a continuous glucose monitor) and it was interesting to get this real-time feedback about what I was eating. My question is this - is it correct to assume or conclude that, if I see an increase or spike in glucose, there will be a corresponding increase in insulin? And, conversely, if I do not see an increase in blood glucose, that there's no increase in insulin? Could there be a situation where glucose does not go up, but insulin does go up?"

Dr. Jason Fung [00:17:17] For the most part, I think it's fine to make that conclusion. There are situations, for example-- so dietary protein can stimulate insulin, for example, but stimulates the opposite, glucagon, at the same time, and, therefore, even though the insulin goes up, the total insulin, in fact, is sort of negligible, but glucose doesn't go up. Insulin goes up but then it's sort of negated by the glucagon. So there are situations but mostly for protein. But then of course what happens there is that that high glucagon and stuff increases satiety, so it tends to work out just fine. So I think the overall assumption, yes, there are going to be instances where that is the case, but for, like, again, 95% of cases, you can assume if glucose goes up, insulin went up, if glucose didn't go up, insulin didn't go up.

Lisa [00:18:03] Okay. This person has a question about oxalates and fasting. They measured high on the OAT test consistently over the last decade, and they understand that oxalates are difficult to measure and unreliable, but they're hoping to preempt getting these oxalate stones. Will fasting and detoxing and releasing these toxins help with high oxalate considerations?

Dr. Jason Fung [00:18:32] I mean, oxalates are in lots of different foods, and so there are certain people that produce these calcium oxalate stones. And a lot of foods which are-- you know, it's not necessarily carbohydrates, but a lot of leafy greens, and fruits, and nuts,

and stuff have oxalates. Why some people have too much oxalate, we're not really sure. It's not really clear. Fasting, of course, where you don't eat anything is going to help lower oxalates, but whether or not it's going to be beneficial in the long run is not clear. Some people feel that some of the oxalates is affected by gut microbiome, so the way it's metabolized increases sort of oxalate absorption and so on, and anything you eat or don't eat does change your microbiome. So fasting does change it, eating changes it, eating high-carbohydrate food changes it. So anything you eat or don't eat does change it. And perhaps it may change it in a beneficial way, but it's not clear and there's not a lot of data on it. But of course, when you don't eat, of course you don't get any oxalates, so that's one good thing. But whether or not you get the sort of longer-term benefit of trying to change up your gut microbiome, I don't know. It's a good question. I just don't know that there's any data on it one way or the other.

Lisa [00:19:53] We need more research on fasting. [laughter]

[00:19:58] This person says, "Fasting longer than 48 hours has sparked individual finger joint pain, an inflammatory state. Is there a potentially common way to detox, or should I do an autophagy fast to help with this, as opposed to a regular fast with fasting aids?"

Dr. Jason Fung [00:20:20] Yeah, I don't know. I mean, I don't hear that complaint very often, that it provokes pain, but, again, it can be very different, so it's hard to know. I do hear a lot of people who say the opposite - that the longer fasts actually help with their pain, perhaps due to the decreased inflammation. And, again, with the inflammation, what happens is that the body sees that it's not getting anything to eat so, therefore, it starts to cut back sort of anything that's not necessary, including excess inflammation. So, therefore, some people find that their inflammatory state does improve as they do the fast, especially the longer ones. I haven't heard that often that people get provoked. But if it does, you know-- and, again, there's lots of potential reasons for joint pain, but, yeah, maybe shorter fasting, you know, 24 to 30 hours autophagy, you know, like a clean, water only might make it easier to go longer later on. But again, it'd be something that would be sort of trial and error.

Lisa [00:21:20] Okay, great.

[00:21:21] And this person says, "Could you please address the subject of metabolic flexibility? Is it possible to be too fat adapted with the following consequences: the body gets very efficient at burning fat so that you stop losing weight, or that you might need to reduce your calorie intake in order to lose weight because you're fat adapted. And when you eat carbs, the glucose spike is high and long because the body isn't used to carbs, it isn't used to producing insulin, so it overshoots. Or for certain activities, such as performance in sports, carbs can be a better fuel source and your body might not be able to take advantage of these carbs at that point in time very easily."

Dr. Jason Fung [00:22:06] Yeah, I mean, metabolic flexibility is exactly as you say. It's the ability to switch from using carbs to fat. There's two essential fuels that the body can use (there's carbs, which is glucose, and there's fat) and most of your body can use either one. The brain is the major exception. Most of your body, like your liver, for example, if there's carbs, it'll burn carbs, if there's no carbs, then it'll burn fat as a source of energy. You know, when we talk about flexibility, we usually talk about the ability to switch from one to the other. So it's not that you're too flexible, it's that if you are only eating carbs all the time, then your body doesn't develop the machinery it needs to metabolize triglycerides, which is fat. There's an old study where they did muscle biopsy studies and showed that as you

have people sort of doing longer fasts, for example, then there are changes in the muscle, you know, changes in the genes and stuff that produce the sort of machinery it takes to metabolize fat. So it makes it easier. So if you burn only carbs and you do that for your whole life, then, when you change over, you, basically-- you don't burn fat very efficiently and, therefore, you can have less fuel and, therefore, be tired and so on. If you do, you know, regular fasting or regularly limit your carbs, for example, then you can switch between the carbs and the fat. If you use only fat, again, your body is smart and has all the genes that it needs, gene products that it needs to metabolize fat, but then it doesn't metabolize carbohydrates so easily because you're not using it, right? So it's just a matter of what you're using. So the point of flexibility is not to only limit carbs. If you only limit carbs, of course, your body will become more efficient at handling dietary fat as an energy source of energy, but less efficient on carbs. If you sort of go between the two, then you can handle both, right?

[00:24:02] So it's not that you don't have flexibility, but if you don't ever take carbs, it's the same as if you don't ever limit your carbs. You're going to only be able to use one efficiently. You'll eventually adapt, right? We all can adapt over time, but if you, all of a sudden, give yourself a whole bunch of carbs, but then your muscles can't use it, yes, your athletic performance will suffer, or your blood glucose will go higher because you can't use it as efficiently as you normally would. So the point of flexibility is to be able to use either one equally well. If you only use one, if you only use carbs, then fat metabolism is not going to be that efficient. If you only use fat, then carbohydrate metabolism is not going to be that efficient. That's not flexibility. Flexibility is being able to use both. And we can do that. Most people are able to do that quite well. The bigger problem, generally, is that most people eat carbs, right, because the dietary guidelines say 55% carbs, and then people are like, "Oh, you should always eat." A lot of people in the last few years have never gone into that sort of stage where they're allowing themselves to use fat as a source of fuel and, therefore, develop that metabolic flexibility, right? It's just like if you don't use your leg muscles because you're bedridden. Well, your leg muscles are going to get weak. That's just the way it is, right? And if you only use your arms, like people who are-- don't have legs, their arms are going to get very strong, right? It's the same thing. Your body gets better at what you do. So if you use fat infrequently, you're just not going to be that efficient at using it. So the flexibility means taking both, but occasionally limiting one. Because if you limit carbs, that's how you get yourself to use fat as a source of energy, either limiting carbs or fasting.

Lisa [00:25:44] Thank you. So this is a question about cancer. Dr. Fung wrote a fantastic book called *The Cancer Code*, if you haven't read that. So this person says, "Since cancer is a disease of too much growth, and fasting slows down growth, why is it not a good addition for *most* chemotherapies when the patient has sufficient fat mass to allow for fasting? An example of such a combination therapy is described by Dr. Thomas Friedman of Boston College for a patient who is diagnosed at an early enough stage and has sufficient fat. Hence, first, fast for a short time to starve some cancer cells, and then they would potentially require less aggressive chemo to kill off the rest of the cancer cells."

Dr. Jason Fung [00:26:32] The problem with cancer is that it's enormously complex. And the reason that it would be useful, I think, in early-stage, of course, is that, if you eat more, generally, insulin goes up. And insulin is a growth factor, so, therefore, you're telling the cells to grow. And the cells that want to grow the most are the cancer cells. So you're allowing the cancer cells to grow very fast. So if you catch it early then these metabolic therapies may be very useful. Where it gets controversial is during later stages, whether it's very useful in that, because people are losing a lot of weight during a so-called cancer

cachexia. And you have to remember that cancer cachexia, where people lose weight during cancer, is not normal weight loss; it's actually something specific to cancer. You don't see it just because you don't eat. So when you don't eat, like fasting, it's not the same as when you don't eat for cancer. So when you don't eat, your body switches over to burning fat. If your fat stores get too low, it's actually going to slow down its metabolism. This is normal during-- because the body wants to survive, right? With cancer, with advanced cancer, that doesn't happen. Their metabolic rate never slows down. So what they do is they basically go through their fat, but then just start burning muscle like crazy. So you're not only losing fat, you're losing muscle because the cancer is like, "Okay, burn something, burn something. Give me energy," right? It's just like that, you know-- what was that show? The one with the carnivorous-- Little Shop of Horrors.

Lisa [00:28:01] Yeah. Little Shop of Horrors. "Feed me Seymour!" [laughter]

Dr. Jason Fung [00:28:05] "Feed me Seymour!" yeah. [laughter] It's basically just like that. It's like whatever it can eat, it will eat. And if you don't give it anything, it will eat your muscle, and it will eat your bone, and then eat everything else. And that's cancer. That doesn't happen during fasting. That doesn't happen during weight loss. Your metabolism should slow down, right? Everybody knows this. When you're trying to lose weight, your metabolism slows down because your body's fighting it. With cancer it doesn't. It's all, "Feed me Seymour!" right? So it's like, "Oh you've got muscle. Burn that. Oh, here's something else. Burn that." Like, it's not good for you in any way. So therefore people say, "Eat, eat, eat," but it's not normal weight loss. You can't eat and restore muscle. You're going to eat and restore fat. So, even during cancer cachexia, it's a very complex process. It's not because of the weight loss. So that's where people get very-- you know, all the cancer docs get very, "Oh, you can eat ice cream and stuff because we need you to gain weight." It's like, okay, but you're losing muscle and gaining fat. That's not a good trade off, right? You're losing muscle because of cancer cachexia, and then gaining fat because you're eating ice cream all day long, right? It's not a good trade off.

[00:29:12] So I agree that, one, it's a very complex story that needs to be worked out, how it is that we can impact that. We know that obesity is associated with cancers, 12 to 14 types of cancers are-- I think it's 14 that the World Health Organization classifies as obesity-associated cancer, including breast and colorectal. So those ones we know are high insulin states, and those ones probably the weight loss and reducing insulin is going to reduce your risk of these diseases. So, if you look at diseases that are increasing, colorectal is one of the big ones. It's exploding. Like, the number of people with colon cancer we're seeing is going way up. We're catching them, too, because of the colonoscopy, but, at the same time, we're seeing it in younger and younger patients. So it's a real problem. And part of it could be driven by this hyperinsulinemia.

Lisa [00:30:01] This makes me so sad. When I see somebody-- they'll take a picture of them while they're getting chemotherapy, or whatever, and they have those trays or [unintelligible] or whatever you want to call them that is just full of processed food, you know, sugary food, just packages and packages of this stuff. And it's like, "Oh, my goodness. That's not what they should be eating," you know? But it's like, "Oh, yeah, you can you all you want and gain weight."

Dr. Jason Fung [00:30:28] Yeah, because you're losing weight, you can gain weight. Yeah, it's a little bit more complicated than that. And I agree, I think it's actually doing people a disservice to put it so simply but incorrectly in that way.

[00:30:41] Yeah. So this person says, "The book Brain Energy by Doctor Chris Palmer (which is a great book, by the way) talks about how ketones are beneficial for brain function. In your Toronto clinic, back in the day, have patients who fasted with you and Megan Ramos, under your supervision, have they reported mental health improvements as they progress through therapeutic fasting regimes?"

Dr. Jason Fung [00:31:08] I think that Brain Energy, one, is a good book, but it's a lot of-- what you're doing is trying to get a steady supply of ketones as opposed to fasting, which is more intermittent, because you don't necessarily become fully ketogenic with fasting, right? So if you're less than 24 hours, for example, you may deplete some of the glycogen and never really go into full ketosis for extended periods of time. So it may not have that benefit. I mean, his hypothesis is that the brain is not using glucose effectively, and, therefore, as you start increasing ketone production, then there is going to be an increase in brain energy, like it's able to metabolize it, and, therefore, a lot of the symptoms of psychiatric illness and so on will improve, which I think is fascinating. But you need to have that long, sustained period of ketosis, which you don't necessarily get with intermittent fasting. So you can get into ketosis with fasting, for example, and you might maintain it, but then you still have to maintain a very, very low-carbohydrate diet in order to get that steady supply of ketones. So it can help, but it's not necessarily going to put you in it by itself.

Lisa [00:32:19] Okay. "Why do different people need potentially drastically different amounts of magnesium supplementation when they eat the same foods? My partner and I are almost identical in age and weight and have the same activity level and diet. We live together, but we do not benefit at all from magnesium supplementation the same. I need almost four times the recommended daily dose to feel good and not have muscle cramps."

Dr. Jason Fung [00:32:50] Yeah, that's a good question, especially if you're eating the same diet. I did a YouTube video about magnesium. There's differences in terms of, one, over time, there's been less magnesium in our food supply and, therefore, most people are actually getting depleted. It depends a little bit on certain medications, for example. Like alcohol can deplete magnesium, diuretics can deplete magnesium, so there are certain medications that can do it because you do lose a certain amount of magnesium through the urine. And that's why, if you're not replacing it, and that's because the soil that our crops are grown in tends to have low magnesium, and, therefore, that translates into most of us having low magnesium. That's why a lot of people do need magnesium supplements to improve. But why different people differ is probably because of how much you need and how much is being lost in the urine. So if you're more depleted, then it can take a while because the magnesium is also stored in the bones. So if a lot of it is going into storage in the bones (where it's supposed to be, it's good), you're going to need a bit more to prevent the muscle cramps and so on.

[00:33:59] So it's an individual thing. It's one of these things that it's good that you recognize it because it's actually very under-recognized. And interestingly enough, one place they recognize it very often is in veterinary medicine, like cows and horses and stuff. It's well known that you get these symptoms and they just give them magnesium and a lot of the problems [laughs] go away, which was interesting because I was talking to David Uwin, Dr. David Unwin from the UK, and he says he keeps livestock as well. And that's one of the things that, yes, you give all the time because they're eating hay or whatever, and they're very depleted in magnesium. I think humans-- and he thinks the same thing. Humans are very depleted in magnesium as well, and to supplement it is highly beneficial in a lot of these cases.

Lisa [00:34:45] Yeah, we love magnesium. I saw so many miraculous things with magnesium when I worked in the ICU that I was like, "Sold!" [laughter] Thank you so much, Dr. Fung. Take care.

Dr. Jason Fung [00:34:59] Thank you. Bye.