

Nicki: Don't. Stop. Stop. We're rolling.

Robb: We are rolling. What's up wife?

Nicki: You know, just kind of riding the wave of chaos.

Robb: Indeed. Indeed. So, we're in the throws of packing, getting ready to move.

Nicki: We had a nice visit from your friend, Steve yesterday.

Robb: Good friend of mine, Steve who... A 20 year military veteran flying a B1 Bomber and I got to hang out with him and we related many stories that we-

Nicki: I only met him once before, him and his wife once before, when Robb and I first met and let's just say in the few hours that we spent together yesterday, I learned a lot about what you did as a teenager.

Robb: Yeah and most of it was probably incarceration worthy.

Nicki: There were lots of laughs.

Robb: We turned out okay.

Nicki: You guys survived.

Robb: Yep.

Nicki: Somehow.

Robb: Yep. We did. We did.

Nicki: What are you drinking?

Robb: I'm drinking a Salty Palmer, which is a black tea, Lipton ice tea specifically, with a-

Nicki: LMNT Citrus Salt.

Robb: ... LMNT Citrus Salt in it and it's pretty darn good.

Nicki: Really good. Okay.

Robb: Do you want to jump in on this thing?

Nicki: Sure. Let's jump in. Our first question this week is from Cassandra and Cassandra wrote a very, very lengthy question and I'm just going to read-

Robb: Great detail, but it's-

Nicki: Really wonderful detail, but I'm just going to read some sections of it. But the main gist of her question is, how do you recommend tackling post workout nutrition for endurance and high intensity sports while on keto? So let's see here.

Nicki: Okay, so she says, "I think I'm generally fat adapted, but I panic after eight or nine miles sometimes because the old advice of carb bloating always creeps back in and I will suck down a terrible gel or Gatorade because I've made the mistake of running these distances under fuel before and it was a painful, painful lesson. I've heeded your electrolyte advice and I constantly track my sodium, magnesium and potassium levels and take the recommended supplements almost every day. Normally on days with a taxing wad or a workout lasting more than 90 minutes. So what can I eat or drink to keep on the keto train that will help me recover and keep me going on some of these endurance events? Nut butters, whey protein and water. I want to be armed when I take on Vegas this year and not completely derail my eating habits and I'd like to start experimenting with these foods now while I still have time to adjust. Sorry for writing a novel."

Nicki: So just to fill in some of the details, she has done several half marathons and a marathon and she's wanting to do another full marathon later this year. The Rock and Roll in Las Vegas

Robb: Mm-hmm (affirmative). Mm-hmm (affirmative) and lots of great detail, so if you guys check out the show notes-

Nicki: We'll post the full question, yeah.

Robb: ... you can kind of dig into that stuff. So what one thing up front, I'm definitely not an endurance coach. We've dabbled in that area when we ran the gym, it wasn't really my area of interests nor expertise. So I'm going to give some general guidelines, but I'm not an endurance coach. That said, one thing that I would recommend is following all the work from Zach Bitter. He has set multiple, I think national and world champion distances, 100 mile races, largely keto fueled, keto carnivore fueled. He drops in some carbs though. He has kind of a strategy around what he does with that. Part of what she related is she feels soreness and difficulty recovering after her hard sessions, in particular when she's using carbs, interestingly.

Robb: This is one of the interesting things that folks that are in that keto, carnivore space seem to report they just seem to bounce back from workouts better. They don't seem to get the delayed onset muscle soreness and all that stuff. It's kind of funny, before we were recording this I was kind of noodling in the shower about how low carb in the context of a higher protein, like keto gain style, ketogenic diet or carnivore diet or even some of the old, original Loren Cordain protein recommendations. Even though it's low carb technically, because you're not eating carbohydrate as part of the diet, it's not necessarily low glycogen.

Robb: The keto scene has gotten all freaked out about gluconeogenesis and being kicked out of ketosis, but this is all still super context driven stuff. For an individual that needs really, legit levels of ketones for say, like neurological condition or for cancer, co-treatment or something like that, then there's a compelling reason to kind of limit protein.

Robb: But what's interesting is that, and again I'm going to bounce around like there's a zillion things I'm thinking about, but Charles Poliquin recommended for people who were not particularly carb sensitive, but doing high intensity training, a pretty high protein, low carb diet and then, supplemental glutamine post-workout because the glutamine was kind of a slow release way of topping off glycogen levels, both in the liver and the muscles. But that didn't have some of the other side effects potentially of carbs and I

know people are going to freak out. It's like, "Oh, carbs aren't the devil." Yeah, they're not, except when they are.

Robb: For some people like me, who still have some sort of GI problems or what have you, type one diabetics or people that are just tinkering with this stuff, there are other ways of getting reasonably good glycogen repletion, while also still staying in more of that kind of fat adapted world.

Robb: So one thing about this, we have to break this stuff into kind of training nutrition, event nutrition, post recovery nutrition. So during the event, this is definitely where she made the point that she needs to experiment with this stuff and see what's what's working. Again, I would kind of pun to what Zach Bitter does, as just kind of a beginning baseline.

Robb: I think that in general, if he's doing something that's more in that 100 mile pace, he stays pretty much fat and protein because he's going to be going at such a gentle pace comparatively because he's going to run for basically, like two days straight and so he just not going to get glycolytic. So, in that context then, there doesn't necessarily need to be additional carbs or not much additional carbs to the degree that there might be a lot of elevation change or something like that. Therefore, going anaerobic, getting some glycolysis going on, then we might drop in some type of carb.

Robb: Again, you just have to play around with that stuff to see what sits well with gastric emptying and all that type of stuff. I feel like I'm just kind of bouncing around here, but it's interesting. So, she also mentions that in the past, she was kind of worried at some point and this is where I think doing some training runs that are on the longer side and to establish like, how do you do? So she said that she panics after eight or nine miles sometimes. So there should probably be some like 12 or 15 mile runs consistently within the training block where you pressure test. It's like, how do you feel at mile 10 through 15 with a particular type of training without necessarily doing a goo or something like that?

Robb: Even that said, there are a lot of people in the low carb space that, over the course of a day of activity like this, they may consume two or 300 grams of carbs on that day, which is still quite a bit less than what most other people are doing. But this is where there's just a massive amount of individual variation. Again, I'm just not the most knowledgeable person on that side of things.

Robb: So, the takeaways, we don't necessarily need to just cater towards ketosis. Don't think about it being ketosis. Think about it being performance fueling. It may be on the lower carb side, it may be on the higher carb side. Even if it's on the lower carb side, if our protein intake is higher, it doesn't necessarily mean low glycogen for the body. So that can have all kinds of ramifications for recovery and nutrient intake.

Nicki: She definitely needs to make sure she's not skimping on the protein.

Robb: Absolutely. Absolutely. Yeah. The one caveat with that and this is where it gets really detailed, in event training, you may be, particularly if water may be a little bit limited or what have you, higher protein intake requires more water to deal with the ammonia load that's coming out of that. But you don't necessarily want to go super low protein because you will burn through all your branched-chain amino acids and then, tryptophan levels raise. The person will be running along and they get sleepy and they'll literally, fall asleep and it happens a lot on a bicycle, mid run or at a minimum you lose some of that kind of motivation because you're getting sleepy.

Robb: So this is some of the stuff again, that folks just have to play with. Like what protein level keeps you mentally alert? Because you don't have enough branched-chain amino acids in the mix. Some people use of branched-chain amino acids as part of their training mix and stuff like that. But this is again where, it's just super outside of my-

Nicki: Wheelhouse.

Robb: ... Yeah, my wheelhouse. But those are some kind of big, broad brush strokes to consider when you're doing this stuff. Yeah. Yeah.

Nicki: Okay. Let's see here. Next question is from Ben. Should I add fat to my whey protein shake? Ben says, "Hi, I love the podcast. I'm one of the six listeners. Here is my question. I'm wondering if the insulin spike from a post workout whey shake can stall my weight loss? Should I add fat, like heavy cream or coconut milk to the shake to blunt the insulin response? And if yes, how much or am I unable to burn that fat because of the spike insulin storing it as body fat instead? Thank you so much and best wishes from Munich, Germany."

Robb: Man. So, whenever I see someone who's... So clearly, I would read between the lines here, that the goal is fat loss, right? If you're in a fat loss mode, you don't need a shake. You just don't. You need to chew food. Three meals a day, breakfast, lunch, dinner, possibly a snack. I rarely have a snack. I eat two, sometimes three meals a day. It just kind of depends, but you don't need a snack and you really don't need the shake as a baseline.

Robb: That's not really answering the question, but we noticed this within our gym based practice and I kind of felt like... And I would have all kinds of people, like Spencer Nadolsky, who are like, "Oh, shakes aren't the devil and everything." But I just saw people spin out and they would go from eating pretty well and then, do liquid food. Then they were hungry and then, they would end up overeating pretty consistently.

Robb: Then I started hanging out with Tyler and Luis and really watched the way that they handled things within the keto gains group and man, they could've made a mint linking wagons with some protein company and recommending that. Just their ethics are so sound that, what they noticed was that people who are really legitimately struggling with weight loss don't do well with liquid food, don't do well with shakes. They need to eat unprocessed food for the most part.

Robb: So Ben, I would one... It kind of becomes a nonissue. If we get people eating whole and processed food, it's not really going to be a problem. That said, in the context of eating beef or whey protein and the subsequent insulin response from that, it doesn't matter in the grand scheme of things, whether or not that's going to influence fat loss overall. That's still going to be driven by total caloric load, ultimately.

Robb: Some of the things mixed into that, if we get... Like in some people, and this is where some people will tolerate more or fewer carbs. If we get a disproportionate insulin response to carbohydrates and we get a low blood sugar environment, then people are going to tend to want to eat more food. We tend to not see this when the insulin response is from protein.

Robb: And this is another piece that's kind of interesting when people talk about bodybuilding or recovery. Proteins do release insulin and so, you're not necessarily always in a completely low insulin environment, even though you're eating low carb. This gets born

out, when you see the flip side of the crazy keto scene, where people are limiting protein intake because they're freaked out about the insulin response to this whole thing.

Robb: So I know that's kind of all over the place. But Ben, I would definitely ditch the shake and once you get to a level of leanness that is fantastic and you're training like absolute crazy, such that three meals a day don't work then...

Nicki: Then have the shake.

Robb: ... dump a shake in. I wish that shakes did as well as real food but they just don't. It's another one of these things where we've really never recommended shakes. Here and there-

Nicki: Specific situations.

Robb: Yes. Specific situations. Yeah, so I think I beat that one to death.

Nicki: Okay. Let's see. Our next question is from James on portal circulation and leaky gut. "Hi Robb. Thanks for your detailed answer to my question about sun exposure in QA number seven. Following your book recommendations in QA number six, I hungrily delved into the lecture notes on human metabolism. Thanks Nicki. And within the first chapter, I encountered some information that gave me reason to pause. The portal circulation, I'm certain that you can provide a more accurate and concise explanation of the system to your listeners than I can in this question, so I'll leave that to you if that's okay.

Nicki: My question is, given that all blood and therefore, solutes from the intestines are drained through the portal vein and through the liver, filtering out excess substrates and removing toxins, such as ammonia from the blood before it enters general circulation, how can leaky gut have such a damaging effect on the body? It seems to me that the liver is a vital backstop in this process, which was never mentioned, when functional medicine practitioners talk about leaky gut. They give the impression that blood drains from the intestines straight into the cardiovascular circulation and these fuel substrates are clinking around in our arteries causing inflammation, which seems not to be the case.

Nicki: Also, how does this impact the gut hypothesis of heart disease? Highly simplified here, where endotoxins is said to pass through the mucosal membrane into circulation, binding with LDL cholesterol, being attacked and immobilized by immune cells and ultimately, ending up being sequestered into an arterial plaque because the immune system cannot destroy cholesterol or unbind the endotoxin from it. With the portal circulation not removed, this endotoxin from the blood before it enters cardiovascular circulation and meets LDL particles. Is this disease process driven not only by a compromised intestinal lining but also by inefficient liver function? Thank you for your time. Really appreciate your input."

Robb: That's a great question and this is kind of, definitely before, oh, one question. This is kind of-

Nicki: Super advanced.

Robb: ... Chris Masterjohn area. Usually, he's the one that delves into stuff like this, but it's a fantastic question. So for people that aren't familiar with this, the portal circulation is the kind of circulatory loop that drains the gut and goes, as what James said, largely to liver and we do get it... This is where chylomicrons, the packages of lipids are unstitched and reshuffled and put into triglycerides and into lipoproteins. Proteins are kind of sorted and shuffle. Carbohydrates are stored at least, in part, in the liver. Then also throughout the rest of the body and that's actually, a great example of this LPS story that James is alluding to.

Robb: What he's asking here is a great question. In this leaky gut story, there's this discussion around lipopolysaccharide, which is kind of the cellular identification matrix around bacteria and this stuff is incredibly inflammatory in all vertebrates. It sends the vertebrate immune system into kind of an overdrive response. But James, if we just subbed out LPS for carbohydrate, this pretty much answers the story.

Robb: So although dietary carbohydrate fills some, potentially all of the liver glycogen, there's virtually always more that goes to the rest of the body. So although it removes some, it does not remove all. In the case of this LPS story in general, the liver should be effective. The liver in conjunction with the lipoproteins, the lipoproteins like LDL lipoproteins, LDL cholesterol, HDL cholesterol, these things bond to LPS and it tends to help in the detoxification of this substance. But if we have more LPS than what we're really able to deal with-

Nicki: The liver handles some and the rest-

Robb: The liver handles some and then, we get the the spillover and that's one piece of the story. Another piece of the story is that a lot of the lipid containing substances don't go directly into the portal system. It goes into the lymphatic system and the lymphatic system then dumps in right around the aorta.

Robb: So it does make it into general circulation without going through the liver first. So that one year of medical school anatomy actually pays off every once in a while. So, this is a great question though. There are kind of two directions that the LPS story gets around the liver.

Robb: The first one is that there may just be more occurring than what the liver can reasonably detoxifying. Then the other part is the lipid constituents that end up in the lymphatic system, also end up dumped into general circulation, do ultimately make it into the liver, but that's another spot where this stuff ends up.

Robb: Yeah, but a really good question. Lecture Notes on Human Metabolism is just an outstanding book. Really, really good. It was oriented for individuals heading towards medical school. So it was kind of, an end of their senior year. Like how to pull all the biochemistry, cellular biology, vertebrate physiology all together and make some sense of it. The MD-PhD who put that book together, he oriented a bunch of pharmaceuticals into it. He talked about statins, he talked about blood pressure mentally. It's really an outstanding book, yeah.

Nicki: Okay. Let's see. Our next question is on phytic acid from Joseph. "Is phytic acid harmful or of benefit? Is it really necessary to jump through the hoops of soaking and sprouting before consuming nuts and seeds?"

Robb: What do you think on this wife? What's your gut sense?

- Nicki:** A lot of people do find benefit when they soak and sprout.
- Robb:** For sure and I would throw this under the, it depends category. So phytates and even... Gosh, there's this stuff out of rice, I want to say. Ip-6, which is kind of one of these bonding chemicals, kind of a culation type chemicals. They can be beneficial in some circumstances and they can be a bastard in other circumstances. Georgia Ede who is a psychiatrist and really incredibly knowledgeable on this stuff, has some great studies where individuals would eat something like oysters, which are very high in zinc, and you would quantify the amount of zinc in the oysters. Then the person would consume it and they would actually do some plasma zinc analysis. So they can show, "Okay, the before oyster, plasma zinc was here and post-oyster plasma..." So it's showing that you're absorbing it or it's magically appearing in your bloodstream, one or the other.
- Robb:** Then she showed eating the same oyster meal, but with either say, fruit or corn tortillas. The fruit does not have phytates in it. The corn tortillas have quite a lot and the corn tortillas, plus the zinc source, basically made the zinc absorption zero. I mean, it just gutted it.
- Robb:** So this is one of these things that's really interesting and in looking at a lot of the Weston A. Price stuff, traditional cultures bent over backwards to soak and sprout and ferment and process grains, legumes and even dairy, for the most part. So, I think that there was some really good wisdom to all that. It kind of dovetails around on another piece around this kind of emerging story around the carnivore concept and whatnot and I could make a case that... How do I want to say this?
- Robb:** The amount of plant material that we eat is allowable only up to the point that it displaces animal products. At some point the overconsumption of plant material could potentially cause nutrient depletion. I know this is going to be a super controversial topic, but when you look at, let's say just things like spinach, they may contain different nutrients that may be valuable and they may look like they're in a large amount, particularly from a nutrient density standpoint, like a percentage of folate per calorie. But the thing is, the plant based materials are not that absorbable and oftentimes have constituents in them, like phytates that are antagonistic towards their absorption.
- Robb:** These things can also interfere with... They're basically protease inhibitors, so they inhibit the ability to break down protein, both plant and animal protein. So again, how important is it? I think it boils down a little bit to individual situations. But I think to the degree that people can get away with not doing this, is reflective of all the other right stuff they're doing. Also, I think that you're just kind of beating your system a little bit. Like there's some pressure testing that's occurring there.
- Robb:** So, if you're going to do bread, I would do something like Ezekiel bread that's been soaked and sprouted and all that type of stuff. A lot of people are finding these ancient grains, like the Einhorn wheat and then soaking, sprouting, doing the sourdough mix that that helps to break down the gluten and all that stuff. Although there's some great literature indicating that not a lot of celiacs still react to the Einhorn wheat, even after it's gone through all of that stuff.
- Robb:** I'll be completely honest, even though the Weston A. Price stuff is pretty cool, I think that this is still why a lot of people are pretty fucked up in that scene. Because they're just logistically dogmatic about having these foods and they don't realize that even some pastured dairy may be problematic for some people. Yeah. Yeah.

Robb: So, it's super context driven, and this is again, where if somebody has general problems or they're just wanting to ask a question, if they may be grain, dairy or legume reactive, pull them out for 30 days, reintroduce and see how you do. But I would say that to the degree, that you process these things with these traditional methods. It's definitely going to improve the nutrient value of those foods and it's going to decrease the likelihood of damaging the nutrient value of other foods.

Nicki: Okay. Let's see. Our final question this week is from Rory. He wants to know about a caloric estimate for young children. Rory says, "Is there an estimate for calories per pound when it comes to feeding my almost three year old or any child for that matter, say from two to 12? The teen years of course, make marking the onset of self-consciousness and peer pressure, thus thwarting any biological hard-wiring towards survival or is she still young enough to be biologically incapable of starving herself? At which point, I should just trust that she has a normally functioning, satiety signals? I ask specifically, about my daughter because as is par for the course in America, she received antibiotics immediately after being born. So it's not a stretch for me to imagine that she could have some kind of gut imbalance that could cause hormone dysregulation with her leptin and ghrelin."

Robb: Good question, but my gut sense is, Rory's probably being a little too worried about this. Also, I don't know how early... How old did she say?

Nicki: Three.

Robb: She said she's three.

Nicki: Almost three.

Robb: Okay. I mean, I know there are some benchmarks out there. I think it's something like 16 or 18 calories per pound or maybe it's 20 calories per pound. I forget off the top of my head, but it's a lot of calories generally. But even if you know this, then it's like you're going to weigh and measure their food and then, you need to weigh and measure what they didn't eat and you need to separate out the protein, carbs, fat.

Nicki: That's a lot of work.

Robb: It's a lot of fucking work. The risk-reward deal, I just don't see. Yeah.

Nicki: I think you feed them and they eat until they're-

Robb: Full.

Nicki: ... full. Especially if you're feeding him unprocessed, real foods, they're not going to overeat.

Robb: Right and they will generally not under eat and also, kids tend to cycle.

Nicki: They do cycle, yeah.

Robb: Zoe and Sagan, it's funny. We don't have a pool, but our friend has a pool and we've been taking them swimming. On the days when they swim, they don't really eat that much and you're like, "Man, they should be really hungry." But then I tell you what, the

next day, they eat everything that's not nailed down. They just don't want to get out of the water. So they might have an Epic bar or something like that and just kind of a little snack here and there. But they're so excited to swim that they won't get out and they might do a half decent dinner. But then oftentimes, they are so smoked by the end of the day of swimming. I mean, like six hours of swimming. There in the sun and all the rest of that. They don't even really eat that much. They're almost passing out at the table.

Robb: But then, the next day they get up and they eat everything. Which I think is a really... that's a great... In general, kids tend to do a really good job with that. I think that this is something that, over the course of time because of my kind of power lifting background, for ages, I just kind of over ate because I felt like I needed to eat more. I finally, at almost 50, have gotten to a spot where it's like, if I just kind of sit on my duff all day, I don't need that much food. Then on the day where I'm real active, I may lift weights and do two hours of Jujitsu, I eat a lot of food that day and then, maybe even the following day I'm like, "Man, I'm pretty hungry." So I end up eating more.

Robb: If we're not eating odd foods, I think that the appetite control mechanisms are very well in place and I wouldn't worry about a round of antibiotics displacing that stuff. It's a great question to ask, but I wouldn't be overly concerned about that. Anything else as a mom to cap that off?

Nicki: I don't think so. I think it is cyclic. I mean, I think that's fairly normal, where one day they might eat a ton and the next day it tapers off a bit. She's not going to starve herself.

Robb: Nope. Nope. The thing that we do, we kind of make it a speed bump method. We really kind of hold the kid's feet to the fire. It's like, you got eat your protein and then, if you want some more of this other stuff, then we kind of open it up and that works. That works fine.

Robb: We have noticed, even within the two kids, if Sagan in particular, who seems to kind of take after me a little bit more, at least in some ways, if she doesn't get enough protein, that kid gets cranky, real cranky. It's just like a switch just flips and then, she'll eat and she's good. I think she ends up potentially, getting a little bit of these kind of blood sugar changes, if she's not getting enough protein. So, you'll notice a little bit of variability on that.

Robb: Whereas, I think Zoe is a little bit more like you and just a little more even keel, with regards to... She'll eat a lot of protein, but even if she doesn't, it doesn't seem to affect her quite the same way. But Sagan's also going through growth spurt, so I don't know how much of that's going on.

Nicki: She's sleeping like 15 hours at night.

Robb: Yeah. Yeah and she's just been sprouting. So that's a whole other crazy thing to this and it's been funny all the way along. Now that the girls are basically seven and five, the changes aren't quite as dramatic. Maybe up to about three years old, maybe four years old, it feels like every time you kind of get dialed in on one sequence, then they change and you've got to rejigger things. But they still change over time and for sure right now, Sagan is growing a lot, sleeping a lot and we noticed that if she doesn't eat well, she will get some cranky McCrankerkins going on. Yeah.

Nicki: Yeah. I think that's a wrap for this week.

Robb: Yep. Yep. Thank you guys for the awesome questions. Enjoyed doing this, as always. Most of my activity, at least for a while, is still over at Instagram @dasrobbwolf. This episode brought to you by...

Nicki: Drink LMNT, LMNT Recharge and hope you guys are all having a great and safe summer.

Robb: We'll talk to you guys soon. Take care.