

**Nicki:** It's time to make your health an act of rebellion. We're tackling personalized nutrition, metabolic flexibility, resilient aging, and answering your diet and lifestyle questions. This is the only show with the bold aim to help one million people liberate themselves from the sick care system. You're listening to The Healthy Rebellion Radio.

**Nicki:** The contents of this show are for entertainment and educational purposes only. Nothing in this podcast should be considered medical advice. Please consult your licensed and credentialed functional medicine practitioner before embarking on any health, dietary, or fitness change. Warning: when Robb gets passionate, he's been known to use the occasional expletive. If foul language is not your thing, if it gets your britches in a bunch, well, there's always Disney+.

**Robb:** Top of the morning, wife.

**Nicki:** Buenos dias, senior hubs.

**Robb:** You're culturally appropriating my morning.

**Nicki:** No, I'm not.

**Robb:** Okay.

**Nicki:** I don't think it works that way.

**Robb:** If I say it... Well, yeah.

**Nicki:** I studied Spanish.

**Robb:** If I say it does, then yeah. Anyway.

**Nicki:** If you say it does, then it is, because-

**Robb:** No.

**Nicki:** No.

**Robb:** I'm the one person that can't say it does, then it is.

**Nicki:** You can't say it. That's right. That's right.

**Robb:** So what's new?

**Nicki:** It's a little early.

**Robb:** It's a little early for that.

**Nicki:** Goodness. What's new? Well, we just had Easter Sunday and navigated all that goes with that. Hopefully nobody has little kids listening right now that... If you do have little kids listening, maybe pause, especially if they still believe in the Easter bunny. Ours do, sort of-

**Robb:** Ish.

**Nicki:** ... still. But-

**Robb:** Yeah. Oddly, probably more in the Easter bunny than in Santa Clause at this point.

**Nicki:** Yeah.

**Robb:** Which perplexes me, but...

**Nicki:** And when Zoe was really young, when we would hunt with her cousins and whatnot, it was a big thing if she didn't get the golden egg. And then she got it twice in a row, and then this year, their whole week they were talking about, "Oh, I wonder who's going to find the golden egg." And I was such a slazy mom, and we moved, so I didn't have the golden egg that I used to use, and I didn't get one, and so I didn't have a golden egg.

**Nicki:** So I'm like, "Shit, Robb, what do I..." It's the night before. "What do I do?" And he's like, "Well, you could get some foil, and it could be a silver egg." So I started down that path, and I got some foil, and of course you can't make foil really look much-

**Robb:** Like an egg.

**Nicki:** ... like an egg. And we usually put five bucks in our golden egg. And so I was searching through just some note cards I had, and I found some note cards with a golden, more like a deep yellow envelope. And so I wrote on there, "Golden egg." And then on the back I wrote... What did I write? I'm like, "I'm sorry-"

**Robb:** Basically, due to COVID supply chain constraints, yeahs.

**Nicki:** "... I'm so sorry, but due to COVID, I haven't been able to find all the golden eggs that I need this year. Sincerely, the Easter bunny."

**Robb:** It was basically like an IOU. Yeah.

**Nicki:** Well, no. I mean, there was still \$5 in the envelope, but it's just like, you don't get the golden egg.

**Robb:** It was kind of the golden egg IOU.

**Nicki:** Yeah. It was sort of a proxy.

**Robb:** Okay, proxy. I'll take that.

**Nicki:** The envelope was a proxy for the egg.

**Robb:** I'll take that. Yeah.

**Nicki:** Yeah. So anyway, that's how our Easter went. Otherwise it was good.

**Robb:** Do you want to talk about our kids' painting exploits?

**Nicki:** Oh, we could talk about that, too, our big home school fail. First of all, let me preface this by the fact that our kids love horses, like the Breyer horses. They've taken some horseback riding when we were in Texas. We're looking for an instructor here in Montana. They really love all things horse, and they know how to spell horse, because it's been a spelling word and they write it reasonably regularly. We've had them write letters to friends and cousins in Texas, and so they've been spelling horse just fine.

**Robb:** Seemingly.

**Nicki:** Seemingly. And then yesterday, we were outside. Robb and I were working out. The girls were painting rocks. We found our art paints. And there's lots of big, nice-

**Robb:** Really nice, big river rocks type stuff, yeah.

**Nicki:** ... rocks around here, and so they've been collecting some of the nicer ones and decorating them. And both of them made a rock that said horse. And-

**Robb:** It was close to horse.

**Nicki:** They were trying to paint "horse" on the rock. Sagan's was spelled H-O-R-E-S, so like whores without the W. And Zoe spelled hers H-O-E-S, like hoes.

**Robb:** Hoes and whores.

**Nicki:** And I saw that, and I was like, "Oh, you forgot the R." And Sagan's like, "It's okay, Mom. I don't want to change it because it'll mess up my rock." And then I looked at Zoe's, and I was just laughing. And I had to walk into the garage, and I'm like, "Robb, go look at what the girls wrote on their rocks."

**Robb:** And I was... Yeah. The home school fail was strong.

**Nicki:** That's a fail. That's a fail, yeah. So anyway, those rocks are now going to be dispersed throughout our yard for any and-

**Robb:** All of-

**Nicki:** ... all to see.

**Robb:** Yeah. I did photo document it, though, for some future day.

**Nicki:** Oh, posterity.

**Robb:** Yeah.

**Nicki:** Awesome.

**Robb:** Is that similar to a proxy?

**Nicki:** Posterity? No.

**Robb:** Okay.

**Nicki:** Not at all.

**Robb:** Just making sure. No, not at all. Oh, such certitude on that.

**Nicki:** Yes. What else? I did want to mention something else just, again, for any of y'all that have kids. When Zoe and I... When we moved from Texas, we had obviously lots of time in the car, and we were split most of the time. So half the time I had Zoe with me, and half the time I had Sagan, and vice versa with Robb. And we were listening to some audiobooks, and Zoe and I listened to the entire book.

**Nicki:** There's a trilogy called The Bark of the Bog Owl by Jonathan Rogers, and the first one is called Bark of the Bog Owl. And Zoe and I listened to the whole thing, and it was so good. When we got here, we didn't want to start the second book because we wanted Sagan and Robb-

**Robb:** The whole family.

**Nicki:** ... to be in on it. So we restarted The Bark of the Bog Owl, and we have about a 25 minute drive in to jiu-jitsu. And the girls go, we go, so we've been listening to this during our drives. And it is fabulous. We finished that as a family, and now we're on to the second book of the trilogy, which is called The Secret of the Swamp King. And the author does the narration. He's fabulous. There's lots of sound effects that are fun to try to mimic and recreate. And so it's just a really, really fun story for family.

**Robb:** And we have, just as an aside, been listening to audiobooks in the evening when we wind down in lieu of a TV show or something, and we all get on the floor and do some stretching and foam rolling, and it's been great. Yeah. But great, great series so far, and amazingly well done. Yeah.

**Nicki:** Yeah. So just wanted to throw that out there for anybody who might be interested in a good audiobook series. Okay, let's get down to some business. Next Friday, April 16th, is the kickoff call for our spring 2021 Rebel Reset. Robb and I will be doing that kickoff call. That will be followed by our week of seven day carb testing, which is optional, and then after that we start the actual 30 day reset on, I believe it's the 26th.

**Nicki:** In our live chat this past week, we had a rebel mention that she's listening to the book club books. Our book club that we mentioned, that's underway, that's going well. She's listening to the Book Club with her teenage son, and that her entire family will be participating alongside her in the next 30 day Rebel Reset.

**Robb:** Oh, nice. Very cool.

**Nicki:** And they're also going to do the seven day carb test together as a family, so I thought that was super cool and wanted to share that. If any of you who are not yet members of The Healthy Rebellion and would like to join us in our spring 2021 Reset, just go to [join.thehealthyrebellion.com](http://join.thehealthyrebellion.com), and jump on in. It's going to be a good time.

**Robb:** I mean, we'll be there, but it'll still be good.

**Nicki:** Yes. We have Jessica-

**Robb:** We have actually cool, fun people there-

**Nicki:** ... and Squatchy and Elizabeth and-

**Robb:** ... as well. Yeah.

**Nicki:** ... Sybil and Allison and our moderators. We've got other people to make up for what we lack.

**Robb:** Indeed, fortunately.

**Nicki:** Yes. What's our news topic today, hubs?

**Robb:** I did not pull down the title because it's super, super long. Actually, the Sci-Hub thing right there, it is effective vitamin D treatment and best available therapy versus best available therapy on intensive care unit admission and mortality among patients hospitalized for COVID-19, a pilot randomized clinical study. So basically, the administration of vitamin D with and without the current front line, adjunctive therapies. And it impressively reduced both mortality and severity of progression, like going from admission to intensive care to intubation and all that type of stuff.

**Robb:** And it seems like once folks get intubated, they just don't get back off intubation. So really interesting. There's been a lot of back and forth on, is vitamin D helpful, is it not? Most of what's been done thus far has been kind of retrospective in nature, epidemiological in nature, which can be helpful. It can ferret out some interesting findings or tell us if we're barking up the wrong tree.

**Robb:** But this was cool. It's a legit randomized clinical intervention. Seems to show some non-trivial efficacy. And it's worth mentioning, I was reading Dr. Michael Eades's newsletter called The Arrow, which I love the Eades. Those guys are just awesome. They've been in this fight for so damn long. And I would argue maybe the Eades, maybe Stephan Guyenet have influenced my work personally more than anybody else.

**Robb:** Art De Vany arguably very, very powerful if I were to name maybe a top three, and The Arrow is the name of Dr. Eades's newsletter. And he was doing a breakdown on a bunch of different data. There's so much. We're just earlobe deep in this data. And he mentioned, as almost an aside, but then he circled back around and he was like, "Let's really unpack that." The median age of death associated with COVID-19 infection is 80 years old. So half-

**Nicki:** Half the deaths are older than 80.

**Robb:** ... are older than 80.

**Nicki:** Half are younger.

**Robb:** And again, any death is a tragedy, but it's another one of these things where the average lifespan is like 78 years old. And just statistically speaking, it's like once you get past that, you're on borrowed time to some degree. And I'm almost 50, and so that's kind of daunting. It's like, fuck, 28 years, really? And just as you get older, everything heightens. I think Doc Parsley, when we were chatting with him, he said something like, "When you're in your 70s, your likelihood of dying from anything is something like 200% or 2,000% greater than when you're in your 20s." It's just unfortunate. If you want to live, you're going to die at some point.

**Nicki:** It's just a part of reality.

**Robb:** Yeah, it's a part of reality. And there's this very steep J curve in there. I don't want to beat that thing to death. I think everybody's probably got some degree of fatigue over all of this, but it was a really interesting observation point. I think there's 250 people under the age of 18 that have died in the United States thus far. So just some of these data points out there. And again, one can pick and choose the data points any way that they want.

**Robb:** He was actually making that point that he had seen two different news pieces where folks had gone in and done a little bit of data mining, and one of them was basically like, "Look at these idiots on this side of the political spectrum, and look at how terribly they

did on COVID deaths and problems." And then there was the exact same article, only pointing to the other side of the political aisle.

**Robb:** And what Dr. Eades did was actually get in and put in the deaths per 100,000 relative to a Democrat versus Republican governor of all these states, and there was absolutely no data in there at all. It was completely random. And so that too is interesting stuff. But in this age of just easy, ubiquitous data, it's a pretty trivial process to spin up just about any damn story that you want to do. And that's where like trying to consider the totality of data sets and be very, very careful about how that stuff is presented. So anyway.

**Nicki:** Okay. Let's see here. Our T-shirt review winner this week goes to JDubLifter. He says he's even more of a fan because, yay, Robb eats menudo. "Being Mexican, I do get surprised and excited when someone enjoys menudo from non-Hispanics. But I digress. I really enjoy listening to your podcast, quality content, and passion in the work you provide for us. You and Nicki complement each other, as it should be. I love your usual intro, how you greet each other, asking how you are as if you haven't seen each other." He says, "You'll be missed in Texas." That's Juan from Dallas.

**Robb:** Nice.

**Nicki:** Juan, thank you so much for your review. Send us an email to [hello@robbwolf.com](mailto:hello@robbwolf.com) with your T-shirt size and your mailing address, and we'll send you a Healthy Rebellion Radio T-shirt.

**Robb:** And it's J Dub Lifter.

**Nicki:** J Dub Lifter, yes. And The Healthy Rebellion Radio is sponsored by our salty AF electrolyte company, LMNT. And I think the cat is officially out of the bag on our new flavor.

**Robb:** El gato sin bolsa

**Nicki:** Sin, [laughter] Yes.

**Robb:** Escape.

**Nicki:** Es sandia. The new flavor is watermelon. And it will be officially available for purchase on the website, [DrinkLMNT.com](http://DrinkLMNT.com), on April 13th.

**Robb:** It's awesome.

**Nicki:** It's quite good.

**Robb:** Nicki's not a huge fan, but-

**Nicki:** It's quite good. I like it. I don't normally gravitate towards watermelon flavored anything.

**Robb:** You don't have to be a fan of all of them.

**Nicki:** I know.

**Robb:** I only like the citrus salt now in-

**Nicki:** In margaritas.

**Robb:** ... margaritas.

**Nicki:** No, of the three new flavors that we're releasing this year, this one is okay. The one that's coming out in July I absolutely love, so I'm super excited about that one, but I don't want to take the fanfare away from watermelon, el sandia.

**Robb:** Okay, fair.

**Nicki:** I do want to mention too that super salty customers who've made at least two purchases from DrinkLMNT.com, you already have the ability to purchase watermelon. If you just log into your dashboard at DrinkLMNT.com, you'll see watermelon as an option, and then it'll go live for the general public on the 13th. That's pretty exciting.

**Nicki:** If you haven't tried LMNT yet, you can still take advantage of the free plus shipping offer for the sample pack. That's one stick pack of our seven current flavors, citrus salt, raspberry, orange, chocolate salt, mango chili, lemon habanero, and the raw unflavored. That offer I think will be going away shortly, so if you haven't get grabbed a sample pack, you'll want to do that. You just pay shipping, which comes to just \$5 if you live in the US. And again, that URL is DrinkLMNT.com/Robb. That's Drink L-M-N-T dot com slash R-O-B-B.

**Robb:** Cool.

**Nicki:** Cool. Cool, cool. You ready for questions?

**Robb:** That was a lot of foreplay.

**Nicki:** That was.

**Robb:** Let's get after it. Yeah, folks are-

**Nicki:** That was. Okay. Okay, we've got a question from Shannon about antioxidants post-workout and whether or not they inhibit muscle growth. She says, "Hi guys, a little background. I am a 56-year-old woman, super lean and fit. I eat whole foods keto or low carb, high fat, not always full keto, and do body building type weight lifting six days a week. I'm focused on continuing to build more muscle, especially in the booty, and also wanting to be more strict keto because I love the mental clarity and go getter optimism I have when in ketosis. My schedule: I normally start my fast around 7:00 PM. I have my plant-based pre-workout around 11:00 AM, which has four carbs."

**Nicki:** She's wondering, "Does this count as breaking my fast? I'm not thinking so. Then I lift at 11:00 or 12:00, and I have a post workout shake around noon or 1:00. Here's my question. I love my daily chocolate super food shake, and it's my main carb source other than veggies and my pre-workout with 11 net carbs. For quite a while I've used it as my post-workout meal, figuring it's a good choice with a combo of 17 carbs, 11 of them net, and 17 grams of whey protein. And I often add half a scoop of another protein powder to bump the protein up a bit. But I've read a few times now that antioxidants are not good post-workout because they can inhibit muscle growth. Is this true? And if so, do you know the threshold as to what is too much?" And then she posts a label of her post-workout shake.

**Robb:** I think the rest of it's just kind of...

**Nicki:** Okay.

**Robb:** I want to tackle that, the little side question, is four grams of carbs-

**Nicki:** Is four grams of carbs-

**Robb:** ... breaking your fast? We get questions related to that all the time, and even just kind of commentary, say, like with LMNT, because it has Stevia in it. Folks are like, "It'll cause an insulin release, and that'll block your ability to shut down mTOR and autophagy. We have no assay for autophagy and all this stuff. It's kind of a global activity, and so nobody really knows one way or the other on this.

**Robb:** But what we do now is, even an intervention like Valter Longo's fasting mimicking diet where people are getting 500, 700 calories a day, they're still seemingly getting a ton of this benefit. Now, I don't like all of Longo's work. I think he misrepresents a lot of the potentiality around this stuff. I think that there are a lot of very smart people in this scene that are just, they're presenting hit this as an on, off switch, not a rheostat where stuff dials down, stuff dials up.

**Robb:** And we are, I think at some point, or in some way we're going to release more broadly my longevity, are we trying too hard talk. And I don't know if I'm right or wrong on this, but I build a pretty propelling case that people are freaking out over these... It's always so, in this case, what is the goal of that fasting period? If it's just autophagy, okay, that's fine, but you're going in to lift weights, and that's going to stimulate autophagy, and also mTOR, but in a pretty selective way.

**Robb:** And as cool as fasting is, you can't do it forever. Eventually you die. And we need some amount of on, off in this story, and I think that that's something that folks just get really kind of freaked out about. I've seen a lot of people freaked out about just insulin in general. And you can still find it in the low carb circles where people are like, "I can't eat carrots. They have a glycemic index of 90," or whatever. And it's like, you got to eat a pound of carrots to get any appreciable carbohydrate out of it, and it's hard to do.

**Robb:** People are more freaked out about the mTOR, fasting, autophagy, and somehow bugging that accidentally than they ever were, seemingly, about the insulin. Or maybe I'm just getting old and worn out, and just don't have much fight in me. But just as an aside, we need to keep some bigger... Instead of just saying, "Does it break my fast?" It's like, well, what is the context? What are you trying to do, and does it even matter?

**Robb:** And if it breaks it for an hour and then you digest the food and it goes through your body, and it nourishes your cells, and then you go back down to effectively a fasted baseline, is that the end of the world? And again, if you're doing something for adjunctive cancer therapy, or you have an autoimmune flare and you're just trying to really tamp down inflammation and pro-inflammatory signaling at every turn, okay, then we're talking about a different situation.

**Robb:** But yeah, I just wanted a quick aside on that. And then more to Shannon, her specific questions, the super food shake seems fine. If folks have followed us for any amount of time, you know that we're not huge fans of shakes, but she really enjoys it, and compositionally it looks pretty good. What I like about it is that the vitamins and antioxidants that are in there, things like beta carotene, B vitamins, they're from whole food source. They're not super physiological levels of this stuff thrown in as an afterthought to just kind of beef it up.

**Robb:** And that's where I think that people get into problems with this stuff. We see some of these studies where high dose vitamin C, like a gram or even 500 milligrams... Getting 500 milligrams of vitamin C from fruit, say, like citrus, is a pretty challenging thing. You can do it, but it's a lot of fruit. And so when people start taking in amounts that are super physiological from what you can get from food, I think that that's where we start seeing potential problems.

**Robb:** And again, if you go get after a workout, you've got this window of time... And Tyler and Luis are really quite adept at this, the Ketogains founders, of understanding the importance of that peri-workout nutrition to be able to get the most out of the workout. And this is again where instead of being so worried about the fasting side of the story and autophagy and suppressing mTOR, be really, really geeked out about the anabolic window that you have, and take full advantage of that, and don't worry or sweat it.

**Robb:** And I'm not saying everybody needs to be a professional or amateur body builder. I'm not suggesting that everybody eats 10,000 calories a day so that they get as big as they possibly can, but all other things being equal, more muscle mass is better for everything. Your metabolic function, your glucose disposal, avoiding the sarcopenia-related problems that put people into rest homes and make them more prone to all these other disease states. So I don't see a problem with this. I still would lean more towards whole foods that you chew, but again, Sharon seems to really, really like this, and it's working for her, and-

**Nicki:** So she's getting basically... She doesn't say what her plant-based pre-workout has as far as protein goes-

**Robb:** She says plant-based, but then it's whey protein.

**Nicki:** But then she's having... Well, that's her pre-workout. Her post-workout has whey.

**Robb:** Oh, okay, I got you. I got you.

**Nicki:** And the post-workout has 17 grams of whey protein, so she's got a lot of real food protein to eat-

**Robb:** To make up beyond that, yeah.

**Nicki:** ... from 1:00 til whatever time she stops eating at night, to really do herself justice.

**Robb:** So I think I answered that. I'm not freaked out about this suppressing muscle gain. If it had a bunch of B vitamins or vitamin C that was at super physiological levels, then I might be more concerned with that. But again, even in that context, there's always competing forces here. And I'm not saying you should supplement vitamin C post-workout or B vitamin C's high dose.

**Robb:** There are studies that suggest that it mitigates with gain potential from strength training, but if you were to do that, it's not like it just turns it off. It may just mitigate it to some degree. But this is again where supplementation is a potentially dodgy proposition, and if you do it, you really want a reason for doing it, in my opinion, and be a little bit smart about it.

**Nicki:** Cool. Our next question is from Michelle. She has some follow up questions about hyponatremia. "Nicki and Robb, after listening to you talk previously about hyponatremia, I was curious if it was related to hypothyroidism and about how

electrolytes might also come into play with hypothyroidism. What does it mean when you say we shed potassium? When I look at conventional and function treatments for hypothyroid, they include things like T4 levothyroxine sodium, and T3 liothyronine sodium, or natural combinations of those. Are they related to electrolyte sodium?"

**Nicki:** "What went into figuring out the combination of the magnesium, potassium, and sodium that's in LMNT? Is that too many questions? Maybe you can pick whatever moves you and answer the rest later, or answer the rest somewhere in The Rebellion. Speaking of which, I recently joined The Healthy Rebellion and look forward to participating in the next carb test and Rebel Reset. I missed this last time it started and encourage everyone who has been listening to your podcast for a while to join The Healthy Rebellion too."

**Nicki:** "It is a ginormous wealth of information and community to invest in and empower yourself about health. I was worried that it would feel like face bag, which I have been off since 2008, but I love it. The connectedness and support I've experienced has been warm, welcoming, and kind." That's from Michelle.

**Robb:** Pretty cool. Pretty cool.

**Nicki:** Awesome.

**Robb:** There are a lot of questions hidden in here. What does it mean when you shed potassium? Basically, you're losing it through the urine, and this is the problematic downward spiral. If we end up in a hyponatremic state and too low of sodium, the body will attempt to re-equilibrate the sodium, potassium ratio, and so it will start dumping potassium like crazy. And this is where things kind of spiral out of control, and this is the point that I make. It's much safer to have a little bit or even a lot, too much sodium, than in a similar magnitude, too little.

**Nicki:** Too little.

**Robb:** You will end up in... And if somebody wants to push back on that, it's pretty clear in the medical literature. God, people throw shit around. Oh, it's just crystal clear. We can build a pretty good case around that, put it that way. Really trying to be careful with that type of language. But we look at conventional... When you hear a drug name or a chemical name and sodium, it's kind of like diphenhydramine hydrochloride.

**Robb:** Under most circumstances, ideally a drug is able to become polarized, an ionic molecule. It's easier to absorb it. It's easier to make it transmit through the blood. Some things are only lipid soluble, and you end up with some challenging situations. So I mean, the sodium that comes with your thyroid or one's thyroid medication, yes, that will ultimately end up being part of the pool of electrolytes, but it's an absolutely tiny amount relative to the total sodium that's in the body.

**Robb:** What went into figuring out the combination of magnesium, potassium, and sodium that's in LMNT? We really just sat down and looked at about 300 whole food based meal plans that the folks that were in the Ketogains community had submitted. We liked that because those folks are eating largely whole, unprocessed foods, very minimally processed. And we looked at the sodium, potassium, magnesium, calcium as kind of the primary electrolyte candidates that we were considering.

**Robb:** Folks were generally pretty good on calcium, and also in the research literature, there was some concerning reality that supplemental calcium is kind of associated with some

increased cardiovascular disease rates. People taking calcium for osteoporosis, didn't really fix the osteoporosis, seemed to worsen cardiovascular disease progression because calcification is kind of the big driver there.

**Robb:** So people didn't really seem to need the calcium, and just a little bit nervous about it, and so we didn't include that. People were a little skinny on magnesium, more deficient in potassium, and really, really deficient in sodium. And so that kind of reflects the way that we put all of the LMNT formulation together, was to supplement an otherwise well formulated-

**Nicki:** Whole foods diet.

**Robb:** ... whole foods diet. It was not assuming that people were eating garbage. If somebody is eating garbage, usually they're getting a bunch of sodium, and they're overeating, and they're hyperinsulinemic, and they probably don't need some sort of electrolyte supplementation most days because they're probably retaining sodium and water like crazy because of the hyperinsulinemic-

**Nicki:** Processed foods.

**Robb:** ... state, because of the processed foods, yeah. But almost regardless of the way that people might clean up their diet, whether it's still higher carb, they're still generally reducing their sodium intake. And this is where we find that very center of the bull's eye is low carb keto for folks that are needing some sort of significant electrolyte supplementation, but we see this kind of across the board if people are just generally eating a whole food based diet.

**Nicki:** Okay. Awesome. Oh, and I did want to mention, following up to Shannon's question because you mentioned your longevity, are we trying too hard talk. When you were talking, I didn't want to interrupt you, but that is available now. It's part of our... What are we calling it? Our year in review, Healthy Rebellion, the top, our research articles that we discussed in the Rebellion in 2020. We also included that longevity talk. And so folks listening can find that by just going to RobbWolf.com, and on the home page there's a spot to enter your email address, and you can download that, and you can watch that talk.

**Robb:** Cool. Cool.

**Nicki:** Okay. Our third question this week is from Jackie. She says, "It's on terbinafine and dysbiosis. Hi Robb and Nicki, been listening since there were only five, and glad we weren't wrong. I really enjoy the Healthy Rebellion Radio format. Several shows ago, Nicki mentioned she took terbinafine to get rid of a pesky toe fungus so she could more confidently show off her tooties in BJJ. Her success story inspired me to try it."

**Nicki:** "I've had this nasty toe fungus since high school. Swim team locker room, soccer cleats in the rain, et cetera. And now I am five years into training Brazilian jiu-jitsu. Pretty much the entire time, I've dreaded ankle lock days when my feet are so exposed. I was prescribed terbinafine by my podiatrist in January. The first thing I noticed was that the painful red, burning mask rash I'm forced to wear when at work that I had been suffering from around my nostrils for several months cleared up right away."

**Nicki:** "Additionally, my digestion improved. I lost five pounds and was sleeping great. Downside was I was craving carbs and sugar like a lunatic. I literally felt like a powerless robot controlled by some creature in my brain, forcing me to walk into the kitchen and

eat all the treats. I could not stop myself, all the while losing weight and generally feeling great. Cut to, I finished the round of treatment a little over a week ago, and I immediately gained back the five pounds. My DOMS has been unreal. I'm only able to lift one to two times a week because I'm so sore."

**Nicki:** "I look six months pregnant from the bloat by evenings, and I could nap from 3:00 to 3:30 PM every day. But the sugar cravings are completely gone. Are these things related? Did this medication have an effect on my overall biome or cause a die off or something? When I'm not on the medication, I am paleo plus dairy, rice, and potatoes, and one cup of coffee a day. I aim for 100 grams of protein at least, sweeteners like honey, and at the most a little dark chocolate."

**Nicki:** "But while on this drug, I was paleo plus all the sad treats that I felt like having. I'm 35 years old, mom to a four-year-old, five foot six, currently 139 pounds. I hike or run outside two to three times a week, BJJ three times a week. I ride the Peloton two times a week, weight lift one to two times a week. And I really appreciate the work you both do, and I am here for the sociopolitical commentary too. Keep it up. We need your voice. You have even inspired me to call my congressmen and senators in the past, and some have even responded."

**Robb:** Nice.

**Nicki:** Yeah.

**Robb:** Cool. I mean, really long question, and the question was, did something in the biome change? Yeah, without a doubt. And I think this is kind of a classic die off scenario, and people report that these fungal die offs can be really gnarly. You didn't really seem to report all that much.

**Nicki:** I didn't-

**Robb:** But the fact that she was reporting some facial rash and whatnot-

**Nicki:** Well, she got that from wearing a mask, and it went away.

**Robb:** Yeah, I know that, but that tells me that this thing was probably more systemic than-

**Nicki:** Gotcha, just the toenails. Gotcha.

**Robb:** It was significantly more systemic. And so not a doctor, but my guess would be that you might need a second round of something like this. I would definitely talk to your doc. I would maybe try to find somebody on the functional medicine side of this that could take a peek at things. And it's not uncommon for fungal die offs to cause this really profound carb craving, because that is the substrate that keeps these critters going.

**Robb:** And it's interesting. There have been studies looking at both fungi, and then also various types of parasites that change the behavior of critters. If a mouse gets infected with a particular type of brain parasite, it alters its behavior such that it's no longer afraid of cats. And it just so happens that cats are the intermediary host for this particular type of parasite, and so it works in this beautiful-

**Nicki:** Wow.

**Robb:** ... synergistic fashion. And this area of research is still new, but it's pretty clear that fungal infections can dramatically alter the behavior of individuals. Usually it makes you feel kind of rough anyway, but the carb craving is real. And this may be a scenario where you got to lock that shit down. It can't be in the house, and-

**Nicki:** Well, it sounds like they're gone. Now that the treatment is finished, the sugar cravings are gone.

**Robb:** Yeah, because she's no longer treating that. I don't think she fully got rid of it, is the problem.

**Nicki:** Gotcha. Okay, okay.

**Robb:** It was going through a massive die off, and I think there was probably... Opinion here. There was probably a big die off going on, but also a feeding frenzy because she was giving them all the carbs. And probably some of them hung around during that time. And the bugger with this is that you can then start selectively breeding these things to be resistant to the terbinafine. This is why when you do this stuff, it's good to really... A round of any type of antimicrobial, you really want to stack the deck in favor of that thing working, working the first time, not needing multiple rounds, because you start selecting for antimicrobial resistant organisms.

**Robb:** So that's my opinion. Looking at this externally, I suspect it probably didn't fully clear that, and that there maybe was even kind of a slingshot effect on the back side of that where the fungus ended up displacing some of the beneficial bacteria. Could be a case to be made for something like the *Saccharomyces boulardii*, which is a beneficial fungus that could be used in synergy with the treatment. But that's kind of my thoughts on it. Yeah.

**Nicki:** Maybe either go back to your podiatrist or find a functional medicine practitioner that might be able to help-

**Robb:** Provide some guidance on this, yeah.

**Nicki:** ... with that. Okay. All righty. It is time for The Healthy Rebellion Radio trivia.

**Robb:** And Nicki left this to me again.

**Nicki:** Robb wrote the question again. For those of you who don't know, our Healthy Rebellion Radio sponsor drink, LMNT, gives a box of LMNT recharge electrolytes to three lucky winners who are selected at random who answer our trivia questions correctly. We always give you the answer, so there's no reason why you shouldn't answer it correctly. And this week's question, Robb wrote, "In a survival situation, would you rather eat a horse or a dog?"

**Robb:** Horse for sure, without a doubt. I just kind of want to eat horse in general.

**Nicki:** I've already eaten horse.

**Robb:** I know.

**Nicki:** In Italy, yeah. Well, it also depends on-

**Robb:** Not that I would kick a pooch out of a pan in a pinch, but-

**Nicki:** ... if this is your pet or your horse. I think there's emotional attachments that way. But a horse certainly provides way more meat, so in a survival situation, that would sort of be the advantageous-

**Robb:** Well, and if you've got a really good dog, they can play a significant role in helping you acquire food. And I guess under the right circumstances, a horse could too, but my-

**Nicki:** A horse can help you get to where you need to go.

**Robb:** ... dogmanship-

**Nicki:** Or away from who you need to get away from.

**Robb:** ... is much better than my horsemanship, so yeah.

**Nicki:** Yeah, that's true. Okay. Well, folks, that's-

**Robb:** Horse.

**Nicki:** ... the answer. To play, go to Robb-

**Robb:** Carne equina.

**Nicki:** Carne equina, yeah. To play, go to [RobbWolf.com/trivia](http://RobbWolf.com/trivia) and enter your answer, and we'll randomly select three people with the correct answer to win a box of electrolytes from LMNT. And actually, I think I'll make, since watermelon will be available, this particular trivia question will be a watermelon flavor.

**Robb:** Win.

**Nicki:** You can win watermelon.

**Robb:** Raise the stakes.

**Nicki:** Raising the stakes. The cut off to answer this week's trivia and be eligible to win is Thursday, April 15th, that's tax day, at midnight. Winners will be notified via email, and we'll announce the winners on Instagram as well. And this is open to residents of the US only. Okay, we've got our fourth question this week from Josh, and he wants to follow up on the sleep eating question that we answered, gosh, a couple episodes ago.

**Nicki:** He says, "This is a follow on question to Paul's question that was on a previous podcast, and it's around sleep eating. I too suffer from this. What he is referring to is when I'm doing low carb, I have a desire/drive/urge that wakes me up, and I have to eat something. It takes me out of a deep sleep, one to three hours into the sleep. It's usually carbs, and after I do that, I can comfortably go back to sleep. I hate the insulin spike at night, and I know it is not helping my circadian rhythm. What do you think is causing this, and what is a fix?"

**Robb:** I was noodling on this one a lot, a couple of different angles on this. But as with everything, why are you doing a particular gig? Why are you eating low carb? What's the goal there? What are the desired benefits? What are you actually getting out of it? If you're eating or doing things in a way where it's really goofing up your sleep, I'm at this spot where if I had a central, singular goal, I'm going to start coughing here, but

anything that seems to improve sleep seems to be a win. Sleep quality, sleep duration, all that stuff, you wake up feeling refreshed.

**Robb:** Modifying diet can change that. Being outside can change that for the better, appropriate amounts of exercise. And then inappropriate amounts of any and all of this stuff can worsen sleep, which I see being a problem. And so as a beginning, is Josh just eating too low carb? Does he just need a few more carbs in the mix with his regular dinner? Some people report that-

**Nicki:** Right. We don't know if he's doing 25 grams of carbs or 100 grams of carbs.

**Robb:** Per day, and he's doing jiu-jitsu five days a week, and all this type of stuff. Lean individual, active, carb sensitive. What's the goal there? What's the goal? What's the need? For me, I eat low carb because that's kind of the way that I just feel best. I've tinkered and fiddled. And I will admit that throwing occasionally, if I have a significantly larger amount of carbs in the evening, I do kind of sleep a little bit better, but I wake up kind of groggy, and then I'm starting into the carb roller coaster, too. And so it's-

**Nicki:** Sort of finding the sweet spot.

**Robb:** ... yeah, difficult to find the exact sweet spot, particularly with changing activity levels and all that.

**Nicki:** You used to say if people woke up in the night hungry, to look at what you had for dinner.

**Robb:** For sure. Yeah.

**Nicki:** And maybe there's not even enough protein there.

**Robb:** May not be enough protein. May not be enough fat. May not be enough calories overall. I generally recommend that folks eat more of their calories early in the day. Seems to be some good support for that. But then interestingly, something that I've noticed, every once in a while we'll get a really good bluebird dinner time. We're eating at 4:30, maybe five o'clock.

**Nicki:** You mean blue hair dinner time.

**Robb:** Blue? What do they call it? It's the bluebird hour.

**Nicki:** Is it called bluebird?

**Robb:** Yeah, the bluebird special and all that.

**Nicki:** Oh, okay. I always thought it was the blue hair.

**Robb:** It's also blue hair, but they will call it the bluebird special because it's alerting the older folks that, hey, come get your free eats early, and then you can get out before the riffraff gets here.

**Nicki:** Okay.

**Robb:** I've noticed that although I feel pretty good with that, and we go to bed pretty early, but if I put that last meal too early, I'm hungry before I go to bed, and then I find myself, oh,

I'm going to eat some chicharrones or something like that before bed. So I think that there's limits to that being beneficial. The thought is that the further away from bed that you eat, the better your sleep is, but that's not always the case. There's stuff that you have-

**Nicki:** Lots of factors in there.

**Robb:** There's a lot of factors.

**Nicki:** Activity level, yeah.

**Robb:** Yeah.

**Nicki:** Stress.

**Robb:** The fact that we've been back at jiu-jitsu consistently and lifting a little bit, I've been eating a lot more, otherwise I find myself waking up and not recovering and whatnot. So I don't know if I'm doing a great job of buttoning this thing up, but I would just ask the question, are you eating too far away from bedtime? Do you need more in general? Do you need more carbs? And then the sodium deal. As always, particularly if he said that Josh is eating on the lower carb side of things, we know for a fact that that sodium level has got to be at least five grams a day, and it may be double that depending on-

**Nicki:** Depending on activity level and-

**Robb:** ... activity level and the size of the person-

**Nicki:** ... climate.

**Robb:** ... and all that stuff. Sodium is something to look at, total amount of food throughout the day, amount of food at dinner, and in composition. Maybe you need a little bit more carbs with dinner or throughout the day. Yeah.

**Nicki:** Okay. Hopefully that helped, Josh.

**Robb:** Or you just need some black tar heroin, and that'll really help-

**Nicki:** Oh geez, babe.

**Robb:** ... you sleep through the night.

**Nicki:** No, we are not recommending that.

**Robb:** Okay. Okay.

**Nicki:** All right, our fifth question this week is from Kelsey, and she says that she's the wife of the rhymer, and the question is about inflammatory papillitis. Let me have a sip of coffee before I do this one.

**Robb:** Yeah, you get yourself squared away for this one.

**Nicki:** Okay. "Hey Robb and Nicki, my situation is a little bit sticky. My husband is the rhymer, but I figured I'd give it a go, hoping my question gets on your show. Last fall I had inflammatory papillitis in my right eye. I'm asking for recommendations because

Western medicine ain't so fly. I'm a mama of one, to add to my story. Our little girl is 14 months and takes all the glory. Finishing nursing, getting caught up on sleep, she rules the house with more than a peep."

**Nicki:** "We eat a paleo diet, but consider it a lifestyle. We might join you in Montana and live in exile. I'll wrap this up soon, my rhyming is sad. What prevention or tips do you have? I'd be so glad. Referring to my optic nerve, it took us on a mighty curve. Shout out to LMNT, it's really rad. Only problem is when it's gone, I'm real sad." Thank you, Kelsey.

**Robb:** Pretty cool, particularly in the age of canceling Dr. Seuss and everything, which we've been getting in and trying to secure as many of those as we can. I did some poking around on the inflammatory papillitis, and it's funny. Most of what pops up is tongue-related papillitis issues, not the optic nerve part on this. But there's a little bit that suggests some gluten linkage, but it's not really clear.

**Robb:** When we understand, though, that tissue transglutaminase is the enzyme that is affected mainly under the condition of celiac, but a lot of different gut-irritating events can result in an autoimmune response to tissue transglutaminase. And transglutaminase, it's in virtually every cell in the body. So this is one of the things that the kind of naysayers around gluten and celiac-related problems, it seems like it's either a cause for all problems and/or a fix for all problems, but I mean, it can affect cardiac tissue, optic tissue, neuronal tissue, gut, everything that has replicating cells, it can affect it.

**Robb:** And it seems to affect different people under different circumstances, probably some genetic predisposition there. There is some linkage with hyperinsulinemia, and in particular, elevated blood glucose levels. And the stuff that I tracked down was more related to blood sugar excursions being a problem than hyperinsulinemia specifically.

**Robb:** And again, I just don't know if there hasn't been that much research, has somebody sat down and really asked this question, but there does seem to be blood sugar excursion as a potential problem. And there is also this reality that there may be some gluten linkage here. So I don't know if Kelsey is-

**Nicki:** Well, with a little one, she's probably not sleeping very well.

**Robb:** Yeah, yeah. And that can affect-

**Nicki:** And so that can affect blood glucose levels.

**Robb:** ... the blood sugar significantly. Yeah, that's a good thought. So I would just say keep an eye on that.

**Nicki:** Oh, God.

**Robb:** And this is maybe a case for a CGM or doing some intermittent blood glucose testing, just to get a sense of what's happening in all of this scenario. Yeah, yeah.

**Nicki:** Yep, focusing on sleep, and then, yeah, trying to keep blood sugar excursions to a minimum.

**Robb:** Yep. Yep.

**Nicki:** I mean, she's eating paleo, so I'm assuming that the gluten is out of the mix, but sometimes a paleo diet can be relatively high carb, too, depending on how the person's tackling it.

**Robb:** Right.

**Nicki:** And being sleep deprived, you frequently crave more carbs, so there could be-

**Robb:** I like that you mentioned the 14 month old. The sleep could be more of the driver in that. Probably a blood glucose excursion that is causing some problems there, and it's probably driven mainly by the sleep, which may mean that on more sleep challenged days, dialing the carbs back might be a good idea. Yeah.

**Nicki:** Okay. All right. Thanks, Kelsey, for that question.

**Robb:** Particularly for the rhyme.

**Nicki:** Yes, that was fun.

**Robb:** Taking the time to do a rhyme.

**Nicki:** Taking the time. Any other closing thoughts from you on anything?

**Robb:** We're really digging Montana.

**Nicki:** We do. We do.

**Robb:** Very nice people. We are definitely-

**Nicki:** Love being back in jiu-jitsu.

**Robb:** Yeah.

**Nicki:** Having a lot of fun with that.

**Robb:** Kids are enjoying it.

**Nicki:** Kids are enjoying it.

**Robb:** The animals are enjoying it. We have a pretty steep driveway that humping up it at a brisk pace is no joke. It'll definitely get you out of zone two cardio, probably, if you push it. But our cat, Thor, it's pretty funny. He was pretty lethargic in Texas. It was just kind of hot, kind of humid.

**Nicki:** He just laid around.

**Robb:** He just kind of laid around. And Nicki will hump up the hill, and he'll zip back and forth in the driveway, kind of pouncing on bushes and stuff. And then when Nicki's walking down, he'll trot up the hill-

**Nicki:** He walks halfway up, and then I squat down, and then he rubs on my legs. And every time I come down the driveway, he meets me halfway.

**Robb:** That was kind of cool. From cat to dog to humans, everybody seems to be digging it pretty well.

**Nicki:** And Dutch found the foreleg of a deer, so he's been chewing on that.

**Robb:** Oh, do you want to mention what probably got the deer?

**Nicki:** Probably a giant mountain lion.

**Robb:** Which the folks that lived here-

**Nicki:** You know how they have those Nextdoor neighborhood app things? Thank God it's not on Facebook. In Texas, the neighborhood group was on Facebook, and it was-

**Robb:** It was a dumpster fire.

**Nicki:** Yeah. But anyway, people post videos from their game cams of critters that they see around the neighborhood around their homes, and the seller of this house had posted in January a picture from their game cam of this giant cat.

**Robb:** Because it's every bit as long and tall as Dutch, but twice as thick. It looked like body builder gato.

**Nicki:** And Dutch is 105 pounds, so this cat was probably like-

**Robb:** 160, 170 pounds.

**Nicki:** It was big.

**Robb:** It was a big gato.

**Nicki:** And it walked right alongside where our master window is, and it was a nice little shot of that guy. So we definitely have those critters around, so keeping our fingers crossed that our two little cats that are mainly outdoor.

**Robb:** Say nothing of all the rest of us.

**Nicki:** I mean, they have access to the garage, but yeah.

**Robb:** Oh, and we did see a rather large red fox the other day, too. It looked kind of like a red panda. It was kind of thick and burly.

**Nicki:** Yeah, it was really cute.

**Robb:** Yeah. But it's cool. Yeah, I guess that's the only thing. Very grateful to the state of Montana for letting us in, and yeah. And grateful to you all. Not to drag this out, but it's very interesting times still. There's a lot of unknown in the world, and some days kind of wonder if what we do is pissing in the wind. It certainly pisses some people off and gets some vitriol, but it's interesting.

**Robb:** Within The Healthy Rebellion, initially we had our old guard, people who, "Oh, I've followed you since 2007 when you spoke at CrossFit such and such and everything." Which is awesome. That's really, really cool. But we've actually been getting a fair number of people that they're like, "Hey, I just found you, just found the podcast, enjoy

it, really appreciate this community." And I still really enjoy helping people, but the medium to be able to help people is challenging at this point. Social media ain't really it. You can kind of pepper some stuff out there, but just psychically, I can't really deal with the-

**Nicki:** It's not worth it.

**Robb:** ... blow back. And you were listening to the DarkHorse Podcast when Brett interviewed Jordan Peterson and-

**Nicki:** It was Jordan's podcast, and he was interviewing Brett.

**Robb:** Oh, okay. Gotcha.

**Nicki:** And yeah. Oh, what did they call it? Psychophysiological-

**Robb:** Attack, or-

**Nicki:** It wasn't trauma, but psychophysiological... Maybe it was trauma. And Brett was making the case that if you have good social network in your home life, a supportive spouse that you can speak freely with, and family and friends that can check you when you're off and whatnot, and you just have this good social circle around you, that you can take more negative heat online. And Jordan actually disagreed.

**Robb:** Pushed back on it, yeah.

**Nicki:** And obviously he's had massive amounts of online attacks, and from big profile media outlets like The New York Times and whatnot. But he made the case that it doesn't matter how robust or stable or grounded you are in your personal life. Some of these bigger online attacks can just really, really rock you. And I mean, you haven't had anything huge like what he has at all, but it definitely adds up. You've mentioned this before. We're wired to assess negative inputs-

**Robb:** More critically, yeah.

**Nicki:** ... to weigh them more heavily because there's a potential threat there, versus positive inputs. So anyway.

**Robb:** And to that end, I will, though, say that having... We get some critical feedback, and we learn and grow from that, and sometimes we push back on it because we might think it's bullshit. But having a community of people that give more than what we're able to give, it's been really gratifying. So just kind of wanted to throw that all out.

**Robb:** Also, we had no idea how this Healthy Rebellion as the community would go. I had a sense the podcast would do okay. I think we do a half decent podcast, and it seems to be valuable doing this Q and A stuff. I figured that would be okay. But continually impressed with the community and the support and the love that comes out of that Healthy Rebellion itself. So just saying a big thank you to everybody involved with all this stuff, and yeah, that's it.

**Nicki:** Yeah. Okay. Thanks, all, for joining us. Remember to check out our show sponsor, LMNT. You can still try all seven current flavors with just the cost of shipping, which is \$5 if you live in the United States. You can go to [DrinkLMNT.com/Robb](https://DrinkLMNT.com/Robb) for that. That's Drink L-M-N-T dot com slash R-O-B-B. And again, watermelon is available on April 13th.

**Robb:** Cool.

**Nicki:** And we'll see you all next week.

**Robb:** Bye everybody.

**Nicki:** Bye.