Paleo Solution - 320

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Robb Wolf: Hey folks, Robb wolf here, another edition to the PaleoSolution podcast. Today's guest is Doctor Jason Fung. He is a Toronto based nephrologist, who's the founder of the website Intensive Dietary Management. He is also author of the amazing, recently released book *The Obesity Code.* Doc how are you doing?

Dr. Jason Fung: Very good, thanks. How are you?

Robb Wolf: All good here, All good here in Reno. Funny enough, we have a Reno connection via the Dr. Jim Greenwald who heads up the Reno risk assessment program so he has a way of ferreting out everybody who's doing good work. I had seen a number of your lectures like the multi part series on obesity I think maybe about 6 months before Greenie made an introduction to us via email. So I've been following your work already and then he managed to track you down and try to rope you into some of our team. So it's an honor to talk to you via podcast.

Dr. Jason Fung: Well thanks very much Robb. It's terrific to be here.

Robb Wolf: Doc, we were chatting just a minute before we started recording and you mentioned that you come from a very traditional medicine background. Talk to folks a little bit about your background, the background of your peers and how you have maybe retro engineered some of the problems that we're facing with regards to obesity. The fact that you're an nephrologist is just awesome in my opinion because one of the largest challenges that we face with the type 2 diabetes and blood sugar dysregulation is failure of the kidneys at some point or complications there. So I think it's fascinating that you are piecing things together in a way that It really makes a lot of sense to me.

Dr. Jason Fung: Right. Yeah, that's exactly where I started from right. So kidney disease, the most common cause by far and away really is type 2 diabetes. The thing is that we kind of come at it from a very, very medicine based approach which is trying to find what drugs that work and surgery and technology like dialysis machines but in the end it's not that. None of that actually helps and that's the real paradox, right?

So we have more medications, we have more surgeries we have this, we spend more money but we don't get any better, right? This is the whole

problem. So you see it in the dialysis population is growing, growing and growing.

It's the same thing with obesity and the same thing with type 2 diabetes. It's growing, growing and growing and yet at the same time you say wait a second, we're smart people right? We should be getting better, and better. How can we be getting worse and worse, right?

Really, it speaks to the fact that we got the entire wrong approach. It stems from an old fashioned view of medicine. If you go back to say the 20th century, the 1900s for instance the major problem is infection. So we came through medicine with this idea of antibiotics right? So something is wrong, you take a drug, and you get better, right?

And that worked really well for things like pneumonia and tuberculosis. We cured a lot of those problems, but we have the same kind of attitude towards obesity, type 2 diabetes and then down the line kidney disease which is that oh, if your obese let's see which drug you need or if you have type 2 diabetes let's see what drug you need, right?

So we come to this kind of one disease one pill sort of model and it totally fails right? Totally fails right? Because all the obesity drugs they're terrible right? And these type 2 diabetes drugs they're really not a whole lot better. So we take these drugs. We take insulin for type 2 diabetes and so on, and yet the numbers of diabetics get worse year after year. They don't live any longer and we're not preventing any heart disease. So how can a disease that is actually hundreds of years old be worse today than it was a hundred years ago? That doesn't make any sense right?

That's like saying oh, we're going to take a computer from the 1950s and it's going to be better than my Mac book.

Robb Wolf: Right.

Dr. Jason Fung: Well that's just ridiculous right? So obviously we took a wrong turn there and where the wrong turn was of course was that a lot of the diseases that we have currently have their roots in nutrition and nobody seems to care about that. As doctors, we care about what's the latest and greatest drug, we care about what's the latest and greatest surgery.

So that's where I started to look at things again and that led me to think about obesity because type 2 diabetes of course is very highly associated with obesity. Here's the other paradox. So we have a disease like type 2

diabetes and we say that it's chronic and progressive and you see this all the time.

The American Diabetes Association has it on their website. It's a chronic disease, it's progressive, you got it, there's nothing you can do about it. But at the same time we know that if you lose the weight everything goes away right. So if you have somebody that goes to me and says well you know I lost 50 pounds, I took myself off my medications my diabetes is gone.

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I'll say good, good for you. Not hey you're a big liar right? It's chronic and progressive, right. So we know instinctively that this is actually a completely reversible disease. So if you take a disease like diabetic nephropathy which is kidney disease due to type 2 diabetes, well the solution to type 2 diabetes and diabetic nephropathy is starring at you in the face right? If diabetes is what's causing your kidney disease, you got to get rid of your diabetes, right? If you got to get rid of your diabetes how are you going to do that? Well you got to lose the weight, right?

That gets us back to how are you going to lose the weight? The real key question which nobody ever asks is what causes weight gain right? Because when you approach it from a disease perspective right, if you say "oh, what's the cause of this disease? Well it's a bacteria so therefor use an antibiotic." Well that's so logical. So we come to the same conundrum which is that if you have a problem with weight gain, then you say what causes weight gain? And that's question nobody thinks about, nobody asks that question.

Robb Wolf: Doc, folks have shot around these a lot you know? And this is kind of where the high carb, low carb wars seem to continue to rage. You know we'll look at anthropological examples of cultures that eat a lot of carbohydrate and don't really develop the western degenerative diseases. We have great examples of low carb intervention, that seem to reverse these conditions. None of these things are really addressing ultra-refined carbohydrates that are hyper palatable and hit the dopamine centers of the brain and are addictive and whatnot. I feel like people have kind of fired around this topic but really haven augured into the real key mechanisms.

Dr. Jason Fung: Yeah, and that's exactly right. There's a probably multiple mechanisms and that's really what the book *The Obesity Code* is all about is to kind of say, okay let's answer this question of what causes weight gain, because once you understand that then you can say well how are we going to fix it right?

Because if you don't understand what causes it, you have no chance of fixing it right? This is the thing it's a multi factorial disease, right? Everybody wants to say it's all calories, calories, calories. Well if it was calories, if excess calories causes obesity the solution is simple, reduce calories. Of course that has been done for 50 years and have been a complete failure. So clearly the answer is not simply calories. There's a ton of problems, you know? The refining process part of that problem, truthfully.

This is where I kind of go off with some of the things. Like I look into the carbohydrates, the proteins, the insulin resistance, the fiber, the vinegar like fermented foods and incretins. Then the one thing that we talk around but nobody ever addresses is how does insulin resistance play into this entire thing?

That's one of the things that I deal with, which is I don't think is dealt with very much anywhere else. That is if insulin is the major problem, then it's not simply the carbohydrates right? This is where the whole carbohydrate insulin hypothesis falls down in my view, is that it assumes that only carbohydrates affect insulin and that simply is not true, right?

There's so many other things you have to take in to account all those other things, including cortisol, including stress, including sleep. All of those things affect hormonal path ways, because my favorite example is really sleep deprivation right?

Robb Wolf: Absolutely I'm right there with you yeah

Dr. Jason Fung: It's so fascinating because it's like well one we all accept that sleep deprivation causes weight gain, fine, but how does it do that? It has no calories.

Robb Wolf: Right.

Dr. Jason Fung: Theory is out, it has no carbohydrates either, so that theory is out too, right? So you have to be able to incorporate all these things and stress is the same. Stress does not have any carbohydrates, right? So therefore there's something else going on and it's really you have to look at the hormonal changes that happen that cause the obesity. That's where I try to piece together all those things. That's where if you understand more the mechanisms then you can see which one is your problem because for one guy, it might be that they're eating a lot of ultra-processed foods and therefore they have very low fiber, very high insulin stimulating, right?

For the next guy it might be a cortisol path way, chronic pain syndromes, fibromyalgia and therefore changing the diet, just isn't going to work right? You need to know what it is and that's where we get in to these arguments back and forth.

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Because if its sleep deprivation that's causing weight gain you know, changing your diet is just not going to help. You need to get more sleep right? We understand that in other diseases somehow we expect that one disease, this disease is one problem, one etiology for everybody, and I don't think that's true, right?

So you have people arguing back and forth. Well I got a lot of sleep and I lost a lot of weight so therefore everybody must be sleep deprived but that's not true. The next guy's problem is that he eats too much sugar so you need to fix that right? Giving him more sleep isn't going to help, right?

Robb Wolf: Right.

Dr. Jason Fung: Because his problem is with sugar and the next guy is eating too much processed foods, right? Therefore you've got to fix that problem. And that's where I think we need to take things to get a more comprehensive. Because honestly I look at some of these ideas like these people who have these, very unrefined foods, but they're very high in carbohydrates and they do great right? I mean like Okinawans ate a lot of sweet potato and there's no obesity, right? The Kitavans ate lots of carbohydrates and there's no obesity. Why is that true? The carbohydrate insulin hypothesis simply doesn't take that into account, neither does the calorie. The calories the worst theory in my view because calories has nothing to do with anything.

But that's where we really need to take it and understanding where obesity comes from allows us to get to the heart of it. A lot of it of course if you simply stick to unrefined foods it really takes care of the rest.

Robby Wolf: Addresses 90% of it yeah. Doc, it's possibly an over simplistic way of looking at this but for a long time I've had this sense that you said that the calories really don't matter, but kind of the goal is to get people to do some spontaneous caloric reduction or spontaneous reaction in food intake, which usually necessitates some hormonal change for that to be effective. So for me I've seen it, you know, we're trying to make it an either/or story. Yeah, the total caloric intake does matter but that can't really happen absents some sort of a hormonal shift unless we are just starving a person in a metabolic ward. What do you feel about that?

Dr. Jason Fung: I think so. See the thing about calories is there is definitely an overlap right? Because all calories to some extent raise insulin, but what's the chicken and what's the egg? Everybody thinks that it's the calories which is the ultimately what common currency is.

So therefore if you eat a hundred calories of chocolate chip cookies, it's the same as a hundred calories of salad with olive oil, but that's really ridiculous right? You'll get fat from eating the cookies and you're not going to get fat from eating the salad with olive oil.

So I think that they got the wrong idea but there's overlap there, because anything that contains calories to some extent, unless you're eating like pure fat kind of thing which very few people do, contains calories.

But what it means is that certain foods with the same amount of calories will stimulate insulin more and therefore be more fattening than others right? This whole calorie idea just, the body doesn't care about calories, so I don't see why we should care about calories, you know what I mean? The body has no sensor to say "Oh, you ate this many calories, right?" It does have sensors for insulin. It has sensors for carbohydrates that respond with insulin. It has sensors for fat for example, and it releases cholecystokinin. It has sensors for protein, releases peptide YY but it doesn't have sensors that say, "Oh okay, you've eaten a thousand calories, and therefore you should be full," it doesn't do that right?

Because what happens of course is that if you compare 2 foods with equal calories? A sugary big Coca-Cola versus a small steak, you can have the same number of calories, but the Coke goes down really easy and you're still going to want your dinner, whereas the steak, you are going to eat and be full.

Robb Wolf: The satiety signaling right, right.

Dr. Jason Fung: Exactly, so there's a huge difference. The satiety signaling is completely different. So why do we pretend that the calories makes any difference? It makes a difference how much protein you have because the satiety signal responds to protein. It matters how much fat you have because it responds to that and the volume of food also too. So if you eat really, really bulky food like lots of fibrous vegetables, there are strength receptors in the stomach which signal you to be full, right? So yes, it does make a difference, the fiber makes a difference but the calories themselves, the body doesn't give 2 shits about calories, right?

Robb Wolf: Right.

Dr. Jason Fung: So we shouldn't either, right? You have to break it down to what the body actually cares about which insulin is signaling, which is peptide YY cholecystokinin, all these sorts of things.

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That makes more physiologic sense than calories, it's so simplistic. I just find it hard to understand how seemingly intelligent people can still think about calories.

Robb Wolf: Right.

Dr. Jason Fung: It really boggles my mind. Like you know if I had 2 things with the same calories in front of me as soon as I put them in my mouth, the metabolic, effect is completely and utterly different, right? I eat sugar, the effect is lots of insulin middle satiety, if I eat the steak you know lots of satiety, no insulin. Like it's totally different. So why do you pretend that these 2 things are the same, right? It boggles my mind. There's nothing the same about that.

Robb Wolf: Doc, something occurred to me when you were just explaining this. Nutritional scientists being kind of critiqued that it's very much in its formative phase. It's not like physics or geology that have these overarching theories that drive the together.

So I think in an effort to be quantified, you know which is something that we definitely need to do in science, its comparatively easy, relatively easy to weigh and measure the amount of food that we have and then calculate the calories. And then we get in to the whole bomb calorimeter story which is that really reflective of human metabolism and there's all kinds of goofiness that could happen there.

But I wonder if it's almost an artifact of nutritional science attempting to be both precise and accurate, and you know to be a more formalized science. But the body works on such a nonlinear fashion that that's a data point that just confuses more than that it informs.

Dr. Jason Fung: Yeah I think you're right. I mean that I think that the whole calorie thing got a boost when the whole saturated fat and total fat thing came around because of course fat became bad. Then they said why is fat bad. Well it's really calorically dense. So I think the whole calorie movement got a huge boost in the '70s from that whole "let's figure out why fat's so bad for us" when it really wasn't that bad for us, right? But they needed to say something.

I think that's where it also came around that one it was kind of seen to be much more precise than scientific, even though it really has no roots and physiology at all. The thing about calories is that it has that kind of basic appeal to people that oh, it's the first loft of thermodynamics. But any time anybody says that I think, "Oh, you just haven't thought much about it right? Because I always use the example like the problem is that it's the calories are simply the proximate cause? That's what happens, just before as opposed to the ultimate cause.

It's like a plane crash right? So if you're trying to figure out why a plane crashed, you would say well, that's simple. The law of gravity says that it's more gravity then lift. It's the law of gravity. It's not just a suggestion right? So therefore in order to prevent crashes, you need bigger wings, or less heavy and everything else is silly.

Okay, yeah, but that doesn't even make any sense. Of course the law of gravity applies but if the problem is pilot error, you've got to fix the pilot error that's the ultimate cause, right? So you get more pilot training and this is the same. We say oh, it's all about calories in and calories out. But the thing is that what's causing the calories in and calories out to be skewed in that way? The unspoken accusation is it's all about willpower. I think that that's where it's very unfair that we've given this advice to people, that is extremely bad. If you eat less and move more you'll do fine and if you don't do fine it's really your fault. But that's the same argument that you should get bigger wings or have a less heavy plane. You're only treating the proximate cause which is just useless.

Or you take alcoholism, well it's too much alcohol in or too little alcohol out so the answer is just to drink less alcohol. Well that doesn't take into account the fact that that it's an…

Robb Wolf: Addictive substance and…

Dr. Jason Fung: Exactly. So if it's an addictive substance, you got to treat the addiction not just say, "Oh, that's the alcoholic first law of thermodynamics, you know the alcohol can't come from thin air" and then try and belittle those people who keeps saying, "well that's just the proximate cause fella you don't really understand what you're talking about."

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This is the thing, right? So if it's a poor family supports that is causing the alcoholism, treat the poor family support. It's the same thing. We assume that the ultimate cause is somebody has a weak will right? I don't think that's true. I don't think that's true at all.

I don't think that the cause is much deeper and we have to start looking really at these deeper causes and try to address them. It's not just one right? There's probably multiple causes and that's where all these kind of arguments go back and forth and we have to try and find some common ground.

You know the low carb people say, "Oh," and the low fat people say, "No, no, no" and there's these people that say you know? "Oh it should be paleo and like no, no it should be you know zone, no, no. " We get all these arguments but in the end if you look at diets that work, they all do the same thing. They all reduce insulin right?

That's the whole point is to say that yes there are multiple inputs into this kind of common pathway which is the hormonal pathway. Once you understand that, you can understand why different diets will work for different people.

Robb Wolf: Doc, there's a lot of contention about what exactly is the driver of insulin resistance. Historically there has been this instance idea of a down regulated receptor sites. One of the more in vogue ideas is this lipotoxicity within the pancreas itself. Again I kind of feel like all of these things actually have merits, I don't know if any singular entity is the answer but what are your thoughts on that?

Dr. Jason Fung: Yeah, insulin resistance is the one thing that we really need to understand how it affects obesity and what causes it. So I spend actually a bit of time on that, you know I actually write about this in my blog, as well. But what insulin resistance is and how we kind of have the wrong idea about it and what we can do about it.

Again it's the same thing, what causes insulin resistance? Because we know that the insulin resistance it causes high insulin and that can lead to problems right? But what causes the insulin resistance in the first place? And that's the real question and nobody has a good answer for you.

Everybody says well its inflammation, it's lipotoxicity, it's oxidated stress, it's all kinds of stuff but to me the answer is much, much simpler. Any time you look at a body, or some kind of natural system, you develop resistance in reaction to that substance right? So if you take antibiotic resistance what causes it right? Antibiotics. It's developed as a resistance to the antibiotics right? If you look at viral resistance, what causes viral

resistance like mumps or measles? Well, viruses because that's the natural reaction.

So this is the principle of homeostasis. That is your body wants to be in a certain space. If you move it somehow, it's going to try to resist it to get back to that space. So insulin resistance develops to resist excessive insulin, and it's like if you're listening to headphones right? If you have music on and it's kind of too loud , you go a little bit deaf, why? Because your body is resisting that loud sound. So the kneejerk reaction is actually turn up the volume so that you can hear, but that totally doesn't work because you turn it up, you get a little bit more deaf and you turn it up again and it's a vicious cycle. So that's exactly what's happening in our body.

If you look at antibiotic resistance, the kneejerk reaction, use a higher dose of antibiotics and you keep going up on your dose and on more and more antibiotics, but each time you go up you get more resistance. So the answer is not to use more antibiotics or turn the volume up louder. The answer is actually the exact opposite of what you'd expect, which is to go extremely, extremely low. So use very few antibiotics, turn the volume off right? That's how you restore sensitivity and that's the same in every single hormonal system. If you looked at hormones in the body, growth hormone, thyroid stimulating hormone, parathyroid hormone, cortisol no hormone is secreted all the time, why? Because of the body would just develop resistance to it.

So if the body, did that then, you will quickly all get insulin resistance because we all secrete insulin. But what happens is you secrete it in a burst and then it goes back to normal. So it's like you're in a dark room for example say you go out in the sunshine after being in the dark room, you're like blinded right? And then as soon as you stay there for a while it just looks normal. So what you see is that you're developing resistance. So what your body does in essence is keep you in a dark room all the time, and then once and a while it flashes these bright lights and it looks super bright, but then you go back to that dark room.

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So that's how you maintain that sensitivity, keep the levels low, but we've done the opposite. So if you have insulin resistance we just give people insulin for example, and it will go on a vicious cycle. Because if you have insulin resistance it's going to cause high insulin levels, and those high levels, are going to cause more resistance. More resistance, more insulin, and you keep going round and round and round, and that's why, obesity is a time to tend phenomenon. People who are obese for decades, they have been going around this insulin resistance cycle for

decades right? And then you change their diet but this resistance cycle is still keeping their insulin levels high. If you don't do anything about it, and this is this whole biggest loser problem, right?

Robb Wolf: You just wrote a fantastic piece on that yeah.

Dr. Jason Fung: That's exactly what their happening right? They lost the weight but the insulin resistance cycle, they didn't touch it. So what happens is that that's keeping the insulin levels high. If the insulin levels are high, then the body wants to store fat, and therefore their metabolism goes down if their eating less right? And that's the whole problem.

So this is the resistance is actually crucial and again it gets to the point that if you have been obese for a long time, you're going to have a lot more trouble losing weight. Everybody knows this, but again if you look at calorie theory, carbohydrate theory, they don't touch this right?

Because if you cut your calories or cut your carbohydrates, you should be able to lose weight at same rate, if you have been obese for 10 years, or 10 days. It's not true, right? Nobody thinks that's true but nobody explains it. It's because of this insulin resistance.

Same as the fructose, where does fructose come in right? It doesn't stimulate insulin, so why is it so bad? Well it causes insulin resistance directly, that's where its toxicity lies not on the short term but in the long, long term and that's what I explain. That's why I have to understand why sugar really is just so bad right? If you look at epidemiologic study, every time sugar comes in like obesity just explodes and all this kinds of stuff.

Robb Wolf: Doc, maybe to help folks it something that I still continue to try and wrap my head around. So in an example like the Kitavans or the Okinawans who are eating a high carbohydrate intake, they are just simply disposing of that glucose efficiently without that much insulin, relative to a westernized population for whatever reason whether it's a stress or sleep deprivation, or maybe some gut dysbiosis in which they are just not disposing of those carbohydrates, effectively.

Dr. Jason Fung: Yeah, it's 2 things, 1 is that you have to realize that the Kitavans is probably an easier example because they've been studied a little bit better right? So they eat a lot of root vegetables, they have 70% carbohydrates, but when you measure their insulin levels they are extremely low right?

So they were at less than 5% compared. They are at the 5 percentile compared to a Swedish population which means you can eat a lot of carbs, and still have very low insulin. Because they have low insulin, they have virtually no obesity so that makes sense. But if you look at what they eat it's not bread right? And this is the thing, there's no fructose. So if you look at all the factors that kind of tie in and it's hard without a diagram which I have in the book. It points to all the kind of contributing factors but if you look at the ways that they're different, 1 there's no fructose so there's fatty liver, right? So there is no insulin resistance.

They basically cut that whole thing out. There's none of the snacking all the time which I think is a key contributor to insulin resistance. So of the 2 major paths which is the first major path is carbohydrates but the 2nd major path is insulin resistance, it totally cut out that second pathway right? So it's gone. So they're not going to get a lot of insulin resistance. They're not going to get a lot of obesity but then you go to the carbohydrates and to animal protein is the contributor and they have very little right? Fiber is very high, right and fiber is a protective factor and fermented foods and stuff is very high right? So there's lots of ways that they eat those carbohydrates.

Again all carbohydrates are not the same. If you look at beans for example, so you can take 2 carbohydrates 1 amylopectin which is found in wheat which is amylopectin A and you can have beans which is amylopectin C. If you look at the glycemic index of the 2 they are way different right? So one is very high, and beans are very low. So again it's not simply that it's a carbohydrate therefore the bean is the same as the white bread, they're no. They're completely different right? But if you look at the insulin effect, they have very little insulin effect and they have many ways that they actually protect themselves against the development of obesity.

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They're not eating at like midnight and then getting up and forcing themselves to eat a bowl of cereal. That's not what's happening. So those are the things that we do that contribute to the high insulin and contribute to the insulin resistance. But they have so many ways that they're not getting this.

The only thing they're getting is carbohydrates. The same thing was shown in the inter map of the 1990s where all the Chinese people were eating super high level of carbohydrates. It wasn't brown rice, it was white rice, I know because my parents lived there right? They never eat brown rice, ever.

Robb Wolf: Right.

Dr. Jason Fung: So, it's all white rice since World War II. It's been all white rice but their intake of sugar was super, super low compared to the US. So why is that true? Well because they don't get fructose, they don't get insulin resistance, not eating all the time.

Again they eat a lot of vegetables because it's all rice and vegetables so they're getting a lot of fiber you know? So there's lots of different ways that they protect themselves and there's no obesity. But now they add the sugar they add the refined foods and the diabetes is just exploding. Obesity is exploding in China. It's like a total catastrophe over there right?

So they've changed in a bad way to the western diet so they're kind of paying the price unfortunately. But in the '90s you can see that you can eat a diet that's very high in white rice but again if you were to look at their insulin levels they're probably protected against it right? That's the whole idea. That you have to be able to get a theory that reconciles all these kind of disparate…

Robb Wolf: Vectors. Doc what about someone like myself where I'm pretty lean. If I eat on the lower carb side of things you know 100, 150 grams a day, I feel pretty good. I'm lean, I don't have truncal obesity, my fasting insulin levels are good.

Even if I start titrating the carbohydrates up even from beans and sweet potatoes and stuff like that, there are supposed to be these safe starches, I just feel terrible. I sleep pretty good. I do some stress management stuff. I mean I've got multiple businesses. I've got two kids and everything so stress could be a factor there. Both parents developed type two diabetes pretty early. My 23andme genetic testing suggested that I am particularly prone towards type two diabetes. What do you feel like is going on with me potentially?

Dr. Jason Fung: Well for sure genetics plays a large role and I kind of talk about this. If you look at obesity it's actually very interesting but about 70% of obesity is genetic. So that explains the kind of interpersonal differences why one person might be obese and the next person not. But it doesn't explain population obesity because populations, you know the genetic makeup hasn't changed that much over 50 years right?

So definitely from a person to person standpoint, the major difference is actually genetic but then we all react differently to things. We all have

different food sensitivities and things that we do better with and that's why in my program, we don't really have a set everybody should do this. You almost kind of have to tailor things, because some people actually don't feel so good on very low carb. They feel crap.

And you know if you don't work with a lot of patients you tend to be more dogmatic. This is a lot fun. Academic are always very dogmatic *[Indiscernible]* then you get out into the real world and you see that there's all kinds of exceptions. You know some people on low carb I should tell them oh you should be low carb because generally in Canada and in the US carbs are very highly refined. There's not a lot of people eating sweet potatoes.

So when they say carbs, it's usually like corn meal and bread all highly refined terrible stuff. So that's why I say low carb because it's something that people understand but you don't actually have to and some people just feel awful. You think now that doesn't make sense and therefore you have to go back and say let's find something that works because in the end you don't really care about the theory that much. I want to find something for this guy in front of me that works and that's the thing.

If you become too dogmatic about stuff, you're usually wrong in cases. Some people they thrive more on that stuff and the thing is, the truth is that almost all unprocessed foods, people survive very well on. Once you start processing the hell out of them then you get into real trouble. Because you strip away all the protective factors, you take wheat berries and you'd take away all the fiber and you take away all the protein, you take away all the fat and all you've got is pure carbohydrate then you pulverize it into very fine powder so it can be absorbed super-fast.

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And then it's like oh, where's the problem? Well there's a lot of problems on a lot of different levels here right? So the super high absorption for example like that's the same thing with whole wheat. Well it's still super refined. You're still pulverizing it into this fine dust that you would absorb much faster than you would with a natural wheat berry for example.

You've taken out all the fiber in it. So there's lots of different ways you can understand this sort of thing but for you, I mean it may simply be that your body is more tuned to carbohydrates. It does take a little bit of adaptation. If you don't have to I say always keep your goals in mind because why follow a strict diet unless you need something to change?

If you have diabetes sure then you need to change whatever is you're doing is wrong you need to change it. But if you're doing fine on

unprocessed carbohydrates so you could be 70% unprocessed carbohydrates for all I care, you'd be all fine. You'd be like a Kitavan or an Okinawan. So why do I care?

The key is that if you're 80% carbs is bread and muffins and yeah there's probably going to be a problem and I can see where the problem is going to lie then I'm going to change that to something else that you would find tolerable.

Robb Wolf: Right, Doc. do you have an engineering background?

Dr. Jason Fung: [laughs] I wanted to as a kid

Robb Wolf: Okay. It's just interesting because I'm fiddling around with my second book and actually one of the sections the intro was talking about you know I did this Google search controversies in engineering. Really the controversies were around moral topics you know if my work could get parlayed into weapons research, I might have concern about that.

You know nobody was debating about should you use rebar with cement or concrete in bridges. Like all that stuff is pretty vetted out but medicine seems to be almost immune to the process that has made engineering and physics really successful of this like you know test it, test it, test it and see what the best outcomes are.

Use some overarching theory but then just basically retro engineer what we have here. You know in the case of like elevated insulin levels what do we need to do to fix that? If somebody has a sunburn then the solution is take them out of the sun and meter their sun exposure to the degree that they don't get a sunburn.

And then if your insulin levels are elevated then you need to find some way dietary and lifestyle management to get your insulin levels to a point where you don't show disease state. It seems pretty straight forward and it may be highly individual based off of genetics and individual circumstances but that seems to be crazy talk.

Dr. Jason Fung: Yeah exactly. That's my thought exactly because it's like nutrition particularly it seems to be immune to any kind of logic because the thing is that you got to go back and say okay well our strategy for the last 40, 50 fifty years is low fat low calorie right?

Nobody denies that. That's been since the 1970s low fat low calorie. We all grew up on it and things didn't work out. Obesity is exploding, type 2

diabetes is exploding. So no matter what you think that advice is bad. That's just fact.

Robb Wolf: We have the results there. We have our experiments, yeah.

Dr. Jason Fung: We tested it and it was bad really bad. And yet we say that and all of the sudden you're some kind of internet crazy guy. It's like, "Oh yeah, the dietitians go crazy because you should be you know 50% carbs and eat that bread and jam in the morning with orange juice." It's great right and like okay, wait a second here. Let's just apply a little logic.

Whatever it is we've been doing up to this point has been bad right? That has to be our starting point. How are we going to change it? You know that to me is logic but you know you say stuff like this and there's a lot of doctors right? There's a ton of doctors in this whole Biggest Loser you saw. It's all about calories and this and that and it's like okay well we should really go back and find out where this advice is bad and redo it, right?

And whether you do something else anything else at least you should give it a chance as soon. But as you start talking about oh, there's something other than calories that causes obesity, all of a sudden you're labeled as some kind of freak especially within the academic centers. It's like wow you guys, this is like a logic free zone. You know it doesn't apply. It's like oh my goodness. Nowhere else in society would you kind of accept this sort of horrific, horrific result other than like communism or something

[00:40:10]

Robb Wolf: Right, right. I was just going to say the government was pretty good at that so yeah, yeah, it's funny.

Dr. Jason Fung: *[Indiscernible*] Communists

Robb Wolf: Doc, what can folks do as far as like tracking both subjective and objective measures of where they stand on this spectrum? Like I have recommended the folks that when they play with their meals like if they eat a certain meal and then they're immediately hungrier, they're really hungry, shaky, melting down. I call it hangry they're both hungry and angry you know within an hour probably too many carbohydrates for them or the wrong type of carbs and you need to modify that. I have some go-to's for blood work what are your go-to's for both subjective and objective so that the people know they're flying within the right limit within their insulin?

Dr. Jason Fung: The two main ones that I look at and I'm more kind of disease focused because I tend to treat people on very severe spectrum. So if you look at my practice, the intensive dietary measure program it's heavily skewed towards people with diabetes and it's heavily skewed towards these people that you know a hundred units of insulin a day kind of thing because those are the people that have higher Swiss.

So I actually treat them more than just than a person who needs to lose weight. To me what I look at and what I consider important is waist size is actually one of the most well validated measures right. So as long as if you're tracking yourself both the weight and the waist size are actually very important but of the two I think the waist size is actually more important and the hemoglobin A1C is the other thing that I track which is very important.

Now obviously if you have a normal A1C then it's not going to be very useful marker to you but again that's why I say for me it's a little bit skewed. For people that just say weight loss there probably isn't much in terms of the blood work. You can use fasting glucose or fasting insulin as a good marker. If you're not on medication then it's a pretty good marker of insulin resistance but waist size and overall weight is what it is.

Again, I always say keep in mind of your goals. So if your goal is to get off of your diabetes medication then target yourself towards that. If your goal is to get a certain weight then you target yourself towards that. Because there's lots of healthy people who are overweight. You check the bloodwork and there's no diabetes, there's no fatty liver.

So there's lots of healthy fat people but if their goal is to lose weight then obviously the most important thing is the weight and everything else follows. There's also thin people who have type 2 diabetes and again it's the same thing right? The weight doesn't matter so much to me. To me the most important thing would be the hemoglobin A1C, the fasting glucose that kind of thing.

So you know everyone has a bit of a different goal and whatever your goal is that's what you should target towards. Again I have general guidelines but for each person we have to try to work with them because we can't just say, "Oh you know we should eat like all quinoa." It's like yeah quinoa's great and stuff but if you're not used to it then that sort of diet just isn't going to work because if you're of a certain… Like if you are Asian and 80 years old you're not going to change your diet to all quinoa.

So you got to work with what they have and say okay well, there's two things you can work with. One is the foods that they eat but two is also the meal timing. We always forget that. We always change the timing like introduce periods of fasting. Those are all such a traditional way of weight management. It's probably the oldest dietary intervention in the book. Add a few periods of fasting, get your weight down, get your sugars down. You can do that these are all variables that you can manipulate and they help. So there's the 16:8 fasting that some people talk about. There's the five to two diets. There's all kinds of possibilities within that meal timing schedule that most people don't even think about.

It has to be three meals a day. It doesn't have to be three meals a day. It can be one meal a day and if you don't want to change your foods maybe you should just eat one meal a day of those foods that just aren't that good for you right? You'll still benefit.

Robb Wolf: Doc, on that I know that you're a huge fan of fasting and appropriate protocols. What are the situations where fasting might be inappropriate? So you've talked about cortisol. If we have a real type A coffee guzzling individual is skipping that breakfast it's going to be more problem than benefit or what are your thoughts on that?

[00:45:10]

Dr. Jason Fung: There's actually very few people that it will be really contraindicated in children of course, pregnancy, and breastfeeding. So if you're severely underweight so a BMI less than eighteen and a half yeah then I'd probably won't do it either and that's just common sense stuff and almost everybody else could fast because we're not talking about doing 40days and 40 night right? You can fast for like 18 hours. So from say 8:00 pm 12 noon right? You skip breakfast or even 24 hours where you skip breakfast and lunch. We've all done that in some point in our lives because we got too busy and we worked right through. We've all done that and we didn't die right? It's fine.

If you think about it what really happens during that say 24 hours of fasting, you go from dinner to dinner. What really happens? Well your body will start to burn off some of the stored glucose which is glycogen in your liver great. What else happens? Really not much. So what's wrong with that? Tell me what's so bad about it that we have to avoid it like the plague.

I've looked at probably every study in fasting and truthfully fully we've done fasting for 2000 years minimum at least since the time of Jesus Christ. So therefore if the problem is going to show up we'd have known about it like a thousand years ago. There aren't that many problems.

There are problems when you start going into extremes and you know 100- day fasts and medications and stuff. But for the regular person a couple of fasts here and there aren't the worst thing in the world. In fact it can be very beneficial.

So Michael Mosley who wrote the 5:2 diet I think it was called the fast diet in the US. He has lots of people who do it very well, a lot of diabetics we've put on similar schedules and they do amazing. It's like okay what's wrong with that? There's nothing wrong with it actually. This is the way we're built and this is the thing I found fascinating about Paleo is that really if you go back to the kind of Paleolithic times, fasting was probably a kind of.

Robb Wolf: Just baked in the cake.

Dr. Jason Fung: Yes exactly. It was one of these kinds of "I didn't really want to do it but there was no food so I had to fast." So exactly there probably like weeks at a time that they didn't have food there's winter and there's just no food around.

I think there actually is a huge amount of benefit to the fast which people have always kind of recognized because it's always been called like a cleanse. You know and then it gets couched in this kind of spiritual terms but the idea is always that you let your body clean itself out let it heal itself and the truth is that it does exactly that for diabetes and for obesity for sure.

Robb Wolf: Doc. I've seen some pretty good literature pointing towards ketogenic diets being beneficial for both diabetic nephropathy, type 2 diabetes. It is another route into reducing insulin levels. What are your thoughts there? I mean just a tool to be used or a cure all that some people claim it to be?

Dr. Jason Fung: I doubt there's any cure all's not even fasting.

Robb Wolf: Other than fasting.

[Laughter]

Dr. Jason Fung: Yeah, not even fasting but ketogenic diets are really just the kind of the extreme form of low carbohydrate diets, right. I think that they are very useful in certain places because a lot of what we see in North America anyway is really chronic excess refined carbohydrates.

So therefore if that's the real problem then going the opposite doing zero refined carbohydrates will work. So I think that for a lot of kind of North American or Western sort of obesity diabetes, it actually makes a lot of sense to me. But it's not the only way to do it. You can do low carbohydrate diets. You can even do high starch diets.

But even those people who talk about high starch diets they're not talking about sugar and white bread. That's the whole thing. They're talking about beans and stuff like the Mapi Diet. I don't know if you ever looked that stuff but it's all like beans and stuff and I looked at it it's really high in carbs and I said, look at this diet. There is no doubt that you would do great. It's all vegetables and beans and stuff and it's like look at it there's tons of fiber, there's no refined carbs. Everything is unprocessed and it's got to be good. Like I have no doubt that it works and the studies pointed out. It works great and it's high carbohydrates, right.

Yeah. I think the ketogenic diet is certainly a tool. I think all of these are tool even these kinds of Mapi Diets and fasting. They're all tools and you've got to find the right tool for the right person and that's the key when you're working one on one with people.

[00:50:09]

Because fasting will work great for a lot of people but there are people that just hate it and they will not do it. Therefore it's not going to be a winning strategy.

On the other hand I have people who'd start fasting and is like oh this is like so easy. It's like the best thing so then it's like yeah, this is going to be a strategy that works for you.

So you have to work with people and fine tune it. But the more tools you have, the better you are. You have to have that understanding of obesity as to what's going to work and what makes sense. Low fat diet pretty much you know strikes out on all of these and that's the real problem. It doesn't work for anybody and that's a real issue.

So Ketogenic, Paleo, Mapi, Fasting, all of these are great tools and we have them at our disposal once we understand what causes obesity and we can apply them to different people say use this. Well if you don't like that then use this. You know that's the way to get people better.

Robb Wolf: Right, I love it I love it and you know this is one of the ironies too where the nuance is really where the rubber hits the road. I guess beyond just you know just sleep more, do some exercise, skip breakfast occasionally

and then eat some whole foods. That that covers a lot of ground but then to dig in a little bit deeper, we have a lot of nuance there and we need to be willing to not throw out all the tools in our tool basket. They always…

Dr. Jason Fung: That's a little bit stunning is that the most powerful tool the fasting which is obviously you can't go any lower than zero. Even talk of stimulating insulin. We can't go lower than fasting because It's absolute zero right? That's absolute zero of insulin. You're taking in zero right?

So therefore it's probably the most powerful tool and we've totally thrown it out for no reason. It's actually funny because I'm writing a book that's coming out on I think November and it will be called "The Complete Book of Fasting" and it's like it's funny because a hundred years ago they would of said what are you going to write? You know don't eat period. It's done.

Now people have kind of so lost that art that you could write an entire book and this is kind of based. I mean we've been put more people on fasting than probably anybody in the world truthfully. It's kind of like our experiences more than anybody but a hundred years ago when everybody used to fast here and there, everybody knew all these stuff and there'd be no reason to write a book about it.

Now nobody does it. They think it's terrible for us and you have to point out all the benefits. You have to point out on what to do on, what not to do. There's an amazing number of questions that come up on how to do it, what to do, and stuff. So that's…

Robb Wolf: I would imagine some huge push back is going to come out of the mainstream dietetics seeing which is going to say that this will foster disordered eating.

Dr. Jason Fung: Yeah in fact there was a study about that "Oh it's going to cause anorexia and stuff." There is actually a study about that's specific of that. You know I always say Anorexia Nervosa is a psychiatric disorder of body image. To say that skipping a meal will cause Anorexia is like saying "Oh you shouldn't wash your hands because you might become obsessed with compulsive".

It's not really the same thing. Just because you do it doesn't mean you felt the psychiatric disorder. So when they studied it of course, it didn't cause Anorexia Nervosa and it doesn't make it worse either. I wouldn't ever put an Anorexic on fasting but if you did it, it doesn't make it worse.

So the thing is kind of ridiculous but you know these are the sort of questions that come up.

The funny part actually coming to Anorexia is that my guess is that 90% of celebrities in Hollywood use fasting because it works period. You don't eat, you will lose weight. It works great but nobody talks about it because everybody is afraid of being slapped.

Some people, "Oh, this lady is Anorexic, oh Jennifer Anniston is Anorexic." Nobody wants that press so they all shut up about it and what they don't understand is that they're actually doing their bodies a huge amount of good, right. You know I go into the physiology and there's tons of benefits lowering insulin, increase growth hormone, you know autophagy. There's a ton of stuff in there it was really beneficial.

But my guess because you know in Hollywood this is their business. They need something that works. They can't futz around with the low carb low calorie and low fat diet because it ain't going to work. They need something that works because their life depends on it. So my guess is that they all took fasting and some people have spoken about Hugh Jackman and you know he talks about fasting there's a few people who talk about it.

[00:55:13]

But my guess is that all of them do it you know before the Oscars. Nobody's eating another 5 days before because why? You look great that's why. You lose all that bloatiness and you lose a bunch of weight and you look amazing and that's the point it works.

Robb Wolf: Awesome. That's hilarious. No, I completely agree and I have fiddled with the 16:18 quite a bit and so long as I can time my fueling around my workouts, I do some old guy Brazilian Jujitsu. So long as I get the refueling time within the right bounds so that I you know like going in and brawling and having like a two hundred pound cop try to Arm Bar me is no fun fasted. So I do need a little fuel in the tank for that. But other than that it's worked really well.

It frees up probably about an hour in my day or more because I'm only doing two meals a day. So I don't have to prep, I don't have to clean up. You know all the rest of that stuff just using the time spent eating.

Dr. Jason Fung: Yeah, it's actually the anti-diet because it's actually not something you'd do. It's something you don't do. So the thing is that there is a huge number of benefits right. It doesn't take time. It doesn't take money. It doesn't take thinking about. It's like just don't eat, that's it.

A lot of the disadvantages like say you want to eat all grass-fed beef well that's great but it's really expensive so this is free. It saves you money

Robb Wolf: It's more than free. You get extra time; you get more of your life back so yeah.

Dr. Jason Fung: Yeah exactly and we should always cook at home and yeah it's great but who has time? You get more time. It doesn't take anytime. It give you back time. So it's almost Anti-Diet and that's why I say it's such a powerful tool that you could add to any diet, any diet you want whether it's low fat or low carb or Paleo-*[audio cut out]*

…diet but you can still fast on top of that. So it's so powerful. *[audio cut out]* anywhere. So if in one week you're really busy, you could do more and one week you can do less. It doesn't matter. It's not like you do the same thing every day. It's like life is not like that and fasting can fit in wherever you want it to. So there's just so many things about it that really have an advantage that nobody really thinks about anymore.

And that's where the power kind of comes in and that we can harvest these benefits for free. It's crazy to me that at least a quarter of our, you know, Greenie talks about this diabetes and cancer and all this stuff. This is all nutritional. These are nutritional diseases.

So if you think about the money that we spent treating these diseases and yet the cure for all of this is completely free, it's actually all within our hand. You don't need a fancy clinic, you don't need fancy surgery, you don't need anything. Everything is available right now. You just have to apply the knowledge. It's crazy.

It's crazy the amount of money that you could save diabetic medications. You can get everybody off of the insulin. You don't have to test the blood sugar. You don't get cancer heart disease and all these kind of stuff and it's all available right now to every single person for free. It's like that's insane, that's an insane thought.

Robb Wolf: Well we'll see if it catches on.

[laughter]

It's funny again because so many of these things again seem baked in the cake from an evolutionary standpoint seem damndably hard at times to get people to do it so yeah.

Dr. Jason Fung: Yeah. As I said to the people, I call the program the intensive dietary plan not the easy dietary plan.

Robb Wolf: Right. [Laughs]

Dr. Jason Fung: So like I always say my job as a doctor is not to tell you what's easy. I'm going to tell you what's going to make you better. It's not always going to be easy and this is a thing you have…you know there's a number diabetics that Greenie's been following and they're all non-diabetic practically now right and it's like wow. Within months, you can reverse like 20 years of diabetes. It's incredible because now we're in the right track. Now we know what's causing it, now we know how to cure it and we do it for free amazing, amazing results.

Robb Wolf: I love it. I'm really impressed by your work very excited to meet you in person at some point. I did not know that you were working on a fasting book so we'll have to get you back on the show when that one is ready to go.

[01:00:05]

Dr. Jason Fung: Sure. Yeah that's great. I have a couple of things that were all…I mean that's in the works and then one that's more specific on type two diabetes which is kind of planned for 2018 because *The Obesity Code* goes a little bit into it but is mostly about obesity and sets the ground work for it.

But then I speak specifically about insulin resistance and fatty liver and metabolic syndrome and again how it all ties together. Because that's the part that nobody has really worked out really well, how that all ties together fatty liver and all that. Gosh it's all the same thing. It's all the same thing so It ties together perfectly. So that's a few years from now hopefully.

Robb Wolf: Fantastic! Well Doc remind folks where they can track you down on the interwebs and also where they can pick up *The Obesity Code?*

Dr. Jason Fung: Yeah. So *The Obesity Code* should be available everywhere but Amazon is probably the easiest way to get it really and then online you can find me at www.intensivedietarymanagement.com. I also answer questions on also on diet Andreas Eenfeldt at www.dietdoctor.com. So there's a video series that we did together and on his membership site you can just ask me questions directly inside.

And I mean Andreas is an amazing guy. He's built this amazing site for like nine dollars a month you can get access to all these things that could

change your life. It's amazing for nine dollars a month if you fast Monday and skip your Big Mac meal that's your nine bucks right there. So you have get access to all this stuff. I'm on that site as well so yeah.

I post almost everything. Almost everything I have is available for free like all the videos on YouTube and stuff. It's all linked through my website so all the information is for free. The book is mostly just you know a lot of compilations and cleaning up the thing because blogs are easy right whatever you think, you just type it in.

Robb Wolf: You know that was the same method I did. When you did a lot of vetting, you figure out what the confusion is and then if you decide to consolidate it in book you then you figured hopefully a lot of that out before the thing goes to print yeah that's great.

Dr. Jason Fung: It's a lot better yeah. The book is a lot better but the information is the same but the actual… I was pretty… it's my first book right so I was kind of impressed there's a hell of a lot of work that goes between just the kind of stream of consciousness. So I just write whatever I think.

Robb Wolf: And just consolidating it yeah which makes me suspicious that you're this fired up to do two more follow up books. Usually after I get done with a book I want to like close my blog and go coconut farm after that. So you're clearly tougher than I am.

Dr. Jason Fung: I finished the manuscript on this one like almost a year and a bit ago. So it was a while. So it had originally been supposed to be all one book with obesity and diabetes. I said this book was supposed to be huge. So we broke it into two. So therefore that was really just the first part and then I got side tracked a bit into fasting because a lot of people said, "We want to know specifics." I thought it was pretty simple but apparently there's a lot of questions that's why we can't keep up.

Robb Wolf: The most detailed explanation about nothing ever other than maybe like some quantum mechanics stuff but yeah, yeah awesome.

Well Doctor Fung, it was awesome having you on the show I know this one has been on the books for a while but I really thoroughly enjoyed your book and love all of your videos. We will have links to all of that in the show notes.

Dr. Jason Fung: Oh, terrific. Thanks very much.

Robb Wolf: Okay. Will talk to you soon.

Dr. Fung: Alright, talk to you later.

Robb Wolf: Okay, take care, bye, bye.

[1:03:59] End of Audio