

[Robb:](#) Welcome back, wife.

[Nicki:](#) Welcome back.

[Robb:](#) What's new?

[Nicki:](#) I have nothing to say.

[Robb:](#) Man, we are an exciting bunch. If anybody still listens to this thing, I'm a little bit shocked.

[Nicki:](#) It's gray.

[Robb:](#) It is gray.

[Nicki:](#) It's gray outside. I'm ready for spring.

[Robb:](#) Yep, kind of running on low; low sunlight effect.

[Nicki:](#) Yeah. I'm reading the Wings of Fire series to Zooney and we're on the third book and it's about the RainWing dragons who live in the rain forest, and they recharge by sleeping for many, many hours in the sun. I find myself wishing that I was a RainWing dragon.

[Robb:](#) Well, maybe you are but we just have no sun to recharge.

[Nicki:](#) Yeah, that might be it. All right. I guess we'll jump into the first question.

[Robb:](#) Yep.

[Nicki:](#) Let's see. Question one is from Josie, and she says, "I hope you and Nicki do another Q&A soon. These are my favorites. It's heading towards summer and I'm wondering what your opinion is on lake versus typical chlorinated pool for summer fun. Our family opted for the lake last summer and it was beautiful, but between the dead fish and the posted high fecal count, I was more than a little grossed out. There is a lot of talk about kids growing up healthier when they are exposed to more dirt and germs, but what about things that can mess you over like parasites and Giardia? The chlorinated pool is looking better this year."

[Robb:](#) Man, that's a tough one. That's kind of why ... and this doesn't answer the question specifically, but, like, going to the ocean, and now the ocean you can get, like, fecal contamination there. But in general, if the stuff gets ... dilute enough, most of the bacteria that would be problematic is killed. It doesn't really live in the saltwater that effectively. But, I don't know, this is ... Lakes are great, I guess. I don't know.

[Nicki:](#) I don't know. We grew up going to a lot of ... we grew up doing both. Like, we'd go to the lake as frequently as we could, and then we'd ... I mean, it was Brandy Creek, Whiskeytown Lake had Brandy Creek, which I'm sure has fairly high fecal count.

[Robb:](#) Well, you know what's funny? When we grew up, I don't know that that stuff did quite the way that it does now. Like, populations have just grown, and people are just dumb, and dirty. "Well, shit, Billy Bob. Let's go take a dump in the creek here."

[Nicki:](#) You think moreso than-

[Robb:](#) I don't know. I don't know. I mean, just some of those areas were pretty remote.

[Nicki:](#) We also had a pretty gross experience at the kiddie pool at one of the local pools here in Reno. I won't say exactly what we found floating in it.

[Robb:](#) Well, it was a feminine hygiene product.

[Nicki:](#) Yeah, you could say it like that.

[Robb:](#) Ugh ... Yeah, it was horrible.

[Nicki:](#) Yeah, in, like, the three-foot water kiddie pool. So I think you're kind of-

[Robb:](#) Kind of damned if you do, damned if you don't. Now, in that scenario, in theory, the chlorinated water killed everything in there at least. But, ugh, yeah. Yeah, definitely the big win is to have a pool in your backyard basically.

[Nicki:](#) Oh, man. Yeah.

[Robb:](#) Do a saltwater pool in your own backyard and then you're cool. And make sure all the neighbor kids are threatened with death if they take a dump in your pool.

[Nicki:](#) Okay. Let's see. Next question is from Rick on-

[Robb:](#) Right. Keto and endurance?

[Nicki:](#) Keto and endurance, specifically running.

[Robb:](#) We skipped the last one.

[Nicki:](#) I didn't read the title.

[Robb:](#) We didn't read the title. Yeah, sorry.

[Nicki:](#) I have five demerits. Okay. So Rick says, "Thanks for the Q&A episodes. They've been super fun. I'm writing to ask you a question about running when I'm on keto. I'm 45 years old, male, 6 foot tall, 235 pounds and roughly 30% body fat. Trying to lose some weight is the primary goal, but I love running, too. My ideal workout regimen is to lift two times per week, full-body barbell-type stuff, and run three to four times with runs anywhere from 4 to 10 miles. I've never been fast, but I've got pretty decent endurance." Let's see. "Keto seems to be the absolute best way to lose weight, but I find that my runs really tank. I use a heart rate meter and go about a minute per mile slower than my heart rate ... is 10 to 20 beats per minute higher." That didn't really-

[Robb:](#) He goes slower and his heart rate gets higher, yeah.

[Nicki:](#) "The longest I've been able to maintain keto is about five weeks, and the main reason I fall off the wagon is this: while I'm not weighing and measuring, I'm more or less following the suggestions from the masterclass and Ketogains, and I'm focusing on getting enough electrolytes. So what do you think is going on? Do I just have to keep plugging? Is it possible I'm not meant to run while in keto? How can I speed adaptation? Lots of short slow runs, fast runs, slog it out for long and slow? Any advice you have would be fantastic."

[Robb:](#) Yeah, so reading between the lines here, a couple of different things: are you for sure 100% unequivocally hitting your electrolyte levels? I thought I was and I wasn't. And in theory, I'm an expert on this stuff. But Tyler and Louise, each time I came back to them talking about jujitsu and other issues they were just like, "Electrolytes, electrolytes," and ultimately that ended up being the big deal. So that's a glaring thing here. Yeah, it just popped up again and again and again.

[Robb:](#) So the low-hanging fruit is really making sure that you're getting a minimum of five grams of sodium a day plus the other electrolytes. You're a bigger dude, so you might even need a little bit more than that. Depending on the heat and humidity of the area that you're in you might need even more. That's one thing.

[Robb:](#) The other thing is that, in general, keto adaptation takes about four to five weeks. You are slogging through the hardest part, and then stopping at just about the point that all the research suggests that we should get our VO2 max back and we should at least be able to do aerobic-paced activities.

[Robb:](#) So I would say, yeah, you probably need to ... A couple of different things: if you want to stick with specifically keto, you're going to have to motor a bit longer, really make sure that you're on point with the electrolytes, and I would give it a full eight weeks to make sure that you're fully adapted to that.

[Robb:](#) The other thought is that you don't have to be keto to lose weight. It's effective, and it's effective in part because of the appetite-suppressing kind of characteristics, but there's this whole thing of low-carb and paleo and stuff like that, you know, people motor along quite well with those approaches.

[Robb:](#) It's kind of funny. For ages, I would search for "Brazilian jujitsu ketogenic diet", "optimal diet on Brazilian jujitsu", and what was really funny is the kind of ... the thing that came back ... the vegan diet actually came back fairly frequently, but in general it was, "Man, this paleo diet is awesome for Brazilian jujitsu." But this is paleo as in eating sweet potatoes and fruit and all that, that type of stuff, not like a super low-carb iteration of it.

[Robb:](#) So, yeah, hang in there if you want to. Slog it out for at least eight weeks. Make damn certain that you're on point with your electrolytes. Then, from there, if things are just really not clicking over, focus on the appropriate amount of protein, get low glycemic load carbs and titrate those up to the point that you actually get your performance back.

[Nicki:](#) All right.

[Robb:](#) Or start Brazilian jujitsu, because it's awesome.

[Nicki:](#) Okay. Our next question is from Brian, "Carbs for endurance once fat adapted. Robb, I'd love your insight. I'm a 47-year-old cyclist, typically the last guy on Earth touting a low-carb eating regimen, but I've been keto over a year and I've seen performance increase

against my age. I presume my body has undergone a metabolic shift in fuel source because it's working for me. My question is, should us endurance guys still carb load to have glucose present during long events, or should calorie consumption prior to long events stay parallel to our everyday eating regimen? In other words, once this metabolic shift occurs in the macro perspective of one's nutrition, is it assumed that the best fuel choice during ultra events be the same? Would reintroducing glucose be a safety net or a waste of calories in your opinion?"

[Robb:](#) Man. So the first caveat here is I am absolutely not an endurance coach. I watch this stuff from afar. It's not in my wheelhouse. So take that with a huge grain of salt, five-gram grain of salt.

[Robb:](#) I've seen this work all over the map. In general, the benefit of a low-carb-fueled athlete is that he or she will need less in-event fueling than what somebody else would, a more carb-centric individual.

[Robb:](#) Marathon doesn't really seem to matter that much if you're really fast, because the marathon ... those dudes are running so fast, and they get it done in about two hours, which is kind of the outer edge of what one's glycogen stores are, so the people who typically hit the wall in marathoning do it because they run slow enough such that they end up depleting their muscle glycogen and they're not adequately fat-adapted. So if you're real fucking fast and the duration isn't that long, then even the glycogen stores from keto adaptation will kind of motor you through that for the most part.

[Robb:](#) I have absolutely seen folks do the sweet potato or rice the day before an event, and that works well for some people. Peter Defty over at Vespa, OFM, Optimum Fat Metabolism ... he's an endurance coach, a legit endurance coach; has a lot of people under his tutelage. They do a couple of different strategies. They will do the day before doing higher carbs so that you get some top off. Other people simply use some goo or some other things, but they're able to use it pretty selectively, because they are running more on a fat-adapted kid of plateau or process.

[Robb:](#) I'm trying to think of any other offerings there. Joe Friel is a great coach, Peter Defty, Elijah Markstrom. And I'm thinking back to the question that we just asked a moment ago. Elijah Markstrom is a really well-known kind of Spartan race athlete. He noticed that being purely ketogenic was problematic. What he experienced was it was almost like he had a governor on his heart rate. Like, he would try to push hard, but his heart rate would be much higher, fully keto-fueled, versus even doing 100, 120 grams of carbs. At a given power output, his heart rate would be, like, 10 to 20 beats less, which is huge; like, make or break a scenario.

[Robb:](#) So I've seen a lot of different strategies on this stuff and it's just all up for the tinkering. Potentially, I would reach out to some of the people that I've mentioned, maybe nose around some of the other low-carb or peri low-carb endurance coaches and maybe have them kind of take you under their wing for some period of time so that you can help get that stuff dialed in.

[Robb:](#) But my sense is definitely that there's not a one-size-fits-all approach to this. It's really dependent on, man, a ton of different variables: the duration of the event, how fat-adapted you are; again, shorter events like a sprint, triathlon, and I think they mentioned ultra events-

[Nicki:](#) A cyclist. I don't think ... Yeah, ultra events. Yeah.

[Robb:](#) Ultra events. I mean, real long stuff. People do still use carbohydrate during those events, like Sami Inkinen, who's a cofounder of Virta, he did a pretty interesting blog post talking about a really epic bike ride that he did, and he ended up consuming 150, 200 grams of carbs throughout the course of that day, but was also tracking his ketone levels and he was ketogenic the whole time because of the work output.

[Robb:](#) Yeah, man. I wish I had a more concrete answer for you, but this is where working with a coach, or if you're going to put this stuff together you kind of just need to establish a baseline and then pressure test it and see how things do. Then, A/B test variables: "I added pre-workout carbs: these things happened. I added intra workout carbs: these things happened. I added intra workout carbs plus an NCT oil and I pooped my pants." That thing happens. So you just kind of have to get in and tinker with it.

[Robb:](#) Again, some of the really well-established endurance coaches may have a much better kind of algorithm that they move through it. But I understand that stuff in theory, not in practice.

[Nicki:](#) All right. Our next question is from Heather on having a high fasting blood glucose level on a low-carb keto diet. "Hi Robb and Nicki. Huge fan, and appreciate all the knowledge and insight you share on the podcast and everywhere else you show up. I've eaten low-carb paleo-ish for several years now and have done really well. I probably eat less than 100 grams of carbs per day, more like around 50, and eat an average of 100 grams of protein per day: grass-fed meat, bone broth protein, whey protein smoothies, nuts, seeds, pastured eggs, mackerel, sardines, and occasionally chicken.

[Nicki:](#) My fat intake is probably 90 to 100 grams per day. I'm 43 years old, 5'4" at 118 pounds with less than 20% body fat. I go on long walks daily, weight train three times a week, and throw some hit training along with boxing in the mix. I used to be a spinning instructor and spent hours and hours on the bike each week, but haven't taught in four years and now only power walk for cardio outside of interval training at the gym. I have two kids, ages four and eight, so they keep me busy as well.

[Nicki:](#) I recently, as of two weeks ago, bought a blood glucose meter after giving into my curiosity as to just what my fasting blood glucose is, along with postprandial, postexercise, et cetera. I was shocked and so upset when I took my first reading one morning and it was 106. Since then, I've been rather obsessed and am pricking my finger all day long. But really, no matter if I'm fasted, just went on a long walk or weight training session, or even two hours after a meal, my blood glucose is always somewhere between 90 and 110. I never get a big swing upward after a meal, even after I indulged in gluten-free German chocolate cake the other night. It has only gone as low as 83 or 87 on two random occasions, which is making me wonder, "What the heck."

[Nicki:](#) I've read different things about this online, but I really don't know who to trust other than you. Could it be cortisol? Could that be my norm? I was expecting my fasting blood glucose to be around 70 to 80 based on my diet and activity level.

[Nicki:](#) Please advise. I'm so confused. Thank you so much for all you do."

[Robb:](#) So I think last week's podcast we kind of had something similar to this where the individual had kind of higher blood glucose levels than what they might think.

[Robb:](#) The way that we tackle this is what I call triangulating in on this. So we have a blood glucose level that's being tested at various points that looks higher than what we

potentially would look. So then we look at the A1C and see what that looks like. And I would recommend just getting the fructosamine at the same time. If the A1C is also elevated and fructosamine is also elevated, then that means we have across the board elevated blood glucose levels. If fasting blood glucose or blood glucose in general as checked by a finger stick or even a CGM is high and A1C is high but fructosamine is low, then we've got some other things going on, like red blood cells living longer because of being on low carb and stuff like that.

[Robb:](#) Let's assume that it's the drizzling shits and blood glucose is higher than what we would like. A couple of things we can look at. One, is making sure that you're on point with electrolytes. We know for a fact that inadequate sodium intake and electrolytes in general is an adrenal stress and people getting on point with the electrolytes ends up dropping heart rate, it drops cortisol levels, it tends to drop blood glucose levels. So I would make damn sure that you're on point with the electrolytes.

[Robb:](#) If that doesn't address things to the degree that you would like, then we start asking the question around, "Maybe you would do better at that 150 grams of carbs a day. Maybe a little bit more on heavier training days, a little bit less on sedentary days." But that's kind of the way that I would tackle this.

[Robb:](#) First, I would do a little bit of additional testing to figure out, like, "Really, what do you have going on? Is it concerning? Is your A1C and your fructosamine elevated in such a way that we would be concerned about that? If it is, then the things to really tinker with are making damn sure that you're on point with your electrolytes, specifically sodium. If that doesn't address things, then I would definitely get in and tinker with just reintroducing more carbs and see how you do with that.

[Robb:](#) Any other thoughts, wife?

[Nicki:](#) No, I don't think so. Good question, Heather.

[Nicki:](#) Let's see here. Well, and it also ties into this. But if she's consistently getting ... if every day she's getting in that range then it's probably not glucose measurement reliability, which is the next question.

[Robb:](#) Which is the next question, yeah.

[Nicki:](#) From Pedro. "Dear Robb, my name is Pedro and I'm Portuguese. I've been following your work through interviews and your online publications and books. I take many notes from your teachings and have been applying them in my own life which I deeply thank you for. However, a few issues have arised, especially concerning the use of glucometers to measure blood glucose for metabolic control. Fortunately, I had no diseases.

[Nicki:](#) I would like to ask you a few questions. For a year now, I've been regularly using the FreeStyle Precision Neo device and the readings are not reliable at all. I've made many experiments, such as trying to prick my fingers five times in a row to observe the results. The readings are always different, sometimes 15 or more points-

[Robb:](#) Milligram per deciliter.

[Nicki:](#) "Milligram per deciliter. I've done the card test as well, reproducing the same conditions, and the readings also change if I test a few times and in different days. I've tried different devices, too.

[Nicki:](#) I contacted the company to expose this issue and they told me that there is an acceptable variation of 20 points. Being so, it basically means we can't rely on this method to inform us how the body is reacting to foods or to check glucose stability, for example, because it's always changing within the same conditions.

[Nicki:](#) I wonder if you have noticed the same issue and if you've found a method to overcome this reliability. I've also used a FreeStyle Libre device, which measures continually the glucose, interstitial fluid. I know there's a delay between the readings and the actual glucose level and there's also less precision than a blood glucometer. However, the same issue of unreliability is happening.

[Nicki:](#) The profile of the Libre does not have any match with the blood glucometer or even any correlation. One might be going up and the other down, and later one changes and the other doesn't. Since glucose levels are so important for health and performance, if the best method to check it is not reliable and trustworthy, it makes all the assumptions and decisions about our health not just worthless but somehow dangerous. I wonder if you have any thoughts on this?" My best wishes, Pedro."

[Robb:](#) Yeah, it's a great question, and this is something that was pretty frustrating when we were kind of rolling out the Seven-Day Carb Test, when I became aware that there's about a 20% error in the basic testing in most of these glucometers. I forget, there are some that the error rate is claimed to be around more like 5%. I forget which one that that is.

[Robb:](#) But if you have a 20% error rate, if your true blood glucose reading is 100, we would not really be surprised if it was as low as 80 or as high as 120. This is why in addition to the testing I recommended this whole matrix of, "How's your cognition? How's your digestion? What's your kind of sense of inflammation?" So that we could, again, kind of get multiple ... as hard a data as we could, and then shift a little bit into the softer data, you know, just how you're feeling and the performance and whatnot.

[Robb:](#) And I don't have a super good answer to this. The error kind of bars in this story are pretty big. This is why I recommend that folks use it as a guide to kind of point them in a particular direction, but we can't get overly hung up on this.

[Robb:](#) I remember when Nicki did this stuff ... What was it? Your blood glucose ended up, like, two points lower after ... so you had a baseline, and then it went to its high, and then it-

[Nicki:](#) And then it dropped low and [crosstalk 00:22:05]-

[Robb:](#) So it started at, like, 75, and then it went to 105, and then it went to 73. And people were like, "You have phase 3 craft pattern," or something like that. And I'm like, "Fucking horseshit, people." Like, the error ... You're trying to ascribe a three-point delta between the initial and the final test when there's a 20-point error bar encompassing this whole thing, and I'm not a statistician, but this is where people almost get overeducated to the point of being dangerous, where, like, you can't pull back and look at this stuff with a little objectivity.

[Robb:](#) I think as time goes on these instruments will get better and better. I will do some poking around and ... I remember when we were kind of thick into the Wired to Eat stuff there were one or two brands that were significantly better with regards to error rate, like, it was more an established, like, 5% error. But this is, again, also where doing the

occasional A1C and also the fructosamine, you can use that to just kind of triangulate in on that stuff.

[Robb:](#) Then, also, finally, I'm just not a fan of people tracking this stuff every day all the time. I know some people do, they're just kind of data geeks. But Christopher Kelly over at Nourish Balance Thrive was talking about this stuff, not just with regards to CGMs, but heart rate variability monitors and power output monitors when you're riding your bike and stuff like that. Some of it's really valuable, and sometimes it's kind of the difference in being able to click over performance and really make the next step in what you're trying to do. And a lot of it is just a distraction. Like, you're spending all this time trying to pair Bluetooth devices to this, that and the other, instead of just kind of doing what you need to do.

[Robb:](#) We were talking this morning about the HRV stuff, because we're tinkering with some meditation material-

[Nicki:](#) Right. There was some article that Tyler shared with us that was talking about how some of these devices are ... there's enough error rate within them, but then there's this placebo effect that happens, a negative placebo effect. So if, for example, if you're wearing something and it tells you that you had a really poor night of sleep, maybe you did, maybe you didn't. If it wasn't measuring you accurately, maybe you had a decent night of sleep but it says you had a poor night of sleep; that people actually ... the rest of their day they internalize that and they really feel like they had a really terrible night of sleep.

[Robb:](#) And it kind of cuts both ways. Like, sometimes they actually didn't sleep well but the HRV says they're on point, and then they rally and they do okay. Then, to Nicki's point, there's times where it's just kind of a weird error or artifact. Like, when we were tinkering with one of the platforms, I would lay down to read and it would say that I ... it would give me a super shitty ready because it said that I had a latent sleep process, which wasn't the issue at all.

[Nicki:](#) Right, you were just laying in bed reading.

[Robb:](#) Yeah, I was just laying in bed reading, and I had my [inaudible 00:25:05] on, and we go to bed when everybody else is still, like, fucking eating dinner and stuff like that. So I'm like, "Give me a break," you know? And I could never get this thing to give me better than, like, a mid-80s, and heading towards 100. And I was like, "What else am I going to do to make this thing better?"

[Robb:](#) So it became kind of annoying at some point and I think maybe wearing a platform like that, and I know we're just wandering all over the place now, but a platform like that in my 20s when I would work myself to the bone then maybe that would be helpful.

[Robb:](#) But, yeah, this is where the testing stuff, it's valuable, but you've got to really have good context with it and, man, it's a narrow window of the information that we have. And being aware, which it sounds like Pedro is very aware of the limitations of what this stuff can tell us and keeping that in proper context, for sure.

[Nicki:](#) Great. I think that was our-

[Robb:](#) Was that the last one?

[Nicki:](#) Final question for this week.

[Robb:](#) Quick and dirty.

[Nicki:](#) Yep. So if you guys have questions you can submit them on RobbWolf.com at the Contact page.

[Robb:](#) Follow us on Instagram-

[Nicki:](#) Instagram-

[Robb:](#) @DasRobbWolf.

[Nicki:](#) YouTube. Anything else?

[Robb:](#) Paleo f(x) coming up, FitCon coming up. Not sure when this one is dropping, so it may be done by the time-

[Nicki:](#) No, this will come out before Paleo f(x).

[Robb:](#) Okay, okay, cool.

[Nicki:](#) Awesome. Thanks, guys.

[Robb:](#) Bye.