

Robb: Welcome back, wife.

Nicki: Hubs.

Robb: What's new?

Nicki: A lot.

Robb: I always love asking that, because we just spin in the same four walls all day long.

Nicki: So, you know everything that's new?

Robb: We have nothing new. Well, we're in the process of packing, getting ready to move.

Nicki: Mm-hmm (affirmative). Kids are out of school.

Robb: Kids are out of school. So we're swimming, and the kids are walking the dogs around on leashes, and basically torturing the animals. Nicki's been watching the wild kingdom that is our backyard, and our cat slaughtering all of the baby birds in the backyard.

Nicki: We have this wonderful nest, a robin nest up in the tree, and I've been watching the parents come and feed the babies, and then yesterday morning there were no parents.

Robb: Silence.

Nicki: It was silent, and I think our cat slayed the whole family.

Robb: The cat's been eyeballing this thing for probably a week, and I think he just waited for the baby birds to get fat enough to make it worth his while to climb the tree.

Nicki: Those ones I was particularly attached to, because I was watching them every day in the morning.

Robb: Oh, so the cat was pretty attached to them also.

Nicki: All right, let's jump in on our questions. Okay. Let's see. Our first question this week is from Steve. He says, "He keeps stuffing up and it's driving me crazy. Hi, Rob. I don't want to take too much of your time, but going keto for me has found me doing exactly what I feared I could do. I have been paleo for five or six years and so was my wife. We have no kids at home, so grains and junky carbs are not an issue or even a temptation. I'm in the middle of doing the keto masterclass, which I'm savoring, because I've been making some mistakes.

Nicki: 50 years old, workout regularly, doing, either mixed kettlebell workouts, or I do weight and resistance training. I like to do whole body workouts three times a week, and can mix in some cardio in between. I've kept fit most of my life and my goal is, as I age, to stay lean and keep mobile. Pretty simple.

Nicki: We live in Perth, in Western Australia, so we have great weather and lots of sun. I work as a gardener at a private school, a job I love doing, as I'm outside and moving all day. Not as hard as some sort of construction worker, but that can happen on any given day, just not everyday. Coming from eating paleo, the transition for me has been pretty easy.

As I went low carb and increased the fat I was eating, my wife like the sound of it, so she hopped on board. She's doing great, in fact, better than me.

Nicki: We aren't really that worried about measuring ketones at this stage, it has been more about getting the diet right. But my issue is I love the food. For some reason, it has made me hungrier. Stocking our fridge and cupboards, I made sure that we had all we needed and I wanted to see what I liked to eat also. So I've blown it on all sorts of things. I've had days where I ate too much thickened cream, one tub has 800 calories, and it is so easy to eat. I've blown it on nut butter and blown it on cheese. I can't believe it.

Nicki: At first, it was wrapping my head around the fat content, but I think I get it now. But I have put on body fat, which is so annoying. It's not a train wreck, but I feel like I'm in a rut, and it's hard to get out. I don't want to quit, because I can see, I have felt the benefits. It's just with the fat content and my physiology, there seems to be no room for error.

Nicki: I listened to your podcast, and since listening I've gone to the Ketogains website and worked out my macros. I was still tracking somewhat, but some days I may have blown it by 500 or 600 calories. I've come so close to quitting. As for me, it seems to have been an easy way to get fat rather than leaner. I'm not sure that you can help me, and I'm not sure what else I could tell you. Diet wise, I have intermittent fasted for three more years with different protocols. Doing 16 to 20 hours is pretty comfortable. I work out in the mornings, and I often don't eat until lunch or when I get home from work.

Nicki: My diet hasn't changed too much, except I've eaten cream, which I'm now over. Adding more fat to my meals, cooking in butter, eating nuts and doing other keto style things. Apart from that, my diet is still pretty normal. I love veggies. I have for years done a version of Mark Sisson's, Big Ass Salad, which would be my daily staple. Evening veggies could be broccoli with brussels sprouts, maybe some kale and mushrooms. Also we do milk, kefir, but I try to keep that to a minimum.

Nicki: If you have any suggestions, that would be great. Are there others that have had this sort of issue where going keto has made them fatter? Really enjoy your podcasts, and thanks for all of the really useful info that you've put out. I've also read your books. Best regards, Steve."

Robb: You know, it's funny when we were going through this, when I saw stuffing it up, I thought it was going to be a sinus issue. Do you have any thoughts on this? Like shooting [inaudible 00:04:30]

Nicki: The thing is he didn't mention protein at all, and he seems pretty focused on the fat, which as you talk about in the keto masterclass, fat is a lever. Protein is first, because it's the most satiating macronutrient. You know, he says he's hungry, so I'm wondering if he's not getting enough protein.

Robb: Right, right. That's kind of my first thought as well. The protein leverage hypothesis. It's so hard to unpack this stuff, because a lot of people, if they come from a kind of a traditional western diet, they shift to low carb or even paleo, but let's just say low carb. Instead of being on these carb roller coasters all the time, you just get this nice, even energy, even blood glucose levels. Whether it's ketone fueled or not, it's just like you're not on the ups and downs. Generally, they notice that they're not as hungry. But I think that that can kind of give way over time to being low protein.

Robb: Again, with that whole protein leverage hypothesis idea, whether you eat low carb or low fat, if you eat adequate protein, you're probably going to be pretty good, you know, all other things being equal. But if you're skinny on the protein, then your body is going to stimulate hunger and you're going to tend to eat more food. There is kind of a reality that one of the dangers of kind of keto eating is that the bulk of the food is pretty calorically dense, you know? I mean, you could go pretty crazy on plain sweet potatoes or something like that. You know, I mean, just the calorie density is not any-....

Nicki: An extra wedge of cheese, depending on how you measure a wedge.

Robb: Right, yeah, wedge. Yeah.

Nicki: Is a significant number of calories.

Robb: A significant chunk of calories. So the protein would definitely be a thought. An additional thought, he seems to be kicking the bulk of his calories to later in the day. So I would, following a lot of Bill Lagakos' work, and things that we're learning around time restricted eating, I would try shifting more of the calories earlier in the day. All things being equal, it seems like people generally do better with that.

Robb: Then one final piece, is thinking about your electrolyte intake, in particular, sodium. So Tyler and Luis shot me an interesting paper the other day. So, there's a lot of folklore in the keto world, which I kind of alluded to, that we get this kind of appetite suppressing effect while in ketosis and while fasting and stuff like that, and there's definitely truth to that. But, when ketone salt had been studied, kind of head to head with ketone esters, it's interesting, the esters produce higher levels of blood ketones, but they do not have an appetite blunting effect, not the way that ketone salts do.

Robb: Now, this is totally speculative, but one of the key features of ketone salts is they have a shit load of salt in them. We've often kind of joked that, you know, when people are like, "Man, I feel great using ketone salts." It's because they're actually getting a decent wack of sodium, in particular, in addition to the other electrolytes. So, I would really be fastidious on protein, and then also make sure that you get at least that five grams per day of sodium specifically-

Nicki: Especially because you're in a warm climate, you're outside all the time, you're ... yeah.

Robb: Yeah. So those are some biggies in that. So I guess the three are be on point with protein, make sure that you're getting your electrolytes addressed, and then finally, try shifting more of the calories earlier in the day, versus this later in the day eating schedule.

Nicki: Okay. So Steve, do all that, and then report back.

Robb: Ping back and let us know. Yep.

Nicki: Okay. So our next question is from Rory. "What's up with fiber and kids?" Rory says, "As part of restoring my own gut health, I've used prebiotic fibers in various doses based somewhat on Grace Liu's advice, and I'm curious if and when a supplemental fiber would be beneficial for my daughter?"

Nicki: Again, assuming that she started off at a disadvantage because of the antibiotics, it seems to follow logically that prebiotic fiber would help her get bacteria develop and

increase her overall health and resilience. Is that actually logical? Are there any cautions? Is there a certain dose that's age appropriate? Or do I just slowly increase until she has digestive upset? Should I mix fibers in order to feed a variety of bacteria? Or are there certain fibers that are optimal for a young gut? I.e. what would a cave baby be most likely to eat or chew on for fun?"

Robb: Man, that's a lot going on there. So, I think I've mentioned the Sonnenberg Lab a couple of times. I got to speak with Erica Sonnenberg at the event that Akil Palanisamy puts on each year with UCSF. They've done so many different things, but just consuming fermented food, this was one of the studies. Folks were consuming fermented food and they looked at their gut microbiome profile, the diversity, and the, you know, various ratios before and then during, and after the intervention of adding fermented foods like kimchi and sauerkraut, and stuff like that.

Robb: What was interesting is that the gut diversity increased while consuming the fermented food, but it wasn't any of the bacteria that were part of the fermented food. It's been understood for a long time, or at least somewhat understood, that that bacteria doesn't necessarily play a role in populating the gut, at least not longterm, but it seems to tune the immune response, and perhaps creates an environment that's more amenable for other organisms to occupy the space.

Robb: So that's an interesting thing. It seems a little bit more holistic, and kind of leaves all the information processing up to the gut and the ecology of the gut, instead of trying to, you know, have this notion that we're going to pinpoint, you know, fix anything that's going on there. We've talked about this in previous episodes, supplementation with prebiotic fibers, it seems to be a little bit of a mixed bag. Some people do great with it, some people do terribly. The point about having a really diverse mixture I think makes a lot of sense.

Robb: Garden of Life, like Dr. Perlmutter's prebiotic fiber, is a really nice spectrum. It has acacia in it, and lemon and orange peel pulp. It just has 20 different things in it. So, something like that could potentially be something that you add to maybe some apple sauce or something like that. I would probably keep the doses a little on the smaller side. I don't know that I would really want to run a GI, you know, pressure test on that. But those are the things that I would noodle on with all that stuff.

Robb: If you're doing white potatoes, cassava, white rice, going through the whole process of cooking it, chilling it, you know, improving the resistant starch profile, I think that stuff makes sense. But I would be a little bit careful doing outright supplementation beyond that. Do you have any additional thoughts?

Nicki: I got nothing.

Robb: Okay. Yeah. But our kids love both kimchi and sauerkraut. They eat it. If we put it out, they will eat it. We just sometimes, in putting out the meal, forget to, but most kids will gravitate towards that pretty well. So I think that that's kind of a nice, simple baseline that you can have that-

Nicki: Just get the mild one.

Robb: Yeah, just get the mild one. Yeah, yeah. Every once in a while I mess up and get the red lid. Even though Sagan has a pretty spicy palateYup.

Nicki: Alrighty. Let's see. Our next question is from Mads. Tips for increasing testosterone. "Hey, Rob. In a previous Q&A you talked about how muscle gain in hypertrophy is caused by calorie surplus and progressive overload. You also mentioned that gaining muscle is, without a doubt, easier if you have high testosterone. Calorie surplus and progressive overload is easy, but how do I increase my testosterone? You mentioned that there are a number of different tactics that you can use. My testosterone is not low, but it's definitely not high either. I'm 27, and my testosterone is 640 nanograms per deciliter, and my free testosterone is 16.36."

Robb: Man, this is a good question. So a young guy, it's-

Nicki: His testosterone is lower than my dad's.

Robb: Yeah, who's 70.

Nicki: 70.

Robb: Yeah, yeah. Which he's just kind of a stud, so you're-

Nicki: Well, no, but, I mean, also, I know you've talked before about how our parents and grandparents generation, as a baseline, had higher testosterone than-

Robb: Yeah, Kirk Parsley has some numbers that he quotes that, my grandparents' generation, both men and women, appeared to have testosterone levels about three times on average what we're seeing today. So, yeah, I mean, it's probably not optimal from a recovery standpoint. This is the thing, again, we don't really know why this is changing. Is it xenoestrogens? Is it a change in the gut microbiome? Is it all of these things?

Robb: The stuff that can definitely help, usually something that looks kind of akin to a lower carb diet tends to help, because people lose body fat. It's interesting, on the testosterone story, specifically with men, being super lean is antagonistic towards testosterone. So once you get below about 10%, maybe 8%, as a baseline, your testosterone will tend to start dropping because of some stress response issues.

Robb: Some people run leaner and high testosterone, but this is, again, you know, kind of generalization. But then once you start cresting up above maybe about 14%, 15% body fat, you have enough fat mass, which contains an enzyme called aromatase, which can convert the testosterone into estrogen. The interesting kind of downward spiral with that is the brain doesn't sense testosterone levels, it senses estrogen levels.

Robb: So with estrogen levels are high, the brain says, "Oh, we're good with testosterone, I don't need to stimulate luteinizing hormone, and, you know, ping the Leydig cells to, you know, release the precursors and co-factors involved with the whole testosterone production cascade."

Robb: So someone who is overweight will have low testosterone, which tends to feed into overweight, which then elevates their estrogen levels, which suppresses testosterone production at the brain. Then even if they go and get some sort of testosterone replacement therapy, if the doctor is ham-handed with this, they just give them a big huge dose of testosterone, which further suppresses indigenous testosterone production.

Robb: So, with someone like this, some things like zinc citrate have been shown to be pretty effective, about 50 milligrams per day. You have to be careful with doing that consistently, because it can deplete your copper levels.

Nicki: So when you say careful doing it consistently, like once a week? Every other day?

Robb: You could do it maybe four or five days on, and then take four or five days off, and or you could use a supplement like Jarrow's zinc citrate, which comes with copper, five milligrams copper. So, that's something to do, is to make sure that you're supplementing with that. If your body fat levels are north of about 14, 15, if they're in there, then I would try to do some things to get leaner and see if that improves testosterone levels.

Robb: Sleep is going to be a huge factor. So, what time are you going to bed? What time are you waking up? What's the sleep quality? Completely black room.

Nicki: Getting in bed before midnight.

Robb: Earlier is better. Yeah, yeah.

Nicki: As many hours asleep before midnight as possible.

Robb: Yup, yup, ideally. Which is harder in the summer months, depending on where you are, and what latitude you're at. But improving sleep, improving body composition. Those are the places that I would look first, and I would really dig into the diet and lifestyle features first and figure out what if any bump you can get from that.

Robb: Only then, if we aren't seeing favorable changes, do we start working with a knowledgeable functional medicine doctor, like anti-aging doctor. Starting with things like Clomid and some mild aromatase inhibitors and stuff like that to try to goose endogenous production first. Particularly someone that's 27, you do not want this person getting into a, you know, a testosterone replacement therapy scenario.

Robb: I guess one other question is for Mads, has he ever suffered a significant traumatic brain injury? Sometimes you may not be aware of that, but if you played youth football, if you played hockey, if you fell off of a trampoline. So this could be something too that is part of the sleep piece. If sleep seems to be pretty good, but, you know, everything isn't really kicking over, then there can be some sleep studies, there can be some brain imaging and some testing to look at what's going on between the pituitary and the other elements of the story. So that's kind of getting in another layer.

Robb: It's going to be awhile, but we will have some material that's going to really help people unpack this stuff in a completely systematic process, because there's so much shitty information on this and it's so confusing and you need a lot of nuance. There is never a one size fits all approach on this, other than maybe sleep better. That's about the only one that, you know, that's going to benefit virtually everybody. But occasionally, you have these outliers of people who have a particular type of depression or mania and they actually benefit from certain periods of sleep deprivation.

Robb: So again, there's an exception to fucking everything. This is why when people just paint everything with these broad brush strokes, there's just seemingly an exception to everything. So yeah, I know that I was kind of all over the map on that, but it's a lot of

stuff. We'll be doing some work with Kirk Parsley in the future to get some materials so that people can really navigate this story in an effective way.

Nicki: All right. Let's see. Our next question is on sex hormone binding globulin elevated on keto carnivore, and this is from Ian, Ian. I'm not sure how to pronounce your name. Ian says, "Since switching to keto, I've noticed an increase in sex hormone binding globulin levels, which brings down my free test, total test, or free testosterone. So total testosterone has stayed high normal, but was wondering how functional it is with the free portion bound up? The AGA is a bit low too. I feel great, all in all, but I was just wondering what your thoughts are on that."

Robb: Yeah, and so the previous question, I should've mentioned the sex hormone binding globulin story as well. It's interesting, generally when insulin levels go down on a relative basis, we tend to see sex hormone binding globulin go up. What's unclear about that, is it's somewhat similar to thyroid, specifically T3, decreasing on low carb, because you need more thyroid hormone to process carbohydrate. If you're eating fewer carbohydrates, thyroid decreases, but is that clinically significant? We just don't really know.

Robb: Another piece of this whole kind of androgen story, and again, this is true whether you're male or female, is that you may have a particular level of a hormone that may look kind of low, but you may have particularly high receptor site density or receptor site affinity. So a little bit of the hormone goes a long way. The flip side, is that you could have quite high hormone levels and low receptor site density and or affinity, and so you're still not getting, you know, an effective kind of story.

Robb: I'm not entirely sure how to fully unpack that, doing some side of full body radio immunoassay to determine what your receptor site density is. Receptor types change moment by moment too, they come online and offline all the time. So yeah, I mean, I guess the best answer that I have with that is that we could play around with titrating in more carbs, start with 50 additional grams of carbs a day, stick it in the post-workout window. Do you feel better? For both men and women, do you experience better libido? For men, do you wake up with morning wood and stuff like that? Whereas, perhaps previously you did not.

Robb: If we see those things improve, then we might make a case that the insulin levels were suppressed beyond what may be beneficial. So, we may have been getting an unfavorable elevation in sex hormone binding protein or globulin, whatever they're calling it these days. So, those are some things to play with on this. These are the, you know, last 10% things for most people that we have to devote some time to unpack.

Nicki: Okay. Let's see. Our final question this week is on chicharrones.

Robb: Cha, cha, cha.

Nicki: From Isaac. "Hey, Rob. chicharrones, pork rinds, are they a healthy snack? I've heard you indirectly mention them on the podcast some time ago, but I wasn't able to infer whether your opinion is favorable or cautionary. I'm an ultra runner and during peak training season we'll spend about 20 hours per week running. In the battle days, I would top off my calories with a gigantic bowl of cold cereal in the evening or an enormous serving of lentils and rice. But then I got woke, started monitoring my blood sugar and started looking for low carb options to fuel.

Nicki: I'm already having two salads each day, huge amounts of veggies and as much meat as I can stomach. So I'm just looking for some calories to fuel the movement. So are pork rinds okay? I avoid the flavored variety, the bags I buy just say fried pork skin on the ingredients list and I dip them in sour cream. The best part is how easy it is to get an extra thousand calories, and the flavor. Am I headed towards clogged arteries? Or are pork rinds actually healthy in the way that bacon is healthy? Thanks. Love the show, Isaac."

Nicki: He says, "After submitting my question about whether pork rinds are an acceptable snack, I realize that Rob's answer might we'd need to see your lab work." So then he has his cholesterol and some of that stuff.

Robb: That's doing some diligence. We don't have an LEO. Oh, do we? No, we have lipoprotein, ApoB. Oh, he does, yes. LDL particle is 1149, that looks phenomenal. Quick triglyceride, HDL ratio looks great. C-reactive protein is tiny. Okay, cool. Those numbers we'll put in the show notes.

Robb: So, this is one of these funny things. So, Rhonda Patrick, who I think is great, but pork rinds have been one of the things that she's just gone after. She's like, "Oh, it's just still unhealthy, you know? There's no nutritional value there." Which I mean, there's not a lot of vitamins, there's probably not a lot of minerals particularly, but it is a really interesting source of collagen. When you're in this kind of lower carb, unprocessed food world, there's not much that's crunchy. You'll grab a piece of ice just to be like, "Oh, man, I want some sort of crunch."

Robb: We'll do some jicama thin sliced every once in a while. But you just kind of, you miss that crunch, and chicharrones are phenomenal for that. Typically, they're cooked in pork fat. I guess you could make the case that maybe some of that stuff is producing some oxidized cholesterol. But I was just reading some stuff recently that people in ketosis, their liver preferentially identifies lipo proteins with oxidized cholesterol and removes them from the system.

Robb: So, it's kind of an interesting story, where even though cholesterol levels, possibly even lipo protein levels may go up under a ketogenic or low carb diet, your body also seems to be more savvy about removing the offending particles that appear to be the most problematic. So, it's kind of, you know, is that a wash? Is it a net win? A net loss?

Robb: With the option of always modifying my position in the future, I would say, in general, I can't really see pork rinds in the context of a keto carnivore type diet being the least bit problematic. The cool thing here is that Isaac has done the diligence of doing some good blood work that actually answers some questions. Even just glancing at it, it's kind of like, okay, we're pretty good to go. We don't have any type of wacky discordance, we don't have hidden insulin resistance.

Robb: There's a few other things we could take a peek out if we wanted to. But from reading between the lines, it sounds like he's looking, feeling, performing well, but he's just kind of curious about like, "Hey, is this one thing that I'm throwing down the pie hole going to crush me?" So, I would just repeat this blood work, probably once a year or something like that, to just use as a baseline. Maybe at some point, additionally doing a coronary calcium, just so you've got that in your back pocket, and we can use that again as a baseline.

Robb: The CIMT can be handy also, but it takes a very skilled practitioner to do the CIMT well. So those are a little bit of a mixed bag and they're a little more variable than the coronary calcium. But beyond that it seems good. You know, I will make a plug for the Epic pork rinds. They have a barbecue flavor, a sea salt and vinegar and salt and pepper.

Nicki: Salt and pepper is really good.

Robb: Yeah, and the barbecue one, the kids ... It literally can-

Nicki: They have a baked one too.

Robb: Yeah, they do have a baked one, which I like less, honestly. I like the ones that are fried in pork fat. But either one of the flavors, but mainly the barbecue flavor will provoke the girls into a fist fight, practically, as they get down to the bottom of the bag. Which I don't know if that's good or bad, but they're good, they're tasty.

Nicki: The dog likes them too.

Robb: The dog definitely likes them too.

Nicki: The bag comes out and he hears it, and he's right there sitting, pleading.

Robb: So Isaac, good question, and good on you for doing some diligence on your blood work. It's incredibly frustrating when people spend time and money to go get an assessment that answers nothing. This is another area that we're going to be dipping our toes into to help people make better decisions around the lab work that they're choosing, why they're choosing it. So keep your eyes open for that too.

Nicki: Making sense of it once they get it.

Robb: Yeah, because literally, 90% of the time, 95% of the time, people do blood work and they're more confused by what is ordered than otherwise. It's because it's just not enough to really make a definitive call in general.

Nicki: All right. That was our last question for the week. Thanks everyone. As usual, if you have questions, you can submit those at Robbwolf.com on the contact page. What else?

Robb: Most of my online activity currently is over at Instagram at [dasrobbwolf](https://www.instagram.com/dasrobbwolf).

Nicki: D-A-S-R-O-B-B-W-O-L-F.

Robb: That's it. So, thanks for the awesome questions. You guys are fantastic, and-

Nicki: We'll be back next week.

Robb: We'll be back next week. We may be a little bit hit and miss between now and August, mid August, because we're going to be moving and stuff like that. We're going to try to bank some of these so that we stay ahead of stuff. It's possible that life may just grab us by the shorthairs, so in demand that that doesn't happen. But we will do our best to stay on top of. Yup.

Nicki: All right. Thanks guys.

Robb:

Bye.