

Paleo Solution - 392

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Robb: Hey, folks, six listeners can't be wrong. Another edition of the Paleo Solution Podcast. Really, really excited for today's guest. I'm not sure why but the whole topic of type 1 diabetes has been something I'd been really concerned about, interested in for literally the last 20 years. It's an incredibly difficult and challenging condition to manage historically. It's mainly affected kids. I think there's a little heartstring tugging that goes with that.

Today's guest is RD Dikeman. RD is a theoretical physicist. His son David was diagnosed with type 1 diabetes at the age of nine. His son is now 14 and just thriving, just shows none of the complications that we typically associate with type 1 diabetes. He has normal blood sugars, normal phenomenal A1Cs, below five most of the time, and this is just unheard of.

You will discover in the podcast that fewer than one in a thousand type 1 diabetics have A1C below that 5.0 level. RD founded this group Typeonegrit which is a Facebook group. The average in this group is below five. The vast majority of the people there, the ones who don't have A1Cs like this are typically the newer folks that just haven't gotten things dialed in.

It's an incredibly important show. Type 1 diabetes, there's a lot to learn there both with regards to the propensity to head into type 2 diabetes which is a very common complication for the type 1 diabetic individual particularly the way that standard of care recommends that you just eat whatever you want and then cover things with insulin. It's a great show. RD is a great guy, leads by example. I think you're going to get a lot out of this. Please do share this one with friends, family and folks that you know that are struggling with that type 1 diabetes diagnosis.

RD, how are you doing?

RD: Hey, Robb. It's good to finally meet you.

Robb: Good. Great to chat with you. We were just chitchatting and I thought that we should press record on this because I was trying to remember when or how you and the Typeonegrit community first got on my radar. It's funny, I don't have type 1 diabetes, no one in my family does but I've known a number of people with type 1 and I've written maybe four, five blog posts over the years about type 1 diabetes and low carb diets and the Bernstein diabetes solution.

I got mauled by people. I mean, just eaten alive. So, eventually, it just kind of beat me down to such a degree that I dropped it. Then I found you, guys, in this robust thriving community of folks over at Typeonegrit on Facebook and literally, it was a little teary eyed moment. I'm like, "Oh my god, some people get this. They're doing it." Do you remember when I first popped up over there? Did I just start sharing stuff you guys were doing? I can't remember the back story.

RD: I think you were on the ball before my son was even was diagnosed. History will show that you are correct and I've had the same experience that you did as far as expecting the type 1 community to embrace the fact that you can normalize blood sugars by making some modifications to the food that you eat and was surprised early on in diagnosis after I discovered the ability to do, to normalize blood sugars, I was surprised at the negative reactions. But along the way, we picked up a few people and the snowball started rolling and getting bigger. The results now are sort of hard to deny. It's a different world than it was five years ago.

Robb: Man, it really is and it's so hopeful. There's some fascinating stuff on the horizon, the potential of some stem cell therapy to repair the pancreas. There's some interesting work around. But in the meantime, it's important to not have people develop diabetic neuropathy and blindness and lose digits and develop type 2 diabetes as a consequence of the poorly managed type 1 diabetes.

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It's crazy. I did an intro for the show but can you give some of the background? What is your background? You're not a physician. You're a super smart dude though but it's interesting the background you do have and the insights that a number of folks with backgrounds like yours are bringing to this health space. What were you doing and then what was the process of discovering the type 1 diabetes diagnosis and then maybe even describe -- You've got the whole family on board with this thing which is something that I had always recommended and people thought I was an idiot for that. Could you flesh out some of that back story?

RD: Yeah. That's a lot to unpack.

Robb: I know. That's probably a whole show right there.

RD: I know, I know, but I'll keep it interesting. When my son was diagnosed, his endocrinologist happened to go to the same school that my son goes to. There is sort of an immediate kinship. My son is pretty bright and he was nine. He almost died in the process of being diagnosed. Of course, he knew nothing. I knew

nothing about anything nutrition or diabetes and the physician missed his diagnosis.

Anyhow, when he was explaining to my son the day after we were in the emergency room and had been admitted, he started explaining to my son how to manage diabetes and he basically gave this time series graph of blood glucose showing that insulin makes the blood glucose go down and carbohydrate make it go up and you want to stay in a certain range, 80 to 180, he said. If you go above too high for too long, you're going to get diabetic complications.

He was honest, and he said including all the way up to blindness and amputation. And then too low and then you have hypoglycemia and you can pass out. He sort of explained. My son said, "I just won't eat carbohydrate then." I swear to god. And we all laughed at him because the myths were already well-embedded into my head.

Robb: But your son saw through it. He saw the solution.

RD: He sort of did. But my idea, when I saw that, Robb, was -- I'm a theoretical physicist but right now I work in -- I'm a research scientist and I work in real time signal processing. When I saw the graph -- And I build real time systems for a living for 20 years and have deployed them. When I saw that graph, I said, "Well, this is an automation designer's nightmare." I mean, absolute nightmare.

This is a problem that can be solved by automation. And so immediately the day we got home from the hospital I started to record and develop models of glucose and insulin based on the data that I was getting off Dave's blood sugar meter. Dave was in such bad shape. He stayed home for two weeks and I recorded everything and I immediately started to code up algorithms.

I did that for about a month and was giving Dave like bowls of oatmeal, as prescribed. Dave's favorite food treat back then was Starbucks cookies. I was doing things like dividing up the cookies into pieces and giving them every 20 minutes and trying to make a science experiment out of it. After about a month of that I was always getting a different result with the same experiment, the same time of day, the same starting point, same amount of insulin, same cookie and it would be a different result.

I couldn't wrap my head around it. And it would tease you a little. You'd get the same result and you'd be like, "I got it." And I'd go to my wife and she would just kind of roll her eyes. And she, in the meantime had, by the way, seen that this was failing and she had Googled low carb and type 1 and Bernstein's book came up. She bought the book and the book arrived 30 days after Dave was diagnosed.

I read the book and in about three or four minutes after I started reading the book, his law of small numbers was well explained and I realized what I was observing with my models were that the glycation and insulin actions on each other resulted in the stochastic process. And the Bernstein line is big doses of insulin, big doses of industrial or rapid acting carbohydrate result in unpredictable blood sugars.

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And predictability, when it comes to medication, and especially insulin, are the whole ball game. What my model showed was that once you achieved both insulin rates and/or carbohydrate rates above a certain rate threshold you got instability. We started looking at low carb in those models and what we realize was that certain foods and certain insulins would give you predictable results.

That just happens to be the Bernstein program. Foods like proteins, foods like fibers, vegetables, foods like nuts all have slow glycation rates. The insulin that Bernstein uses primarily regular insulin which is a much slower, milder insulin of what's prescribed for diabetics. The rate of insulin infusion is slow.

When you have these slow rates you get predictability. After that, we were sort of home free. Dave's blood sugars became manageable. It takes time. There's a lot of technical details in the whole process. We were able to get his blood sugar -- I could show you his first month of blood sugar. It's all over the place. I mean, the fact that they turn people lose with the recipe, it's amazing that people survive.

His blood sugars were between 40 to 400, and that's pretty typical for people who...

Robb: Holy smokes.

RD: That's right. The type 1 diabetic can with a mouthful or two of foods experience blood glucose levels beyond which any non-diabetic or pre-diabetic can experience. You can go from 80 to 400 with a couple of mouthful of grocery store sheet cake. And then you spend your whole day trying to get it back down again. You don't want to be up then down.

What we did was we basically instituted not just the food but the Bernstein protocol which has a lot of technical details as far as how to use insulin. Since then Dave's never had a -- As his blood sugar came down, there were some remnant glycated red blood cells but since then his blood, his A1C has never been above 5.0%. It's always in the high fours, mid-fours. He just had one that was 5.0% by one of these cheap home meters but his average blood sugar is

what we shoot for and that's about 83 milligrams per deciliter. The Bernstein line is he is as healthy as any of his non-diabetic friends. That's our goal.

Robb: You could make an argument he's probably healthier in many regard. Most "normal people" walking around don't have A1Cs that good.

RD: He passes the eyeball test. He is a young eagle. He's almost six feet tall now. His body, he's lean and ripped like a young 14-year old boy at peak growth velocity should be. And you can see his shoulders widening. You can see his jaw getting stronger. We've been working on his diabetes since he's nine so I feel like Dr. Frankenstein creating this perfect monster and then you turn him lose on the athletic field. He's so damn proud.

This kid, he is doing what no one ever thought was possible. He has this disease that he has to work on 24/7 because it's not like a said it and forget thing although it almost is with the Bernstein thing. He's going to be on the ball all the time. He needs help from us too. Nut, man, when you do it, the results are just beautiful. And he's not the only one now. There's hundreds, maybe thousands, of people doing it now.

One of the big advances was that in the social media communities, people are posting their results and the CGM graphs don't lie. You'll see some people with some luck with eating the cake and French fries but they'll post like a two-hour graph. These Grit people are posting weeks of graphs and they're getting not just slightly elevated blood sugars, they're getting normal non-diabetic blood sugars in the 80s, A1Cs in the 5% or lower, which is incredibly rare.

A1C at 5.0% for a type 1 diabetic is about one in a thousand. After six months or a year of practice everybody can get them easily. It takes a lot of work, on the one hand. I won't say it's easy but you're going to have to do the work anyway. Why not win and do it?

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Robb: I had to diabetic wound care on my father as he had -- which was type 2 diabetes. First, the toe then all the toes then part of the foot then all the foot and then below the knee amputation. Managing the stuff day to day is not easy but I tell you what, diabetic wound care is no walk in the park either. You either frontload the work and maybe avoid all those catastrophic events or you don't and you face some really horrific outcomes on the backend of that.

Again, I alluded to this a little bit. It's so frustrating. If you can disconnect from it, fascinating also. The way that type 1 diabetes is typically now managed, it is almost a guarantee that folks are going to end up both type 1 and type 2

diabetic. Can you talk a little bit about that process of this over correction, not living and dying by the law of small numbers, how that ends up getting folks into this insulin resistant type 2 diabetic scenario?

RD: Well, you're old enough and I'm old enough to remember a day when -- I can't remember being in K through six or ever any time in school when a mom would come in for someone's birthday with a big box of grocery store cupcakes from Kroger. But now, and I'm not the only one, everybody knows this, this happens all the time. Our food culture has totally changed.

In the old days, the type 1 diabetics were not told to eat all these food and just use insulin. But now that is the command. With the advent rapid acting analog insulins there's this belief that you can eat anything that you want and just take a bunch of insulin. What people have done with the new pump and CGM tools is they've optimized their insulin therapy.

You've literally got people, they'll take a big piece of cheese cake, eat it and then they'll stare at the CGM for the next four hours and if it goes up they'll press the button on their pump and take a bunch of insulin. If it goes down, they'll eat another piece of cake to get it from going too low or they'll drink a Coke or whatever they do. Riding this rollercoaster is just going to build fat.

What we now see, and this according to Joslin, this isn't my observation, according to Joslin, you've got about half of all type 1 children now developing double diabetes. So, the type 1 is not enough. Now, you're going to get this cascade of inflammation from obesity and insulin resistance and that's going to make your insulin therapy not work as well too for mechanical injected insulin reasons.

The comment from the Joslin research is just spot on which is if you tell somebody that they can eat what they want and cover it with insulin, you're creating a perfect storm for double diabetes. That's exactly what people are trying to do.

Robb: This is basically standard of care though.

RD: It is. The first time you see, when you're diagnosed and you see an endocrinologist or a dietician, the diets that I have seen people being put on are atrocious and for a small child, because things go according to body weight, it's unbelievable how much. You're literally overwhelming these small children with carbohydrate foods and insulin and you'll never going to get the--

I talked in the intro about how the main problem with type 1 diabetes is this law of rates. You cannot cover reliably and predictably these high glycemic rate

foods with these high rate insulins. You're never going to get them to match. You might get them once in a while but once you're going to go high, another time you're going to get low, eventually you're going to experience some severe hypoglycemia particularly if you have a young kid who's doing athletics and their insulin sensitivity is changing throughout a 24/7 period.

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So, the standard model of care is an absolute disaster. I mean, we got off of it within 30 days. When you get off of it, life changes in every possible way for the better. The studies that I've seen and the comments that I see on a daily basis are startling as far as the quality of life metrics that are improved. People are not in constant fear of hypoglycemia. They have more hope for the future. They feel like they can control their blood sugar.

It doesn't feel good to be up above 140 unless you get used to it, which is sad. You feel like hell. You feel crabby, bitter, wiped out. Like I said, you don't want be up then down. One of the problems that you talked about in the beginning is that I think one of the, let's call it reticence, the parents I think are reticent to try a low carb diet because I think they instinctively know that they're going to have to go on it too.

You can't all sit around and eat a big piece of cake and then not give that cake to your child. It doesn't work. You can't have constant temptation food in the house. What you have to do is you have to all do it together. You have to learn how to make replacement foods including cakes. You have to learn how to make a low carb cake. And as a parent, you have to demonstrate.

One of the biggest determinants of obesity in children is how obese the parents are. Parents set the example. You have to set the example. I haven't eaten any garbage food in five years. And guess what happened? I lost 50 pounds. I'm in the best shape of my life. I started lifting weights. The health benefits for the parents are available and will put a silver lining on what's a pretty dark situation.

Robb: I'm so glad you mention that. I think I've mentioned a time or two on the Typeonegrit forums where I'm doing a little bit of public therapy because in running gyms and being on the board of directors of a hospital or a medical clinic we've had a lot of folks that their kids either had or developed type 1 diabetes. And so you try to intervene in that honeymoon phase because there's an outside chance that you might be able to dodge the whole thing entirely if there's some aggressive intervention but that's hard to get the buy in on it.

And then just that kind of long term piece you lay out this case that the whole thing is going to be potentially pretty disastrous if the standard of care is

followed. The folks go away and noodle and then they're kind of like, "Yeah, we're good." They goose step along with that standard of care. It's just heartbreaking because you know where it's going to go. You hope the best for them but, I mean, it's just, unless the folks are really, really lucky, which I mean that luck doesn't happen. Like you said, one in a thousand type 1 diabetics have an A1C below five but yet virtually everybody in that Typeonegrit community has an A1C at that five or below level.

So, there's something really unique going on there. Man, I just am really glad that you mention that. It's just testimony to you, folks, that you saw that deeper psychology of the situation. It's like, okay, all for one and one for all and we're all in this. When you post what the whole family is eating and everything it's just so inspiring, just incredibly powerful.

RD: Thanks. Yeah. Well, and it's more than just that people won't choose the food because when you're diagnosed too your physician loads you up or the dietician will load you up on so many myths. They make it sound like if your child doesn't eat the crackers and the cookies and the chips and the potatoes, they make it sound like if you don't do this you're going to harm your child, for many reasons.

One reason is, for example, that the brain runs on carbohydrate. They'll tell people this. So, parents are afraid to not give their kid carbohydrate not realizing that the brain wants constant normal blood glucose and will actually be damaged.

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We now know that children already have detectable damage from hypoglycemia, already near diagnosis or at diagnosis. You can see the differentiation in the brain matter at diagnosis. The ADA published this research. So, that's just one -- I mean, I can probably reel off ten myths that you may be told at diagnosis. You have to, as an individual or a parent, you have to not only get away from the modern standard high carb diet, what you call in your book the hyperpalatable diet really which I love that term.

You also have to remove all these myths and your doctor is not going to be on your side. It is rare that we encounter people who have normalized their blood sugar in Typeonegrit with basically healthy eating. I mean, this is a meat and vegetable diet, Robb. There's nothing goofy going on here. You're going to get ripped if you eat meat and vegetables, I'm telling you, and you're going to thrive as a child.

Yet, the physicians will push back. They want you to be as high as possible not just because the -- I mean, first of all, most of them believe in this, that they've

learned in this too. Physicians don't get a lot of nutrition training, as you know. But if you're a physician, and this is the Bernstein line, and I believe he's right, if you're a physician and you've got a thousand patients and one dies from hypoglycemia, you're going to get sued.

So, you're going to try to keep those patients as high as possible and follow the standard high carb guidelines which have changed recently, by the way, now. The ADA has recently changed that and if you look carefully they allow low carb diets. I think they're afraid of litigation. If you aren't a physician, you've got to be -- I guess, it's understandable. You're going to be really defensive.

I mean, managing type 1 diabetes, it's a bastard. You're walking on a razor blade all the time. I think they have it totally wrong. If you're on a low carb diet and you're using small doses of insulin and you're using insulins which are much more mild and slow acting, you're not going to experience that severe hypoglycemia. That's probably the main instant benefit from being a low carb, person, is to remove that fear.

For example, someone that's following -- Let's suppose Dave has a friend who follows the advice of the dietician sent them down the tubes with. If he's on the football team with Dave there are going to be instances throughout the season where the kid has to drink several juice boxes and feels awful when he's experiencing hypoglycemia. That's just the nature of how injected insulin works. You're walking around this state of danger.

What does Dave do to treat hypoglycemia? Well, you can't totally prevent it. Being a type 1, you have to always be on guard. You want to minimize it. And then when you treat hypoglycemia you want to treat as effectively as possible to get back to target blood sugar. What does that mean? It means that Dave carries around glucose tabs. A four-gram glucose tab will raise, according to your body weight, it would raise Dave 20 points. Perfect.

So, if Dave slips down to 65, he could take the glucose tab and he'd be right back to normal. Or if he was in practice and he wanted to play defense a little bit, he might take two tabs and get up to 100. That's the ball game. I just send him off to school. He's got a little bag that he takes in his pocket with three glucose tabs for the day. And he'll come home and maybe there will only be two left in there, maybe they'll all be gone or maybe he'll have three left. It depends on how his day goes. But he doesn't have to eat--

Robb: Eat cake.

RDL He doesn't have to eat like, yeah, he doesn't have to take a cab to Kroger's and buy himself a piece of sheet cake.

Robb: RD, even this low carb terminology, like there's a, as we discussed on a back forum that hopefully none of the details ever spill on the interwebz about, but, man, there's a lot of interpretation around that.

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Some folks are in this protein-phobic, low protein, super high fat kind of deal. How does the Bernstein approach play out in this story? Because I have to admit, when I first entered into this and I really started looking around at what folks were doing I was still assuming that some of those hypos were buffered due to a robust ketogetic state. But that's not necessarily the case. Can you talk a little bit about the way the Bernstein model, which ironically looks a whole lot like a Ketogains model when you strip that right down? How does that look?

RD: Okay. It's really interesting topic, Robb. For your listeners, to understand -- Look, I'm a physicist. We approximate all physical problems as a sphere. Type 1 diabetes has a place for your listeners not just because it's interesting and they might know somebody but because, man, I have learned a lot about nutrition and metabolism by playing the role of Dave's pancreas or watching him do that. Because you see the instant effects.

So, what is the lesson for, say, a type 2 diabetic or someone who's trying to get healthy or what does Bernstein think? First of all, Bernstein treats type 1 diabetes and type 2 diabetes very similarly. His lessons in his book are sort of lost on the type 2 diabetes community and the low carb type 2 diabetes community. I think there's a big rush to go and reinvent everything without actually reading his book.

I know people are probably publishing books on diabetes and low carb on type 2 diabetes and probably don't understand his book at all. What Bernstein does is Bernstein treats insulin resistance and blood sugar at the same time. He wants a type 2 diabetic to normalize his blood sugar, begin reversing the complications which are almost guaranteed to exist, and he'll find them in his eight-hour physical exam.

A lot of people say, "Well, I don't have any complications. My doctor looked at me for 12 seconds and I took an A1C." Okay, well, Bernstein will look at -- He'll test you for about eight hours in his physical exam, basically. He'll test for a hundred complications and he'll find them. I'm sure that I had them running in the mid five likely before I knew anything about this.

Anyhow, what his strategy is to normalize blood sugars, to treat the insulin resistance. He treats the insulin resistance through weight loss and muscle

building exercise. He doesn't use what he would call meals of fat. He doesn't treat people with medicinal ketogenic diets. He treats people, and he emphasizes he is not an LCHF prescriber. He wants people to eat protein foods. He wants people to eat vegetables, fibers, vegetables and protein foods.

You're not going to overwhelm your plate with a hunk of butter. You can have a tablespoon of cream in your coffee but you don't want to eat a glass of cream for breakfast. As far as hypoglycemia and type 1 goes, there's a couple of points. First of all, when people start on a low carb diet and they start to lower their target blood sugar, if you lived in an environment where your average blood glucose as a type 1 is something like 200, which is pretty average, I mean, the average A1C is about 8% and that's about 200 milligrams per deciliter or a little higher.

When you start lowering your target, you're going to feel rotten for a while. That may be because your electrolytes are off and stuff. But mostly, it's because you're not used to -- 80 feels low to you. Your body sadly will get used to it. The second thing is that there may be some keto protective effects from a low carb diet. If you're on this low carb high protein Bernstein diet, you're going to make ketones now and then.

If you measure, like if I measure Dave's ketone levels, he may have like 0.2, 0.3 millimoles, something very low trace ketones. That may be because he's using them. He eats a lot of protein. So, his body is probably metabolizing the fat and the protein foods very efficiently.

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But there's really no benefit for Dave to run lower than 83. We don't see any benefits to lower glucose than that in the literature. It's too close for comfort. So, I do notice that when he drifts down and say it's like 68, he won't necessarily be symptomatic. But if I don't eat for a day I'll have those kinds of blood sugars too.

So, that's probably not a good place to define hypoglycemia. When he will experience hypoglycemia if I happen to give him the wrong insulin, for example. That happened a few years ago. He went down to low 50s. He said, "I feel terrible." There's a quick blood sugar drop or whatever. Was he keto protective? It's hard for me to know but I can imagine that there's really something to that.

Like I said, we're trying to keep in the 80s where I think healthy non -- That's where I'm at. That's where my son Hayden who's non-diabetic is at. That's where my wife Roxanne is at. We all test in the 80s. Sometimes I'm in the low 90s. If I do squats, my blood sugar go up to 110. And another interesting one is if I coach

an intense game, my blood sugar -- I coached one game and I felt like I was going to have a heart attack after the game because I was so intense. I tested and I was like 115.

It comes right back down. Healthy non-diabetic isn't going through these undulations all day long. That's a myth that you should be going up and down like that. It doesn't really happen unless you -- There's probably, Robb, if you drink a glass of Kool Aid and your blood sugar went up to 130, it doesn't make you unhealthy. I mean, I've seen your pictures. You're ripped and you're a real athlete.

If you're a diabetic and you're doing this, especially if you're on medication that requires you to fight to get back down, you just want to be in the 80s.

Robb: Well, you know, it's interesting. Even though I'm pretty lean... RD, do you have a set of headphones? I'm getting some feedback from your side.

RD: Yeah. Let me see. I can try to scare some up.

Robb: Or maybe just even turning your volume down. I'm just echoing on that. Even though in theory I'm reasonably healthy and all that type of stuff, I definitely don't feel good when the blood sugars get up in that 140-160 range. I feel pretty crappy in that with some of the blood sugar experiments that Nikki and I did about a year ago when Wired to Eat first came out.

We would eat the same food and Nikki would barely crest above like 113-115 something like that, and clearly within the error bars of our shiny little pharmacy purchased blood glucometer and all that jive, but I mean she was consistently showing maybe about 50% better blood sugar levels than I was for any given meal. She was like 40 pounds lighter than I am.

Even with the added delusion factor of me just being bigger than her, I had pretty piss poor blood sugar responses all things considered. And so I hovered in around this kind of ketogenic, peri-ketogenic state and it's interesting the spot that I've kind of felt best is this higher protein. The highest my seen my ketone levels in the last maybe three months was at 0.6. I have no idea even what did it.

I've checked at pre-workout. I've checked post worked. I've checked it after a one day fast or about a two-day fast when I got food poisoning at Low Carb Breckenridge. And it just doesn't go up that much. But my blood sugars were nice and consistent. I feel really good. It's easy to maintain leanness. When I get hungry, it's like, oh, okay, I need to eat but I'm not wanting to chew my own arm off.

It's interesting that even that kind of attractor, everything's moved into that position relative to this, like you said, therapeutic ketogenic diet for like epilepsy or some of these folks that are doing cancer treatment where they're trying to get a one to one or a two to one ketone to blood glucose level or something. You have to do some really heroic efforts to get that stuff. But yet we see folks trying to mimic those numbers by hook or by crook for fat loss and reversing insulin resistance and it's just not working.

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It's driving the boat in the opposite direction. And again, that's probably a whole other podcast. We should get Mike Julian and Eric Leif on here.

RD: Yeah. Julian, he's been incredible at warning. There's this crazy thing that happened and it happened after I got into the low carb community, I guess. And we've been really successful at keeping this nonsense idea out of the type 1 community. There's a lot of people who are on guard for this high fat stuff, the meals of fat stuff. And Julian has been a champion for broadcasting in the type 2 and obesity world against eating a bunch of cream cheese as a meal.

What alerted me to it was I would see parents -- Bernstein called me one time. He said, "I got this mom who's feeding their kid cream cheese and stevia for dinner because they notice it didn't raise the blood sugar." And these people are in terrible shape. They're depriving their kid of protein. You got to eat a ton of protein as a kid. Tons.

We started to see that nonsense from the type 2 community, starts to roll into the low carb type 1 community. We cut it off at the past but -- Another point. When you said you started to feel bad at 140 to 160, like I said earlier, the blood sugars available to a type 1 diabetic are so far beyond that, that 140-160, people eating standard diets are comfortable just being there. They put their kids--

Where you feel bad, their physicians are actually putting their kids, telling the parents to put their kids to bed at that level or even higher than that and they're higher than that through the day. I'll tell you a quick Bernstein story. When I started working with Bernstein, I had a phone conversation with him, which is a good story, but then we started Skyping.

He has a book in his book shelf, I could see in the camera. It's a book on gravitation, a famous Graduate School of Physics book. I said, "Where did you get that?" Because I used to study physics. I was at Columbia. So, we started talking about physics. He was a lab partner with a guy named Gerald Feinberg who's at Columbia.

Columbia was one of the top, top, top places in the world when he was there. He said, "Why don't you continue with that? And he said, "I was wiped out all the time from the diabetes." Because this is before blood sugar monitors. He wasn't able to determine -- He didn't have his basal bolus regimen worked out. He didn't know it was raising his blood sugar or lowering it. He took a shot insulin once a day, I think, and took it, I guess, foods, no idea what to eat.

He was so wiped out. I would say, Bernstein's IQ is probably in the 150 range. I mean, the guy is unbelievable. He would have been, I think, a top theoretical physicist had he stayed in there but the combination of rollercoaster blood sugars and I'm thinking he had some hypothyroidism which definitely comes along for the ride in the AI, autoimmune cluster in type 1, I think he was too wiped out.

He had to switch to engineering. Eventually, he did get a blood sugar meter, the first one commercially available. He started experimenting. Kind of like I was saying we experimented with Dave and the cookie. In a couple of weeks he worked out a routine that normalized his blood sugars. He had, I think, stage four, whatever the stages are, the last stage of kidney disease. He was cooked and he reversed everything. He reversed his gastroparesis. His CAC score is zero now or one or whatever is the lowest. He's been following his own regimen for about 30-40 years now.

He became a physician at the age 43 after he discovered this. Because he figured no one will listen to him unless he was a physician. He wanted to do what you were doing, Robb. This has been going on for a long time. He discovered this. He went to the ADA. He went to the journals. He went to the conferences. Same as you. Same as me. He got on the bullhorn. He started screaming. Everyone shouted him down. Everyone booed him down. But he was right after all.

[0:45:05]

There'll be some studies coming out soon that will show that he was right. His example is, of course, right because he is going to the gym at the age of 83 lifting weights three times a week and his contemporaries that didn't believe him were long gone.

Robb: Right. And again, a 40-year run as a type 1 diabetic or longer than that.

RD: 70 plus years, 40 years since he discovered his -- He invented the basal bolus based on his blood sugar meters but he's been diabetic since he's 12. He's 83 now, sharp as any graduate student in science, a mind just like a young person, constantly reading, working six days a week as a physician, still treating people. I mean, the guy is pretty unbelievable.

I spent hundreds of hours with the guy, videotaping him and whatnot, trying to get his thoughts down so we don't lose them. The guy is just unbelievable. Now, his vision is finally coming true. He always said I need -- If there was only like a Hollywood star that was type 1 diabetic that can get the message out maybe that would help.

But really, it's been social media and CGM technology where people can post their CGM graphs and their meals and the book and that grass roots effort is starting to wake people up. We've been so reticent that there's something to this. So, we see people who are recently diagnosed doing it and having immediate results and then we see people who've been diabetic for 50 years and finally get their blood sugars under control.

The type 1 community is still by and large absolutely obsessed with the idea of developing pump technology or auto pump technology and eating whatever you want but it just doesn't work. It's not going to work. I think it's time and I think finally we're starting to see diet enter the conversation. Whereas before, it has been absolutely, as you know, man, it has absolutely been blocked from the conversation.

Robb: Yeah. I mean, you're a crazy person suggesting that diet should be kind of the first intervention and that we should lean on folks that, "Hey, if you don't want this to go sideways, this is what you need to do -- It's not the easiest thing in the world compared to continuing what you were up to.

Again, to your point, so you had a completely functioning pancreas where otherwise what we would generally label as healthy. But just the process of you enacting this brought you back to what I would argue as like phenotypic normal, like this is what homo sapien was be supposed to be. This is where a lot of the bench marks that we use, even this arbitrary cutoffs, and this is shifting into more the insulin resistant, peri-diabetic type 2 diabetic story but I have this really niggling suspicion that any blood sugars that are getting up above maybe about 115-120 with any frequency is probably maladaptive and there are a lot of people that would want to nail me to a variety of crosses for saying that.

Again, maybe pulling from some of the anthropological literature, like these pre-agriculture societies, they would give these folks oral glucose test tolerance. At the one hour mark they would typically not even be above 100. We're hoping that it's not above like 160 or 200 at two hours. That's the norm. For a variety of reasons ranging from gut dysbiosis, iron overload, systemic inflammation, the list is long.

That makes it hard to go after but diet and lifestyle, lifting weights, getting sun on your skin, eating a protein-centric diet and then really being mindful about the amounts and types of carbohydrate that one eats, this is kind of the promise land. But again, it's a little bit of a crazy self for people to go buy in on that.

RD: Yeah. You know this because you're on video with these guys all the time.

[0:50:00]

I'm talking about Luis and Tyler from Ketogains. When I stumbled across -- Those guys represent what I would call the rational side of the low carb world outside type 1 diabetes. We're talking about type 2 and obesity. This is the famous protein to support muscle building exercises. You don't skimp on protein. Again, Robb, the same damn myths that are in type 1 diabetes prop up in the type 2 diabetes.

You see it all the time. Protein turns to sugar which is nonsense. You should eat fat to lose fat and get your fat burning engine going. Nonsense. Today, I saw that you should never be hungry if you want to lose weight. That's just absolute nonsense. There's so much nonsense.

You're leading the fight against it. You said Mike Julian, which is correct, Ted Naman and then Luis and Tyler. You look at their Ketogains site, the results that people get are astounding. And here's the kicker, man. When I first started following those guys, I looked at what they're doing with their dietary prescription, it's Bernstein. It's low carb, you don't overeat protein, you eat the right amount of protein to support your needs.

And that's a fitness and vitality group so, of course, they're going to push muscle building exercises. I went back to Bernstein's macros, guess what? He follows a damn Ketogain thing. He doesn't go and count his -- He just eats like meat and veg so he has the salmon. But if you look at his macros -- Now, I look at Dave's macros, he's eating much more food.

He's eating much higher fat levels. Well, he's a kid and he plays two hours of basketball a day. If I eat as much fat as Dave ate I instantly gain weight because that's how it works. It's not fat as in a free food. The thing that was interesting to me from the type 1 diabetes angle is here's the great protocol for type 2 diabetes as well or obesity or just vitality. If you're just looking for vitality, it's the Ketogains protocol and that, lo and behold, matches the Bernstein **[0:52:45] Crosstalk**].

Robb: Basically, convergent evolution. If you're an ocean based predator and one's a fish and one's a mammal, they're both -- A shark and a dolphin -- There's a lot

more similarities going on there than differences because they've got the same problem to hack and you're working within the constraints of physics and hydrodynamics and everything. So, you're going to end up with really, really similar solutions. So, it's not surprising that these guys ended up with for all case and purposes largely the same solution.

RD: That's funny. It's not just the protein amount. It's not just the you don't load up on meals of fat. It's also the exercise routines. Here is an example of where being around a type 1 diabetic is sort of fascinating. Dave takes -- He's 14 now. He's at his anabolic peak if you look at the velocity growth charts of children. He's turned into, like a little guy with a high squeaky voice to if I play basketball with him, man, if I'm not leaning into it, he'll put his elbow on me and knock my ass over.

This happened in two years. It's not a surprise that his basal insulin demands, not just the insulin used to cover the huge amounts of food he's eating, and I mean, huge. It's not just that insulin's gone. It's just the amount that's used to cover his fasting state, the basal, is maybe triple what adult would be.

What happened over spring break is what's interesting. He had a two-week spring break. He had hurt his back a little bit playing basketball. He took off. For two weeks he did a little bit of algebra every day and a lot of video games every day. We just walked around but there was no basketball. His insulin demand, his basal insulin demand **[0:54:55] [Crosstalk]** 20-30% during that period. I was prepared.

[0:55:00]

And I was prepared for it because I had seen it before. Over Christmas, we went skiing. I was prepared for a little bit of a drop and that's what I got. But with two weeks of inactivity, his insulin sensitivity dropped. The amount of insulin required to keep him level went up about 20 or 30%. If you told Bernstein this, he would say yes. That's why if you're insulin resistant, muscled bearing exercise and regular exercise routines are essential and that's what he prescribed for all his patients.

Again, it's a connectivity to the importance of the Ketogains approach because exercise, when you're insulin resistant or if you're on insulin medications, you want to use less. Exercise is an essential tool and I don't think anybody but you and the Ketogains guys are emphasizing that.

Robb: It's interesting. So, this social media phenomenon is largely the reason I do what I do, what Ketogains does, what they do, the Typeonegrit community. So it's incredible on the one hand because we have this opportunity to share some

ideas and we can share best practices and we see these results. But then it is interesting because you do have these other camps that espouse some very different ways of going about things.

They have none of the success stories that I would argue that this kind of community that I would say I'm a part of, we're a part of potentially. They just don't have the success stories. But yet it is a firewalled religious type dogma around this stuff where it should be, hey, who can build a house the fastest and bestest and then we stress test with a hurricane force wind and which one stands and which one doesn't.

It's an engineering project largely. So, that's something that I would throw out there to folks. To people listening, if you're like, "I don't know, are Robb and RD smoking some of Dustin's stash or something? What's going on here?" I would just throw it out there that this stuff is replicatable, it's empirical, you can see it. The results are pretty obvious. There's always tweaks and fiddles.

Some people need some more electrolytes, some people really need to attend to gut health and stuff like that. There's little tweaks and fiddles. But that's really out of the outer margins. If this basic idea of blood sugar management is there and health and whatnot, this protein-centric heavy on the low glycemic load vegetable matter and then just titrating fat based off of need works and it works just about every damn time.

RD: I think when I read your book and I saw the word hyperpalatable, it's the first time I encountered that word and it's like a blast went off in my head. What made me realize is that there is a rise in low carb cooking that's taken place in the last five years. So, you can make anything in low carb. These foods are still hyperpalatable and they're still hypercaloric.

What I think people are doing is they're trading in their food obsessions, their high carb food obsessions and they're just switching over to these hyperpalatable high fat foods like fat bombs and things like that, Bulletproof coffee. They still haven't changed -- What you'll see is you'll probably see an improvement in blood sugar because you're not pumping your veins with dietary glucose when you switch off high carb.

What you and Mike Julian, again, he's the lighthouse on this, is it's not just about blood glucose. You have to remove the insulin resistance by reducing your weight and getting rid of some of the weight that's gotten into your organ. Jeff Sur is another guy. He's a champion. He explains this all in his Facebook page too. You have to get rid of the fat that's grown into your organs.

And you're not going to do that if you just improve your blood glucose by getting off high carb. You need to lower your fat intake and take some of the pressure off your body because eventually you're going to run into big problems. It's not fun to be overweight. Let's just face it. I can speak authoritatively about it because I'd been overweight. You can see my before and after pictures.

[1:00:01]

I feel so much better. I feel light on my feet. I feel good about how I look. You can do it with low carb but you've got to eat protein foods and you've got to lay off this nonsense about eating meals of fat, putting cream cheese all over your food or butter or making sure you eat ribeye instead of sirloin, the endless string of nonsense that's available to you on social media. You guys are doing a job.

Robb: We're doing what we can but I think our job security is unfortunately all to secure both on the kind of dealing with the standard of care on the medical side and then trying to convince folks to -- Again, it's always greasy used car sales pitch with this stuff. It's like, hey, if you really think the fat bomb approach works, great. Do it for 30 to 60 days, track what your results are, see how you look, feel and perform. Do some before after photos.

And then I'll just make a really crazy suggestion, cruise over to the Ketogains macronutrient calculator, get your stuff all dialed in and make sure your electrolytes are on point, and then follow that protocol and just see how you look, feel and perform and see what biomarkers look like. Again, two 30 or 60 days permit. Do it for longer than seven days.

RD: Do it for longer than seven days.

Robb: Again, I don't want to make people uncomfortable, I don't want to trigger them but it's your life so maybe invest a little bit of time in really kicking the tires but the cool thing about something like this is, again, it's totally transparent. It's totally empirical. Maybe you and I are -- Maybe everything that we think the reason why this stuff is working were wrong.

Maybe the mechanisms are wrong but in the practical application, if we're making a claim about, okay, if we do ABC, XYZ is the result, if you're not getting that XYZ then there's probably another option somewhere that you can get in, plug that in and give it a shot. That's my crazy used car salesman pitch on that.

RD, let folks know where they can track you down and more information about this stuff and I'll get all of this in the show notes and clearly going to have links to Dr. Bernstein's books and whatnot, but where can folks track you and the Typeonegrit community down?

RD: Well, I gave a talk at Low Carb USA a couple of years ago. That's available on -- If you Google Diet Doctor, Diet Doctor's hosting that talk, and he's got a three-minute pre but he's also allowed free access to the whole talk which is my hat's off to him for doing that. I go into the details about how diabetic complications arise already in childhood let alone later in life and then I go on to how to prevent them and then we go on to some success stories in the group.

That was a few years ago so there's many more now. That's like a good starter right there. And then Diabetes University which is my channel with Bernstein and there's over a hundred videos on there which cover every single topic you could ever want to cover on diabetes management. We've got him recorded for all eternity now which is--

Robb: Awesome.

RD: One of my life's works, man. That's good stuff.

Robb: RD, again, it's kind of interesting how the interwebs work. I just have this incredible affinity for you and your family and the work you've done and even though we haven't met in real life yet, just a profound sense of gratitude and love for you guys, like just can't say thank you enough for what you're doing.

Because I had largely gone into hiding on this type 1 diabetes topic because I just couldn't really muster the slings and arrows. Because you guys had to deal with this for your son, you had that additional skin in the game where you're kind of like, fuck it, we're going to do this and we're going to do it right and I'm going to tell folks and the smart ones are going to get it and those are the ones that we're going to focus on. I just can't thank you enough for the work you've done.

RD: Well, that's I--

Robb: I'm looking forward to meeting you in real life here at some point and the kids can play and that will be a blast. I will do all the cooking.

RD: That sounds awesome.

Robb: Let's put that together at some point. I will make sure to get all this information in the show notes and looking forward to chatting with you again soon. Okay, take care.

RD: Okay. Thanks a lot, Robb.

[1:04:55] End of Audio