Recorded Intro: Bulletproof Radio, a state of high performance.

Dave Asprey: You're listening to Bulletproof Radio with Dave Asprey. Today's cool fact of the day is that you can get something beyond weight loss from fasting, although weight loss can be pretty cool if that's what you're trying to do.

A study from the University of California showed that fasting can trigger stem cell regeneration. If you were at the Bulletproof Conference, you know where I had my stem cells injected, pretty much everywhere you could think of. You could actually make them regenerate themselves just by fasting. The research found that rounds of prolonged fasting guard against immune system damage and make you're immune system regenerate itself, and they figured out that fasting moves cells from a dormant state to a state of self renewal, which is kind of cool.

Speaking of things that are kind of cool, if you're a regular listener, you've heard me share my list of top ten bio-hacks. Let's talk about number nine, fun hacks for the Bulletproof mind. It may sound weird, but hanging upside down is a great way to hack your brain. Regularly inverting trains your brain capillaries, making them stronger and more capable to bring oxygen to your brain. It's pretty straight forward - more oxygen in the brain means better performance.

I get my daily stretch and my dose of oxygen with Teeter inversion table, which is so essential for optimum focus, concentration, and mental energy. That full body stretch elongates the spine and takes the pressure off the discs so they can plum back up. Less pressure means less pain. If you have back pain, even if you've been lucky enough to avoid it so far, you really want a Teeter to invert everyday to keep your back and joints feeling great.

For over 35 years, Teeter as set the standard for quality inversion equipment you can trust. My friends over at Teeter have decided to show some love to Bulletproof listeners. For a limited time, you can get the Teeter Inversion Table with bonus accessories, and a free pair of gravity boots so you can invert at home or take the boots with you to the gym. To get this deal, which is a savings of over $138, go to getteeter.com/bulletproof. You'll also get free shipping, and a 60 day money back guarantee, and free returns, so there's absolutely no risk for you to try it out. Remember, you can only get the Teeter with bonus accessories and a free pair of gravity boots by going to getteeter.com/bulletproof. G-E-T-T-E-E-T-E-R.com/bullerproof. Check it out.

Where did I put it? I'm lost my bag of coffee. Oh, there it is.

Bulletproof Original Whole Bean Coffee. Everyone knows how much I love coffee, and it's one of the reasons I started Bulletproof. It was to bring high quality coffee that's lab tested for mold toxins to the market. We talk about stem cells, and I talk a lot about mitochondria, and it turns that the toxin that grows in coffee is something that damages the mitochondrial function in cells in your body, including in your stem cells, including in your neurons. If you're looking to perform better,

taking small doses of neurotoxin in your daily coffee just doesn't make any sense. I can feel the difference in about two hours after I drink the coffee. I created this coffee for myself so I would feel good all day, and that's pretty amazing.

Bulletproof coffee is a part of my Bulletproof Intermittent Fasting Protocol. It's not the same as fasting, but it offers different benefits that are cool. If you do it with moldy coffee, you should expect to have a different result. That's one of the big important things. Check out Bulletproof coffee beans. They're one of the only three ingredients in Bulletproof coffee. You need the right coffee beans, you need Brain Octane oil to boost your ketones, and you need grass-fed butter, because, well, it works better that way, and there's other good stuff in there. You can find this on bulletproof.com, and you can find it pretty much all over the internet. You can even find it at a few grocery stores, so check it out. I'd sure appreciate it.

Speaking of gratitude, if you like the show, go to iTunes, please, and just give me a five star rating so I can tell the rest of the world how good the show is, and they'll find it, too.

Today's guests are guys I've wanted to talk to for a while. One is a guy who's been on Bulletproof Radio before, and a friend, and one of the experts in the fasting and the ketone communities. The other is a guy I haven't spent as much time with. One is Jimmy Moore of Livin' La Vida Low Carb. Jimmy, great to talk to you again, man.

Jimmy Moore: Hey, what's up, man?

Dave Asprey: Also, Dr. Jason Fung. Welcome to the show, Jason.

Dr. Jason Fung: Hi. Great to be here.

Dave Asprey: Jason's a Nephrologist, and a leading global expert on intermediate fasting, knows a lot about low carb and high fat diets, especially for Diabetes. If you haven't heard of Jimmy Moore, it's probably because you're not on the internet. He's got 1,000, or maybe 10,000 - just kidding - about 1,000 episodes of Livin' La Vida Low Carb.

Jimmy Moore: 1200, technically, but yeah.

Dave Asprey: 1200. You know what I'm saying, like four times more than Bulletproof Radio, and has talked to most of the experts I can name, and some I can't name, on his show.

The other things is, if you're watching on our YouTube channel - by the way, bulletproofexec.com/youtube will take you right to the YouTube channel where you can subscribe - you will see that Jimmy is looking better than he has ever looked. I've been on Jimmy's low carb cruise. You just finished a 20 day fast, but you are looking healthier, more vibrant, and more amazing than I've ever seen you look ever since I've known you, so congratulations, man.

Jimmy Moore: Thank you, and I never would have believed it would come from the F word.

Dave Asprey: From the F word? Well, there's so many of them that can help you lose weight, Jimmy.

Jimmy Moore: Well ...

Dave Asprey: French? French press, right?

Jimmy Moore: What did you say?

Dave Asprey: French press, right?

Jimmy Moore: Yeah, fasting has revolutionized really my thinking on everything about diet. Much in the same way that low carb 12 years ago revolutionized what I thought about diet, fasting has just added that same level of excitement for me, because I never realized just how bad I felt, even in the place where I felt like I was feeling good, compared to when I started fasting, and I'm going, "Whoa. All those things that I was so fearful about regarding fasting was silly."

The more that I've done this - and I've talked about this when I've done updates on Periscope - I feel like I've grown a little bit of a fasting muscle, so to speak that the more I've done it, the stronger I feel like I've gotten, where fasting, I used to think a three day fast was a long fast. Now a seven day fast seems so short.

Dave Asprey: The first time I did a real fast, I went to a cave in the dessert outside Sedona.

Jimmy Moore: Of course you did.

Dave Asprey: I slept on a rock, and I only had water. Actually, I had a sleeping bag and a rock.

Jimmy Moore: It was pitch black, yeah.

Dave Asprey: It was at night, and there were strange noises that scared the crap out of me actually, because, well, you never know what animals are coming into your cave. That definitely pushed some of my fear buttons. It's normal. You say it's silly, Jimmy, when people have a fear of fasting, but there's only three things we're wired to do as a species to make sure that we reproduce, and they're all F words. One of them is feed, so eat everything or you'll die. That's our wiring. It's flee, run away from scary stuff, which is why I wanted to be in a cave, just to see if I could double down on that. The other F word is just to make sure you reproduce the species. That's it.

You're pushing survival buttons, and that's why there's so much polarized debate online. People just get all wigged out about nutrition and all because we're messing with our survival programming there. I love what you're saying there, that you pushed, you developed the muscle, and now it seems silly, but at the time, man, this was your body telling you, "You will die," and you have to face that fear of death to put the fork down.

Jimmy Moore: I think it all starts with that first step. I think once people try it just once, and fail ... That's what I want people to know. You're going to fail probably the first time you ever try to fast, because you've psyched yourself into it. I did. I totally psyched myself into it. "I'm going to fail," and that first attempt at even intermittent fasting crashed and burned with a blaze of glory, but it was that first attempt that got me to try it again, and I got a little better, and went a little longer, and I tried it again, and got a little better. Now, again, it's almost become second nature along with my ketogenic diet to make me healthy. I'm very grateful for the work of Dr. Fung, because he's certainly leading the way in this aspect.

Dave Asprey: You guys just wrote a new book, which people are calling the Bible of Fasting, which is a great book. It's called The Complete Guide to Intermittent Fasting. You are an Amazon best seller. I'm assuming you're like a real Amazon best seller, not in Religious Studies category two?

Jimmy Moore: We're more than an Amazon best seller. It actually hit international best seller, or for my Canadian co-author, national best seller, because it did hit number five in the self improvement category in Canada, and it hit number one on Amazon Canada. It stayed at number one for about five days, so we were very honored.

Dave Asprey: Wow. I'm still ...

Jimmy Moore: That was [in all books 00:09:23].

Dave Asprey: They have Amazon in Canada?

Jimmy Moore: In all books, yeah. Amazon.ca.

Dave Asprey: By the way, Jason, I live in Canada.

Dr. Jason Fung: You're so funny. Yes, I know you do.

Jimmy Moore: A nation best seller for you guys.

Dave Asprey: That is so cool. Congratulations, guys, because this is one of those things ... I'm going to be a little bit honest. There's been a little bit of extremism around fasting, just historically, for the reasons we just talked about, where it's fear of starving, and all these incredible, "You'll die, you'll go into starvation mode, but it's not the one you want, and you'll lose all your muscle," and all these things. Jason, how does it actually work?

Dr. Jason Fung: Well, the thing about it is, as you said, there's a lot of fear around it. That's one of the reasons we wrote this book is to put to bed some of these myths that really hold people back because the thing is that those myths, the main two being starvation mode and losing all your muscles, they're actually not true at all. If you even thing about the word breakfast, it's the meal that breaks your fast, which means you should be fasting every day. This is not some cruel and unusual punishment. This is part of everyday living. Then you can look back at history and

you can see that three of the most influential people in the history of the world, Jesus Christ, the Prophet Mohammed, and Buddha, all agreed on really probably only one thing, and that was really the power of fasting.

People have done it for years and years and years. Probably initially inadvertently, because as winter, there's no food. When that passed, then people did it deliberately. You look back at the ancient Greeks, Plato, and Hippocrates, and all these people fasted, not because they had to lose weight, or they had diabetes, or there was no food. They did it because of all of the benefits of fasting.

That's what we've really lost sight of, is that there's something uniquely and intrinsically good about fasting. It used to be called a cleanse, a detox, and so on. It's really getting rid of all that excess junk from your body, the excess glucose, the excess fat, the excess protein, because you have to understand that the process of renewal is not simply a building process. You have to tear everything down and then rebuild.

Think about your kitchen cabinets. If you have really 70s style kitchen cabinets, you can't just build another cabinet on top of it. You've got to tear it down and then rebuild. That's what fasting really does.

What you do is you activate certain hormonal mechanisms. They're actually extremely interesting. What they are is noradrenaline and human growth hormone predominantly. Some cortisol as well. These are the so-called counter-regulatory hormones, in that they increase blood glucose. Insulin tends to lower the blood glucose, these ones tend to raise it. The reason your body does that is because you're not eating, so therefore it wants your body to start pumping out the glucose.

Think about it. If your noradrenaline is going up, you have more energy. You're not feeling tired during a fast. You're feeling energized during a fast. Then you've got growth hormone so that you get this rebuilding.

This is what's really fascinating about the whole thing is that you've got the entire renovation process. You activate something called autophagy, which is very, very hot right now, because autophagy, one of the research pioneers of autophagy just recently won the 2016 Nobel Prize for Medicine. What he described was this process where your body actually cleans out all that excess proteins, old junky old proteins, and sub-cellular parts. You clean that all out, and then the human growth hormone means when you start to eat again, you can rebuild new ones. You're getting rid of the hold stuff and building new stuff, so it's actually almost the reversal of the aging process. People have always known this.

The Prophet Mohammed, Jesus Christ, they're not trying to kill off their parishioners. They're telling them to do these fasts, and long ones, too, sometimes. A month of Ramadan, 40 days of Lent. Sometimes very long ones because they knew that there was something uniquely beneficial about the fasting that's really not available anywhere else.

Then you can talk about other benefits like the anticancer benefits, prevention of Alzheimer's disease, and then even the obvious ones like weight loss and Type II Diabetes. People talk about using it for elite athletes. Training in the fasted state is the big thing coming up. Again, you can understand why people would want to do it. If your noradrenaline is high, you're going to have more energy so you can train harder. When you re-feed, then what happens is your growth hormone is high, so you build up that muscle faster. You train harder, recover faster. That's a huge advantage if your an elite athlete and competing.

All these elite level athletes, you see it in professional sports and all this. They're talking about low carb diets, they're talking about training in the fasted state. There was really no reason for us to be afraid of fasting, but unfortunately what has happened is that people have, especially companies that sell food, for example, they just don't want you to fast. That's all lost profit.

For the last 50 years there's been this whole thing of, "You should eat more times a day. You should eat all the time to lose weight." I'm like, "Okay, that's really dumb. That doesn't even sound like it's going to work."

Dave Asprey: You missed half the strategy. You should eat all the time to lose weight, and you should eat things that make you fat, like artificial sweeteners, because then you double down on the profit cycle. Come on, Jason.

Jimmy Moore: Whole grains, yeah.

Dr. Jason Fung: That's right. That's right, and a lot of processed foods and snack foods. That's right. That's exactly right, and it's not something that was foreign to us. That's what everybody thinks. I get this reaction all the time when I tell people to fast. Man, the first thing, they're like, "You're just crazy." Think about it. Why can't you do it? There's actually no reason.

I'll just touch on the two main concerns that people have, which is the starvation mode and muscle loss. The starvation mode is this idea that you're body is going to slow down its metabolism when you don't eat. If you normally burn 2,000 calories a day, the idea is that as you go into starvation mode, you'll go down to 1500 calories a day because you're burning less, it's easier to plateau your weight loss and regain.

What's truly ironic about this whole myth about starvation mode is cutting a few calories a day guarantees that you will go into starvation mode. We have studies going back almost 100 years which tell us that if you simply reduce your calories, say, by a quarter, go down from 2,000 calories a day to 1500, your metabolism will slow to 1500. That's because the body's not stupid. If it's taking in 2,000, burning 2,000, it's great. If you drop down to 1500, you can't keep burning 2,000 because then you're going to die. The body's just not that stupid. If really cuts down to 1500.

That's why caloric reduction diets are guaranteed to fail. Guaranteed, because you go into this starvation mode. What doesn't put you into starvation mode is actual

starvation, or at least the controlled version which is fasting. What you're doing is that you're not actually slowing down the metabolic rate. You're forcing the body to switch fuel sources, so that you're not burning food, you're burning stored food, which his body fat. Then you're body's like, "Hey. Hey, look, there's plenty of this stuff. Let's just burn 2,000 calories because that's really what I want to do."

If you look at studies of the metabolic rate, even over 70 days of alternate daily fasting, or four straight days, if you measure the metabolic rate after four straight days of fasting, a value 10% higher than when you started. The VO2, which is your exercise capacity, is 10% higher. That makes sense, because your body's actually pumping you full of energy. This makes sense because if you are a caveman and it's winter and there's no food, you can't shut down your metabolism because every day is going to get harder to go out and hunt that rabbit. Your body, again, is just not that stupid. What it does is it switches fuel sources and then pumps up your energy so you can out and hunt that woolly mammoth. That's how we survive.

There's a huge number of benefits to the hormonal fasting. It's the same thing with the muscle loss. If we all lost muscle when we fasted, again, those cavemen would have died out a long time ago. Think about this. All those aboriginal people, indigenous people who went through these feast and famine cycles. Every time you gain weight, you gain fat. Every time you lose weight, you lose muscle. It's like, "Okay, so you're telling me that nature designed us to store energy, food energy, as fat, and yet when we need energy we burn muscle?" It's such a stupid ... You think Mother Nature is so stupid? It's like storing firewood for the winter, but as soon as you need it, "Oh, let's chop up our sofa, throw it in the fire." Nobody's that dumb.

This is the thing, neither is our body. All those indigenous people who had those feast and famine cycles, they should be 100% little balls of 100% fat. It's funny how that didn't happen. All those Native Americans, all those [Inuit 00:19:12], all those Bush people, they're all lean and muscular with no fat. Why? Your body stores energy as fat, and when you need it, you burn energy as fat. All the metabolic studies show the same thing.

People say, "Well, because of gluconeogensis, you're going to burn protein." If your question is, "Do you lose protein," then measure the protein. Again, just recently there was a study comparing directly caloric reduction versus alternate daily fasting. At the end of it, if you look at lean mass percentage, it had gone up a little bit in both cases because they're burning fat, but the percentage went up .5 in the caloric reduction and 2.2 in the intermittent fasting, which means that it's four times better at preserving your lean mass than caloric reduction. It's way better.

Again, the same thing. If you look at metabolic rate, with the caloric reduction, it went down. With the fasting, it did not. If you are trying to keep your weight off, you must fast. You can't just cut calories. You will fail. That's why everybody fails, because they've given up this therapeutic modality, because the two things is the hunger and the metabolic rate. That's what kills the weight loss in the long term. There's a huge advantage for fasting from a metabolic rate standpoint.

Dave Asprey: There's a study that I've used in a couple talks that I give that looks at what happens when you raise ketones a little bit. It's only to .38, which is halfway to nutritional ketosis, but that suppresses ghrelin, which is the main hunger hormone. That causes you to reset your hunger levels to your current body weight. If you fast, even just a little bit, you can get that benefit. I remember when I weighed 300 pounds, and, Jimmy, you were at 480, you've lost ...

Jimmy Moore: 410, yes.

Dave Asprey: 410, sorry. You've lost 180, you were at 410. The difference in your function when you get control of just that one little hunger hormone, that one little craving hormone, it changes a lot.

Fasting does something more than just ketones there. What else is going on with hunger hormones when you go through that, whatever, about two days of, "I'm hungry," and all of a sudden you're not hungry anymore? It's not just noradrenaline, and it's not just ghrelin. Are there other hormones involved that are changing that effect hunger?

Dr. Jason Fung: You can actually measure the ghrelin. People have done this over an extended fast. The ghrelin peaks on day two, and every day after that it goes down. We see this all the time. The advantage we have is that we prepare people. If they're going to go on a long fast, we say, "Well, be prepared that day two is going to suck." It's always true. Day two, sometimes day three, that's the stage where you go, "I cannot take this. There's no way I can do this." Then, every day after that, ghrelin actually marches down every single day. By day five, day six, day seven, it's so low that you're not hungry at all. The question is why? The reason is that you are burning fat. You're body is energized and it's essentially eating your own fat, so there's no reason why it needs to eat something else.

Ghrelin goes down, and then by day five, day six - we see this all the time - people are like, "Yeah, I could just go on forever. I feel great. My mind is on fire." Everything is feeling good.

People say this all the time. They go ... Again, we have seen hundreds of people, so we have the advantage of that clinical experience. They come in and they say, "You know, fasting, I thought when I did the fasting that it would make me really, really hungry, but the exact opposite has happened, and I don't feel hungry at all. It's like my stomach has shrunk."

I'm always like, "Well, it didn't actually actually, physically shrink, but it's like that." People are like, "This is terrific." Again, when you go on a caloric restriction diet, what kills your diet long term is the hunger and the metabolic slow down. Now, you've got a technique that can actually help on both sides. It is the ghrelin, but it's also this whole other ... All this other stuff. There's just so much going on, and sometimes people talk about exogenous ketones. That's great, but that, remember, only gives you a little bit of the benefit of the fasting, whereas the fasting gives you the whole range. Obviously you can't fast forever, but there are benefits to using it.

Dave Asprey: It's interesting, the day two problems, where your ghrelin levels are highest, and youre hungry, and it's going to suck. It's not that way if you use Brain Octane as an exogenous source of ketones. You can literally have Bulletproof coffee for the first two days, which, at least in me, when I pricked by finger, I get up to .5, .6, enough to suppress ghrelin, and then you can eat nothing. You don't experience any decline in energy or any sucky day two on an extended fast whatsoever. I'm lazy, and plus, I have I work to do. Bulletproof is a lot of work. I'm a dad. I don't want to be a zombie for two days. I have a life to live.

Do you guys ever do that when your looking to reduce suffering on day two of fasting, which is the worst part. I certainly do.

Dr. Jason Fung: Absolutely. This is the thing that people ask us all the time about Bulletproof coffee. Is it okay during fasting? What people don't understand, they think it's all about calories. In my first book, The Obesity Code, we talked all about it. It's not really about calories. It's about insulin. Insulin is what really makes us fat.

What's fascinating is that if you eat pure fat, you will get a lot of calories, but almost virtually zero insulin effect. If you're looking at the fast, where a lot of the benefits come from lowering insulin, you could take 500, 600 calories of Bulletproof coffee, and get almost all the benefits of the fasting.

Dave Asprey: Crazy.

Dr. Jason Fung: We're like, "Hey, if you want to do that ..." It's like a really effective hack. "If you want to do that, and it helps you," we're all like, "Hey, if it helps you, do it." You will still get almost all the benefits because you're lowering insulin, which is really the point, not lowering calories. Everybody's all about calories, but the calories paradigm has been completely shot. There's no serious people in weight loss who talk about calories.

Dave Asprey: Now, when you say almost all the benefits - and this is something that I think listeners really care about - I do not have absolute clarity on which benefits you don't get when you're consuming just the fats. There's third party studies that looked at insulin effect. Bulletproof coffee was the lowest insulin effect - they found no effect at all - of any breakfast they could find anywhere of a test of 50 breakfasts, and all this different stuff. You've studied fasting at a much deeper level. You're a Nephrologist. What are the things you don't get if you use Bulletproof coffee during a fast? Why should you go for a full fast?

I would say, "For the first few days, drink Bulletproof coffee because life is better that way." That's just my personal preference. After that, whether you want to have nothing ... What are you missing out on if you have your Bulletproof coffee in the morning during a long fast and you're having nothing else?

Dr. Jason Fung: If you have zero insulin effect, you probably get almost all the benefits. It's variable. The point it ... There's another variation we use quite commonly which is a bone

broth fast, which is you fast but you use bone broth. That's different because it has a lot of protein in it.

Dave Asprey: That's the amino acids, right?

Dr. Jason Fung: Yes, exactly. Some people actually think that's good because you get all these things that are good for you from the bones, but the thing is that that protein can actually turn off autophagy.

Dave Asprey: It does. Yeah.

Dr. Jason Fung: It's very sensitive to autophagy. One of the things you have to be very careful of, if that's your goal, then maybe that bone broth fast is not good for you.

The other thing is we often allow people to use a bit of cream in their coffee during fasting, for example. Again, you have to be careful because there's protein there. For that, if you're going to drink a lot of coffee and you use cream, then, yeah, you can turn off a lot of those benefits because of the insulin effect.

Bulletproof coffee by contrast doesn't have really that problem, but it's that little bit of protein that comes along with the other stuff. If you're using MCT oil, or coconut oil, or one of these relatively pure things, but if you're using some dairy products and you're getting some of the dairy proteins in there, then yeah, it's the protein that's the issue. If it's zero insulin effect, then you should get all of the benefits.

Dave Asprey: That's really helpful to hear. I've been digging around saying that maybe there's something happening in the liver. I know that with the Brain Octane, which is a subset of the MCTs, we've got a study that it raises ketones higher than MCT or higher than just coconut oil, which doesn't appear to raise ketones more than just plain fasting. Still, it's a good source of fat, but long chain fat metabolism has to do something to the liver, so maybe you get less autophagy in the liver because you're consuming fat.

I don't know, but there's very little science about that detail. I do know that if you're eating protein, like you said, it's going to probably reduce the amount of autophagy that you have, and there's probably some specific amino acids, like we know L glutamine takes you out of ketosis reliably, but do you have ... Is glycine an amino acid you should have? Have you looked at taking specific amino acids during a fast so that you either have more energy or get more benefits? It seems like there's probably something to be done in there.

Dr. Jason Fung: I haven't looked into that myself. It's probably a level of detail that's not that available. You'd be surprised because ... You probably wouldn't be surprised, but there's really almost no research on fasting. You start looking at studies. When I started looking, I started digging up papers, and they're all from the 60s. I'm like, "Holy crap, there is nothing." I think it's this whole stigmatization that got put on us by the commercial interests that really took us out of looking into it as a serious

option.

To be fair, in the 60s an 70s, we were talking more about world hunger, Malthusian, [inaudible 00:29:52] and so on, and nobody was looking at the opposite problem. Now, it makes a lot more sense for us to be looking at this sort of thing as a solution. There's so many benefits really to what your proposing. It makes your life so simple. You get all kinds of time to do other stuff. You don't ... Not the Bulletproof coffee, but if you just do water fast, for example, it's completely free. You can do it anywhere, anywhere in the world. You don't have to bring anything special with you.

There's so many advantages to fasting. You can add it to any diet that you want to. If you want to eat pizza and burgers, you can use pizza and burgers and fasting. Of course, that's not great for you, but on the other hand ...

Dave Asprey: You've got to make a smoothie out of them, and then it's okay. Just one piece of kale, add a pizza, [crosstalk 00:30:38]

Jimmy Moore: Hey, Dave, can I relay a story here, because when I was dibble-dabbling into fasting, I was doing a fat fast as part of some of what I learned in my Atkins diet experience. I found that I actually get more hungry on a 1200 calorie fat fast, which for people that don't know what that is, it's about 90% of your calories coming from fat, and then the remaining 10% protein, and very little carbohydrate. 1200 calories, I am so hungry, starving, miserable all the time, and yet I eat no food at all. Basically water, and if I need it, bone broth with some sea salt, and I feel so much more sated with the later compared to the former, even though the former's giving me considerable amount of calories. I think for some of us that are insulin resistant, perhaps even that fat calories is doing something that would be stoking the hunger.

Dave Asprey: It may not be the actual fat calories, Jimmy.

Jimmy Moore: Okay.

Dave Asprey: I am aware of fat fasting. I lost 50 of my 100 pounds on the Atkins diet years ago, I couldn't loose the other 50. I've seen this a lot with people on a standard high fat/low carb template. It's because you're eating damaged fats, fats that are oxidized, and fats that have been fried. Atkins was an absolute genius, but pork rinds? The fat in pork rinds is highly oxidized, which actually triggers your body to try and get rid of the oxidized fats, which requires glucose to help you process them in the liver.

Jason, correct me if I'm wrong on any of this stuff. This is my understanding. I'm not a physician.

There's also often times the artificial sweeteners that are included that do trigger intense cravings, like NutraSweet and ...

Jimmy Moore: Well, I ate neither of those during my fat fast.

Dave Asprey: Good. Good deal, so you were not doing that. That was ...

Dr. Jason Fung: Artificial sweeteners is a good question, because a lot of people say, "Well, there's no calories. Can I use Splenda," or whatever, and we're always like, "No." They're always like, "Why not?" We're always like, "That stuff is just not good for you."

Dave Asprey: I'm a Nephrologist. Filters.

Dr. Jason Fung: Yeah, so it's true, because there's all these artificial chemicals and stuff, and we're all like, "No, you've got to get rid of all of that stuff." "Can we use canned bone broth?" We're like, "No, that stuff is full of chemicals, and you're trying to get rid of it." You're trying to get rid of it and clean your body out.

Dave Asprey: There's a protocol that I didn't put in my book, but I put it on the website, called the Rapid Fat Loss Protocol. It's titled How to Lose Weight Faster Than You Really Should. It's basically a modified Atkins fat fast, where you don't eat anything inflammatory at all, even the 10% you're allowed to have, and you focus on specific kinds of fats. When you feel like you just can't stand it anymore, once or twice a week, you have some sweet potatoes and steak and eggs. For the most part, you're basically pounding things that raise ketones.

I've seen people lose a pound a day for 75 days on a protocol like that. It's ridiculous, but the reason it's a problem, and this is why I'm telling you all this as a precursor to a question, is that when people lose a lot of weight, they often times are storing mercury and pesticides and other crap in their fat cells, and they get really bad brain fog.

Do you guys experience that? Have you ever come across it in your populations? You can [bind 00:34:11] the toxins as you go, and I had to add that in there, things like activated charcoal, just because this happened to me, and it happened to a bunch of people who were just like ... You lose 50 pounds of fat in two months. Whatever was in that fat had to go through the liver, and if the liver couldn't ... The liver and kidneys, and if they couldn't get it out fast enough, it's probably going to end up in the brain. Any issues with that when someone goes on a full on fast? What would you recommend?

Dr. Jason Fung: We've never seen that problem, actually. Again, with the ketones, most people feel very much clearer, more energized mentally, much, much sharper than they used to be. From experience, it's not a common problem. Everybody does react differently, so there is a lot of problems that do come up, and we try to help people with anticipating these problems, how to get through these problems, but there are always problems.

The other thing that's important for us is to set their expectations to the proper one. One of the big ones is the initial rapid weight loss. It's not a bad one, but more people lose far more than half a pound a day. The average weight loss, fat loss, is half a pound a day. If you burn ... If one pound of fat is roughly 3500 calories, and

you eat about 1800, it takes one pound of fat loss for two days. Therefore, it's roughly half a pound of fat loss per day.

Now, over a seven day fast, for example, most people will lose eight to ten pounds, and then they're like, "Oh, great." As soon as they start eating, they'll gain five of that back, and say, "Oh, it's just a waste of time." No, you're still down five. It wasn't a waste. You had to expect that to come back. Then, if they know that ahead of time, then they're not completely crushed when they thought all ten would stay off. That ten is not all going to stay off. Once they know that, they can move forward and understand that it wasn't a failure at all. This was expected. Sometimes more stays off, and sometimes less, but yes, you have to expect that.

Dave Asprey: Jimmy, you've talked a lot about healing insulin resistance.

Jimmy Moore: Yes.

Dave Asprey: This is something that I've experienced. When I was in my mid-20s and I started doing a bunch of metabolic testing, so this is going back for me 18 years ago. Later next week or something, turn 44. I had a fasting blood sugar of around 117. They said I was pre-diabetic and at high risk for stroke and heart attack. My panel was like, "This isn't good." Actually, I was 29 during that test.

I just got my results back. I did the thing with Human Longevity, Inc where they do this full human genome sequencing, all this crazy stuff. They do a big panel of tests, and they looked at my insulin sensitivity, and I'm forgetting the metric right now, but it's on a scale of 1 to 120. You're basically a bad type II diabetic if you're at 120. My insulin sensitivity was 1. I'm as insulin sensitive as you can get, which is awesome, which means I probably should be glucose intolerant, but I also had high glucose tolerance. They're like, "This is weird. We don't even normally see that in someone."

My question for you guys is, number one, Jimmy, and I want to see where are you, and are you measuring insulin resistance, and is it improving over time with the practice that you're doing? Number two, from Jason, is what about glucose tolerance and insulin sensitivity changes with fasting?

Jimmy Moore: Insulin resistance is a little bit tricky to determine where you are on that scale. The only thing I can go by is fasting blood glucose levels being at a certain level, fasting insulin levels being in double digits rather than below five, which is what I would like to see it at.

Signs that it's improving, and definitely in the midst of this recent fast that I just completed of 21 days, which by the way I lost 27 pounds in the 21 days, which means I should have only lost, what, Jason, 10 1/2 pounds during that time, so if I go back to only having lost 16 net, I am not complaining.

Dave Asprey: How much more do you have to lose?

Jimmy Moore: Exactly.

Dave Asprey: No, no, how much more do you have to lose?

Jimmy Moore: Oh, how much more. I thought you said, "What do you have to lose?"

Dave Asprey: Oh.

Jimmy Moore: How much more? I could probably stand to lose 60, 70 more pounds.

Dave Asprey: Really? Okay, because I can only see you from ...

Jimmy Moore: It's abdominal. It's all in the abdomen. Yeah, it's all in the abdomen.

Dave Asprey: You are looking ... I almost wouldn't recognize you in an airport right now. You are ... Your face looks ...

Jimmy Moore: It's the beard.

Dave Asprey: It's not just the beard. Your face looks way leaner than I've ever seen. You look really good.

Jimmy Moore: Thank you what's interesting is my legs are very muscular. My arms are very skinny. My face and upper body is all skinny. It's all in the middle, which Jason will tell you, I'm prime candidate for fasting, which is why I'm doing these fasting experiments, trying to remove all of that dangerous fat from around the organs.

I actually have done some dexa scans ...

Dave Asprey: That was my next question.

Jimmy Moore: Yeah, I knew it was. I know you well.

... Around my January fast to see the whole muscle loss thing. It actually showed that I gained muscle. I fasted 28 out of 31 days in January, and I gained muscle in the arms, gained muscle in the legs, but I lost lean tissue, which was extrapolated as muscle in the trunk area.

After talking to Jason about it, he says, "Well, a lot of times the dexa will misdiagnose, mistake some of the fat loss around organs as lean tissue, as muscle, when it's actually fat being removed from around the organ." Little by little, I'm seeing those things get better.

I've actually noticed that skin tags have started to shrivel up on this most recent one. I still have a lot of them, but I had one around my shoulder that was actually killing me, and right in the middle of the fast, it just dropped off. I'm like, "Whoa." I never would have guessed that.

Dave Asprey: I was covered in skin tags when I was a kid an a teenager. They were all over, and they all just went away.

Jimmy Moore: Yeah.

Dave Asprey: It's remarkable.

Jimmy Moore: I actually noticed, too, that when I started eating again ... This is a cool effect to know that the insulin sensitivity hopefully is coming. I didn't gain as much weight initially after that first meal. I've eaten before following a longer fast and gained five pounds with that first meal. I only gained about two pounds with the first meal back this time. It was a pretty sizable meal. When you've fasted that long, you want to eat. I ate a pretty darn big meal, and yet it didn't impact me. Ketones stayed pretty strong. I'm noticing, again, building up that fasting muscle. The more that I do this, the better off it becomes and I'm seeing it.

I think it's going to be a slow process. It took me decades to mess this body up. Let's hope hope it doesn't take decades to get it back on track again.

Dave Asprey: I don't think it will.

Jimmy Moore: You've said that before when I've been on your show, when we were talking about ketosis. I think ketosis is a fabulous hack for people, and probably could get them most of the benefits that we're talking about with a fast. When ketosis and other diets aren't enough, maybe fasting is just the ticket.

Dr. Jason Fung: The point about insulin resistance is a good one, because that's the part that nobody really looks at. If you think about insulin as a the key driver of obesity, one of the things that keeps insulin very high is insulin resistance, and that's what kills people, because it's not dietary. If your insulin level stays up because of your insulin resistance, then you're going to gain weight. Remember, insulin is telling your body to store energy. That's it's normal function. You eat, insulin goes up, you store energy. If you're storing energy, you're not burning. That's the whole problem.

If you become very insulin resistant, then your insulin levels are up all the time, your body is always trying to shove the energy into the fat cells, and then you feel cold and tired and lousy. That's the real problem.

Resistance really depends on two things. It's not simply the high levels, but it's the persistence of those levels. What people have realized is that the insulin resistance, because it depends on those two things, a period of time where you can get your insulin levels very low is going to break that resistance because it breaks that persistence. Not simply the levels, but the persistence of those levels.

There's this fabulous study where they took people. Over one week they gave them either a daily caloric restriction, or a five to two diet thing, so two days of fasting, five days of regular, but the calories were virtually identical. What you found was that the weight loss was fairly similar, but the insulin sensitivity was way better

with the intermittent fasting group. Now you're healing the insulin sensitivity problem. What's happening is that in the long term, that's going to make it a lot easier to lose weight.

We see this all the time because I deal with people mostly on the very extremes of insulin resistance, so type II diabetes. I see people up there all the time. We start fasting them, and we get them off all their insulin, we get them off all their medications, we get their blood glucoses down, and people are like, "Wow, the diabetes is all reversed." I'm like, "Of course it is, because you simply got rid of the insulin resistance, you got rid of the diabetes. That's it."

It's very powerful, because people treat type II diabetes and insulin resistance like it's some forgone conclusion. You have it, you'll always have it. That's not the case. It's a completely reversible disease. This is one ... What I refer to in my one of my lectures as the biggest lie of type II diabetes is that people like the American Diabetes Association is trying to convince them that you can't do anything about it, but there are things you can do. You can heal it with fasting, with fat fasting, with low carbohydrate diets, but they won't promote these things because ... There's probably a lot of reasons why they won't.

Dave Asprey: Hard to sell.

Dr. Jason Fung: Yeah.

Dave Asprey: HBA1C is a blood test that is commonly used to track type II diabetes. With something like Metformin, a common drug for type II diabetes, you can improve your results by 1%. Exercise will improve it by about another 1%. Small changes.

I have a piece of gear at Bulletproof labs underneath my feet. It takes about 20 seconds a week of exercise, about two minutes to do the whole sequence, but only actually 20 seconds of exercise, that improves HBA1C by 8.2% on average. It's by flexing the bones. What you're doing is you're actually driving changes in bone density, which changes hormones, which causes the body to use insul- ... To use glucose more effectively, because it increases demand probably in the bone, certainly in the bone marrow perhaps.

It's fascinating to me that even changes in the type of exercise. You can get any really heavy, weight-baring exercise is going to do a little bit of that. This is just a machine that causes you to do isometric exercises to the point of bones bending.

Dr. Jason Fung: That's very interesting, because again, that's the same thing with exercise. People and fasting, the always say, "Well, it's a stress, isn't it?" Yeah, fasting is a stress to the body, so it exercise. With bending the bones, of course you're putting the bones under stress and you're forcing your body to make that bone stronger. Astronauts go up in space, and there's no pressure on the bone, so they all get osteoporosis. We all think osteoporosis is a matter of lack of calcium. It's nothing of the sort.

Dave Asprey: Exactly.

Dr. Jason Fung: The thing is that I can give people osteoporosis. How you go up in to space, or you lie down in bed all day, and you become bed bound. You get osteoporosis. Everybody knows that. Why? Because you're not stressing your body. This is the concept of hormesis, which [inaudible 00:46:45] talks all about. That guy I think is totally brilliant. He talks about hormesis in that small doses of something which can be toxic, for example, in small doses are very, very good for you. It's the same thing. Exercise is hormesis, fasting is hormesis, flexing the bone is hormesis. Any stress on the body, as long as it's not excessive, is actually very, very good for you.

Dave Asprey: Some things are just not hormetic at all. This is, I think, a big problem with a lot of nutritional research. Cyanide isn't hormetic. Mercury isn't hormetic. Hypoxia is hormetic, a lack of oxygen, which raises a brain-derived neurotropic factor, BDNF.

There's all these crazy things, but there's a bit of a bro, chest-thumping perspective. "A little bit of gluten in pizza won't bother me." Well, actually, it turns out, if you're having pizza once a week on your cheat day, it probably is bothering you. I could show you a bunch of studies, but gluten probably isn't a hormetic stressor for some of us, but others are. Being able to just know, is this a good stress that's going to make me stronger, or is this just a stress that takes away and causes food cravings later?

A lot of my work in the food road map on the Bulletproof diet has been figuring out what's hormetic. Nightshade vegetables are not hormetic if you're one of the 20% of people who have essentially a blood type that isn't going to work well with them. This is different than the blood type diet stuff. You don't know, but understanding the benefits of good stress versus stress that's kryptonite stress. Do you buy that? You guys have a different life experience than I do. Jason, you're a medical professional, and I'm just a hack.

Dr. Jason Fung: No, absolutely. Absolutely. That definitely is true. It's like asbestos. Asbestos is not hormetic.

Dave Asprey: There you go.

Dr. Jason Fung: You don't want asbestos. Definitely it's true, but there are other things that are hormetic, and for those things, you have to realize that those are the hormetic things and then you should go ahead and do those or do more of those. We all know that with exercise. Yeah, you should exercise. Absolutely. You don't build muscle by sleeping.

This is one of the things that always upsets ... Not upsets me, gets me all riled up. Everybody talks about muscle loss. I'm always like, "Okay, if you're talking muscle, you don't eat to gain muscle. You have to exercise to gain muscle." If you want to lose weight, that's mostly about the diet. Yes, you can exercise to lose weight. It's really hard. A lot of people have tried to do it, and most of it not successful, but again, it's like everybody says, "Well, if I don't eat, I'll lose muscle." It's like, "Why?

Why would your body do that?"

Yes, you are going to lose some lean mass. Yes, you are going to lose some protein, but that's not all bad, like those skin tags. This is the thing, something like the ...

Dave Asprey: Jimmy lost two pounds of skin tags on his fast.

Jimmy Moore: I wouldn't doubt it.

Dr. Jason Fung: This is the thing. We have people who have lost 100 pounds, but we never have problems with flabby skin, because that's all protein that needs to go. If you look at Holocaust pictures, and Japanese, World War II American prisoners of war, there was no flabby skin. Some of these people had a lot more skin when they started. In 1945 when they were released there was no flabby skin. Why? Because the body's not that stupid to starve and still have flabby skin. You're going to burn that for energy. It's the same. It's a good thing. You want to lose a little bit of that protein. Just because you've lost a little bit of protein doesn't mean it's a bad thing.

Dave Asprey: Very insightful comment, and thank you, Jason. I hadn't thought of that, but it makes really good sense. Do you think that fasting then might help people with loose skin? I hear this a lot with Bulletproof people, and I know there are certain kinds of exercise that can help the body just want to tighten up the skin. I don't have loose skin issues, even though I've lost 100 pounds. Is fasting going to fix loose skin for most people, just because your body gets so hungry it absorbs all the extra skin?

Dr. Jason Fung: Yes, because what happens is that the first ... There is a period of time. If you look at the physiology of fasting, what happens is that if you fast for about 24 hours roughly, you have glycogen stores, you burn that all off. Once you burn that off, between glycogen and real ramping up of fat burning, there is a small period in there where you're doing gluconeogensis and some protein is going to be lost. That's all the connective tissue and the skin and stuff that needs to go.

If anything is going to do it, it's going to be fasting. I can't say it's 100% successful, but I can tell you that if it's probably the technique that has the most likelihood of success. I can't say for sure. Anecdotally, we've had lots of people who said, okay, they had a lot of problems, an then as soon as they started the fasting ... It's not going to go away in two days.

Over time, they've noticed that they're skin has actually tightened up significantly. Your body knows that that is superfluous tissue. Again, we can't assume that our body is just that stupid. It knows that it's useless tissue. Therefore it goes back in there and says, "Well, let's get rid of that. Let's get rid of it." There's that whole process of autophagy and also programmed cell death, which are fundamental processes in life.

Again, it comes to the same thing. Everybody always things building up is good. It's not. It's tearing down, and then breaking ... Then building up. That's good. Just

building more, that's like painting on top of wallpaper. It's like, "Yeah, it'll work, but it's not good." You've got to take it off, and then put down what you want.

Dave Asprey: Let's talk about the chicks. What about women? Women respond differently to fasting, to ketosis, than men do, at least quite often. What changes if you're a woman you want to try fasting?

Dr. Jason Fung: Actually, there's not a lot of difference. I think this, too, is one of the great myths of fasting, is that women can't do it. That's ridiculous, because women have fasted for thousands of years. Again, some [inaudible 00:53:19]. If you think about all the religious fasts, for example, it's like, "Do women get exempted?" No, not at all. When it's Lent, or when it's Yom Kippur, or when it's Ramadan, the women fast.

There are certain situations. One, if you're pregnant, definitely don't do it. Breastfeeding, definitely don't do it.

Dave Asprey: Please done. As the author of a book on fertility, please done fast when you're pregnant. That is just bad.

Dr. Jason Fung: Also, if you're under weight. Yeah, you probably shouldn't be fasting. That's just common sense, because what could happen if your body fat falls below a certain point is that you will stop your cycles. You won't be able to get pregnant. That for sure, those are special situations. Again, if you're 16 years old, and borderline anorectic in terms of your personality, then of course that's not for you, but that's a whole different thing than the 65 year old woman who is obese and type II diabetes.

There is a context to it, but when you take out those people who shouldn't be fasting, then women do fine. All the studies, all the old studies have both men and women, and they lose fat at the same rate. Some people say, "Well, I fasted. I didn't lose as much weight as I thought I would." Well, you know, that happens to men, too.

We have a clinic. We've seen hundreds and hundreds of people. At least half of them are women. Probably they do equally well. In fact, some of the people who have done the best are women. There's no reason, there's no physiologic reason. Remember, the difference between men and women is sex hormones. Estrogen, testosterone. Insulin, which is the main thing when you talk about hormonal changes of fasting, is the same in men and women. Not exactly, but it is similar. There is an interplay between sex hormones and insulin.

The other thing is cortisol and human growth hormone and so on. Most of those are very similar between men and women, the reason it got out there was because there was some internet post, somebody said, "Well, look at these studies of five rats. The women rats didn't do so well." I'm like, "Well, what about the last 5,000 years of human history where women were fasting. Did we see any problems? No. What about all the religious fasting. Did we see problems with women? No."

Dave Asprey: I'm sorry, Jason. Until we double-blind the last 5,000 years of history, we cannot pay attention to it. I'm sorry. There you go, skeptics. I've got your back.

Dr. Jason Fung: The truth is this: if you're a woman and you're worried about it, then you should try it. If it really sucks, and it's really bad, and you're really not doing well, then don't do it. It happens to men, too. There are a lot of men that don't lose the weight that they feel. It's always an option. We don't say that everybody has to do it. Try it. Try it, see how you do.

If you do it once or twice, you're going to think it really sucks. The first few times, the first few weeks that you do it, it's going to be bad. That's where everybody falls off. Just like Jimmy, he did it once and said, "Whoa, this was terrible. I'm never doing this again." It's like exercise. You don't run a marathon the first time you put on some running shoes, and then your muscles are all sore and go, "Oh, that was terrible. I don't know why everybody says exercise is so good for you. I felt terrible."

The same thing with fasting. You've got to get that muscle up. It's not actually a muscle, but it's the same idea. The more you do it, the easier ...

Jimmy Moore: A psychological muscle.

Dr. Jason Fung: Exactly, but the more you do it, the easier it gets. I think what happens, and you can actually see this physiologically, is that you [inaudible 00:56:59] regulate all those genes that are used during fasting so that you're boy can actually switch the fuel sources much easier. Before, it's rusty. You're used to burning food, and you can't burn your fat, but then after a few weeks of fasting you can just switch over right away. You don't get that problem with the hunger and all that sort of thing.

Dave Asprey: It's interesting. I've been doing this for a long time now. I take Brain Octane oil, which converts directly to ketones, with every meal. I use it in my salad dressing, I pour it on my food, I travel with a little bottle of it. Pretty much, my blood ketones every day are .5 or higher, multiple times throughout the day, even if I eat carbs or whatever else. It's a constant thing.

Every morning, I have Bulletproof coffee, which reliably gets me up to actually about .7 to .8 on a good morning, just on my blood ketone measures. I think that that has trained my biology to easily use ketones or glucose at any time, and it's made it so I can fly to Japan, and I don't need to eat, at all. I just don't care. I feel like I have this freedom from hunger and cravings that never had before.

Do you have any data on what happens there when people are just frequently in both a state where they have glucose and they have ketones, but much more frequently than you can achieve in a normal world, where it takes a couple days of fasting or carb restriction to get any ketones at all?

Dr. Jason Fung: I don't have any data, but anecdotally, we find exactly what you're talking about. People who are on a ketogenic diet or low carb diet, I think their bodies are already

used to burning fats. For example, if you look at muscle tissue, people who are always in ketosis, they actually have up-regulated the genes to use fatty acids as energy. Therefore that's why you get this ketoadaptation phase, where if you're always burning glucose, your muscles actually can't use that fatty acid very well because they haven't had the gene products to do it.

The same thing is if you go from a very high carb, standard American diet and you fast, it really is a shock. As Jimmy had noted in his previous book, Ketoclarity, intermittent fasting almost comes naturally when you're in a ketogenic diet. Your hunger's not there, your body's just burning fat, so it's no different from burning body fat, so it's like, "Hey, it's all the same stuff. It's all triglycerides. Therefore, I'm just going to burn this body fat same as I would this butter."

It's easy, because you don't have that kind of drop in energy, you don't have that drop in [inaudible 00:59:41], and it is freeing. This is the whole idea. Fasting is not something that you do, fasting is something that you don't do. In that way, it's completely different than every other diet. Every other diet tries to add complexity. Do this, do this, do this. Fasting simplifies it. There's no shopping, there's no cooking, there's no cleaning, there's no planning, you're saving money. You can use it if you want, and not if you want.

Dave Asprey: One of the cool things about saving is that you are by definition doing less of the things that make you weak. There are things in your diet that aren't as good for you as you think they are, or things that you just don't know about, even if there are small things that make you weak. There's really good food, and then you did something to it, and it wasn't as good as it could have been. All that stuff goes away. It there are these pros and cons, you got rid of all the cons, [crosstalk 01:00:38] by definition.

I think that sometimes that can be part of the, "I feel so good. My joints stopped hurting," and the really cool stuff that happens.

I have a question. My wife, [Karen 01:00:54], is a trained physician. When she was 16, she read a book about some spiritual thing, and did a ten day water fast. She was not anorexic, she wasn't fat, wasn't trying to lose weight. She just wanted the mental clarity, and thought it seemed like a good idea at the time. Teenagers are likely to do ... They just do stuff.

She, for 20 years after that, was rail thin and cold. Her thyroid stopped functioning on that fast. We're talking no padding on the butt kind of cold, and when I first met her she was still like that. I'm like, "We can fix that." We did, and she's at a healthy and normal weight. Have you seen, especially in teenagers, any thyroid effects, down-regulation, things like that? A ten day water fast for a teenager seems extreme, but what are the risks, and who should maybe do that, or what should she have done differently?

Dr. Jason Fung: I think that it all depends on where you are to start with. If you are normal weight, or relatively underweight, then ...

Dave Asprey: She was normal, yeah.

Dr. Jason Fung: ... Yeah. There's a bit of risk with that. It's the same thing, it's like running that marathon the first time you do it. You could do some serious damage. This is the phase that you have to ...

Dave Asprey: The first guy died, right?

Dr. Jason Fung: ... Yeah, that's right. What was his name, that Greek guy? That's the thing. You have to take things slowly. You have to have the knowledge to go with. Obviously, she was just impressionable at the time and thought, "Hey, this is super cool." Her body's completely not adapted to it. She's not able to use the fats very well, and all that sort of thing.

I don't know that there is any effect on the thyroid. None of the studies has really shown a huge effect, and I get this question all the time about thyroid function. It really doesn't effect it much.

There is a problem if you start to go too low, so if your cholesterol goes too low, and so on. A lot of these hormones are actually fat-based, so if you go too low and you become too underweight, all kinds of bad things can happen. That's why our general rule is if you're BMI is less than 20, we say don't do it. There's no point, or just do very short ones, like 24 hours, 36 hours. There's no problem with that, because again, if you look at what we have people do when they do fasting blood work, what we have them do for colonoscopies, what we have them do ... It's often fasting for 24 hours. If you go into surgery, they'll often tell you not to eat for 24 hours, so you're fasting. Nobody ever has a problem with that. These shorter ones are okay, 16 hours, 18 hours, 24 hours, but 10 days? That's a little bit extreme to go the first time [inaudible 01:03:37] for sure.

Dave Asprey: Awesome. We're coming up on the end of the interview. Jimmy, I've asked you the question already that comes with Bulletproof Radio, but Jason, we haven't had a chance to do this, so I'm going to ask you the question. If someone came to you tomorrow, and they said based on everything you know, from your career, but also just from life in general, and I wanted to perform better at everything I do, so I want to kick ass at life, what are the three most important things I need to know? What would you recommend?

Dr. Jason Fung: That is difficult. This is not just diet related.

Dave Asprey: It can be anything at all. You might talk about diet not at all, or you might say it matters a lot. It's up to you.

Dr. Jason Fung: I think that the ... One of the real things is ... I think Johnny [Bowden 01:04:32] had talked about this a little bit, was that obesity is not simply about calories. It's really about hormones, and there are things in life that are very, very important that everyone poo-poos in the western world. There are things such as friendship and a

sense of community, and belonging, that are simply so important, but because you can't measure it as a caloric value, people tend to denigrate it, as in, "Yeah, whatever."

Things that are really important are that: friends, family, sense of community. There's the spiritual aspect, which is not necessarily religious, but spiritual or meditation. Again, one of these things, and we talk about it sometimes, meditation as a way of stress management. Again, everybody's like, "Oh, that's all airy-fairy and all this stuff," but again, there's so much data that says that you can actually reduce those harmful cortisol levels an so on.

Medication, and I think religion is so far ahead of us in terms of what they've told people, which is ... Think about what they do. "Come to church every week." Sense of community. Everybody's doing the same thing at the same time. When you're fasting, you're fasting with the whole community. Sense of community. You're doing prayer, which is a form of meditation, and fasting. They've codified this way of being well and kicking ass in life, and they've told us ... Not just one religion. It's not simply Christianity, but every single religion has the same thing: community, prayer/meditation, a way of dealing with stress, and fasting.

Those three things are the key. We're so blind to this kind of reality that, "Oh, what you need is money." It's like, "You don't get it." Happiness is not about money. It's about [inaudible 01:06:56]. The key to a happy life is obviously to stay healthy. Nobody's going to be happy if they've got all kinds of health issues. Those really are the most important things, of which diet is only one. Those three things ...

Dave Asprey: Thank you.

Dr. Jason Fung: ... Again, are probably the most. Community/support, meditation/spirituality, and fasting. Those three, I think, are the pillars.

Dave Asprey: Beautiful answer. Thank you. Jimmy, I have a bonus question for you.

Jimmy Moore: Uh oh. By the way, I'm on your vibration plate right now.

Dave Asprey: I was just going to say, I hear a familiar sound in the background. I see you doing the Bulletproof Vibe.

Jimmy Moore: I am doing that. I am the only one of the three of us who is standing up. I've stood up for over an hour, so I needed to do a little shaking.

Dave Asprey: Nice. I have one right behind my standing desk, but I'm not at my standing desk.

Jimmy Moore: It makes your voice sound really funny.

Dave Asprey: It does. By the way, this was not a planned plug, but thank you.

Jimmy Moore: You're welcome. I love it. I use it everyday.

Dave Asprey: I do, too. It does something special, I guess a mitochondrial thing, like when you agitate a vat full of bacteria healthier. It creates hormetic stress in your organelles. By the way, I have no scientific evidence for that.

Jimmy Moore: All I know is my low back pain goes away when I do this.

Dave Asprey: We do know there's some mitochondrial density studies from astronauts or whatever, but there's something cool happening there. It may be piezoelectric. Whatever it is, I support you doing it, and I do it myself everyday.

Jimmy Moore: I bet you've never had a guest do it while you were interviewing them, so this is fun.

Dave Asprey: It's totally true. I have not. That actually goes into my question for you. You've done, you said, 1200 interviews, and you actually are a gentleman. You always act with kindness. You've interviewed some people who most of us would say are total assholes.

Jimmy Moore: Not Jason. It wasn't Jason.

Dave Asprey: No, it wasn't Jason, but you've really just held your ground, and been polite, and been focused on the science. You are the exception. Both of you are. When you look at the keto community, and you look at just the amount of trolling, just the amount of anger and rage that's out there, where do you think it comes from? You don't have it.

Jimmy Moore: Oh, and that's ironic. It ended just as you finished your question, so no more shaky voice.

Dave, there are good people in the world that do the right thing regardless, and then there are people in the world who have agendas, and they try to push that agenda for whatever their purpose. I wish I understood. I just know I've done this long enough to know if you're doing good, there will be people who will want to undo your good. It just motivates me, and I know Jason has the same philosophy, just to keep doing what I'm doing.

You can't really control what others think about you and what they say about you. If you've been online for very long, and you've had any level of success online - and I know you've seen this, too, Dave - you're going to get trolled. You're going to get vilified, and people are going to say every ugly name under the sun to you. At the end of the day, screw them, because I have too many people I'm trying to save out there with my work. If I get bogged down answering all the trolls, I have no time to do the good work. What their motivation is, I don't have a clue, but really I don't give a crap either.

Dave Asprey: Well said. I'm trying to remember who it was. It might have been Brendan [Burchard 01:10:48]. A couple years ago, this one guy sent 20,000 trolls to my page

all at once. I'm like, "Good God, it's like wading through slime." There's some people who are really mad about specifically keto diets and around high fat diets and fasting. It's almost like there's an MMA fight, where they're online just beating each senseless. "I have a study." "Well, my study has got better edges than yours."

Jimmy Moore: We've got studies, yes we do! We've got studies, how 'bout you?

Dave Asprey: I'm like, "What happened when you tried it?" They're like, "What? I wouldn't try that. There's no double blind study. It's a scam." I haven't decoded that human behavior, because if I could, there's probably a lot of people in those communities who probably could really be helped a lot. If they were neurologically able to act with kindness and awareness, they would probably spread a lot less crap around. In the meantime, there's always ban/delete, which works really well on Facebook.

Jimmy Moore: Oh, yeah. I use that a lot.

Dave Asprey: it takes me no time at all. They spend 20 minutes trying to troll, and you're like BLOOP, and they're gone.

Jimmy Moore: You know what's cool about fasting, Dave? Fasting fits into every dietary paradigm. There's not one single dietary paradigm that can't implement some form of fasting. That's why I like this.

Dave Asprey: I have a new book called The Frosting Fast coming out. All you eat is just canned frosting. It's so good. Oh my God.

Jimmy Moore: Oh, be still, my insulin heart.

Dave Asprey: On that lovely note, I suppose that question ... Number one, I am really curious about that, but that question is also a compliment, Jimmy, because you've maintained your good nature through 1200 podcast episodes, which is remarkable, and not true throughout a lot of the Paleo and keto community.

Jimmy Moore: Thank you.

Dave Asprey: I've never seen you lose your cool like that. Hats off for being a good human being. I appreciate that.

Jimmy Moore: Thank you, sir.

Dave Asprey: Jason, thank you for taking your medical knowledge, and your medical license even, and going out there and pushing the limits. It's always harder when you have a license that they can threaten to break paradigms and be disruptive, which is why I'm grateful to be an unlicensed bio-hacker, because you can't take away my un-license.

Actually, I just found out yesterday. I've known for a while. I'm speaking at the American Academy of Anti-Aging Medicine. I'm the main stage keynote, but I'm the

only non-physician to do it this year, which completely blows me away. It's such an amazing honor to be able to go and talk with doctors, and to be able to learn from them, and to be able ask you questions, and to be able to have an intelligent conversation. It's cool that there are people now who are going to medical conferences who aren't necessarily doctors who care that much, and I think that when you write a book with Jimmy like this, where you guys collaborate on this, it takes something that would have been stuck in academia for 30 years, or in a medical research lab, and gets it out there where it can help people who would be dead in 30 years. That's the ultimate medicine that you're really practicing there. Thanks for putting yourself out there to do that. That's cool.

Dr. Jason Fung: Thank you very much. That is the point, because we can help people right now. You're absolutely right. They're like, "Oh, why don't you do a research study?" I'm like, "Okay, then what? I'm going to do a study. Five years later, people are going to say, 'Oh, that wasn't randomized, double-blind. Oh, you only had a few hundred people. You didn't have 10,000.'"

People nit-pick this stuff to death. Even the women's health initiative, 50,000 people. "Oh, this is the problem." What are you talking about? This is the best study ever. Everybody just ignores you.

Here, we can help people right now. I'm not saying everybody has to do it. I'm saying try it. Give it a try. Here's the information, and if you're if you're helped, keep doing it. That's all we're saying. We're not trying to push anybody into it, but we're saying look at it as something that is doable. That's what we're trying to do with this.

Dave Asprey: I would support that message 100%, and for listeners, this book by Jimmy Moore and Jason Fung is called The Complete Guide to Intermittent Fasting. You can pick it up on Amazon. You guys are in print as well, or are you just on Amazon?

Jimmy Moore: Oh, yeah, it's in print.

Dave Asprey: You can go to Barnes & Noble? Can you go to Barnes & Noble?

Jimmy Moore: It's in print, and Barnes & Noble, Books-A-Million, and coming in December, I actually just finished the audio book, since I'm a podcaster that people know my voice. I went ahead and read the whole book, so that's coming in early December.

Dave Asprey: That's actually a huge amount of work. That takes four days.

Jimmy Moore: Yeah, no kidding, dude. More than four days.

Dave Asprey: For The Bulletproof Diet, I read the first two or three chapters in a special booth, and it took a whole day. I couldn't get three more days of booth time because I kept having keynote presentations and flying around, so I had a professional reader. I always felt bad because I wanted to read the whole thing, but I couldn't do it.

Jimmy Moore: It's so much harder than say a podcast, because a podcast I can sit here and jibber-jabber with you, but when you're reading the words ... You just mess up. My poor podcast producer is going though that now and, "All right, dude, you mispronounced this word. Reread that." Just the magic behind the scenes of doing an audio book. I wasn't going to do that to Jason. That is a lot of work. He threw in some words in there. I was like, "I don't know what this word is, can you like ..."

Dave Asprey: Well, guys, thank you ... All right, I got to ask, and then we're going to wind up. "Aw-tophugy," "auto-phagy?"

Jimmy Moore: "Aw-tophugy" is what I say.

Dr. Jason Fung: I say "aw-tophugy."

Dave Asprey: I know. That's what you guys say, but are you sure?

Jimmy Moore: I've heard "auto-phagy" before.

Dave Asprey: Really? I've heard it both ways.

Jimmy Moore: Yeah, so have i.

Dave Asprey: I don't know which one is technically correct.

Jimmy Moore: We'll go with ... How does the Nobel Prize winner say it, Jason?

Dr. Jason Fung: Well, he was Japanese, so ...

Jimmy Moore: Say it in Japanese. No.

Dave Asprey: I guess we don't have a consensus on that. In med school, what did they say?

Dr. Jason Fung: I think, when I heard it ... Not many people talked about it, but it was "aw-tophugy."

Dave Asprey: "Aw-tophugy."

Dr. Jason Fung: Again, it's probably one of these things that can go either way.

Dave Asprey: Like "Pro-cess" and "prah-cess."

Dr. Jason Fung: Yeah. Yeah.

Dave Asprey: All right. I got it. Beautiful. On that crazy, trivial note about one of the side effects of fasting, we'll end today's show of Bulletproof Radio. Guys, it's always a pleasure. Thanks for the work you're doing.

For people listening, you know what to do. This is a book that's worth reading. You've probably tried a Bulletproof Intermittent Fast. It happens when you have Bulletproof coffee for breakfast and nothing else. It's pretty easy. You know how painless it is. Try a longer fast. I would recommend for the first few days, use your Bulletproof coffee because ... Well, I'm lazy and it works for me, but if you do just a plain old water fast and you go through the first few days of high ghrelin levels, it's okay, too. It builds character, if nothing else, to just resist some urges for a little while.

This should be a part of your ... At least your annual self-maintenance tasks. You take your car in every year to get the belts tightened, and whatever the heck else you do with modern cars. Get the batteries ... Watered. I have no idea. Cars keeps changing. The bottom line is, you should be doing the same for yourself, and fasting for at least a few days every year belongs there, and maybe more often than that.

Jimmy and Jason have done the world a favor by writing a book about it that really focuses in on it. If you care about the stuff that you've heard about on the last 350 episodes of Bulletproof Radio, this is right in the middle of bio-hacking, and it's something that's worth your time and energy to read. Head on over to Amazon, pick up the book, which is called The Complete Guide to Intermittent Fasting by Fung and Moore.

All right, guys. Thanks again.

Dr. Jason Fung: Thank you.

Jimmy Moore: Thank you, and don't miss our new podcast coming out in January, Fasting Talk.

Dave Asprey: I forgot to mention that. Fasting Talk.

Jimmy Moore: You did. Fasting Talk.

Dave Asprey: All right. That is the final thing, in January, Fasting Talk, and I'm guessing - this is my psychic abilities here - 40 years of Zen training kicks in, you're going to talk about fasting.

Jimmy Moore: You guessed it. We're actually going to answer listener questions. If people are familiar with my show on Thursdays called Keto Talk with Jimmy Moore and The Doc, it's going to be the same kind of format, exceept we're going to add in some patients of Dr. Fung's, along with Meghan Ramos, his sidekick in crime with the fasting. They're going to alternate, basically, every other week, Dr. Fung and Meghan, along with patients, so that we can answer questions from the real world perspective, because you asked some pretty real world questions today, and we'll answer those with expert knowledge.

Dave Asprey: All right. That's called Fasting Talk. It comes out in January. That's going to be a cool show. Thank you, guys.

Jimmy Moore: Thank you.

Dr. Jason Fung: Thank you.