

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.

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Robb: Holy smokes.

Nicki: We're back folks. Episode 126 of Te Healthy Rebellion Radio. How you doing, hubs?

Robb: As you said before we recorded, it's been a big day.

Nicki: It's been a little bit of a big day. Yep. We're hanging tough.

Robb: Do you want to update people?

Nicki: That's an NKOTB reference for those that we're fans-

Robb: Oh, Lord.

Nicki: ... like me way back in the day. Shout out to Jamie Boone.

Robb: Oh, Lord.

Nicki: Oh, Lord. Let's see here.

Robb: We had more anal gland updates.

Nicki: Oh, goodness. I thought-

Robb: Not mine, still.

Nicki: ... this thing was completely over, but I took Dutch back in today, and apparently it's a thing that can be ongoing, and did an infusion, of some sort of triple antibiotic ointment and more oral antibiotics, and there's scar tissue on the left side that ruptured. And so I got to go back in a week. And, yeah, what's the upside of pet ownership like you keep saying? It's crazy. I never heard of this thing in my life and then now, we're-

Robb: Now, it is our life.

Nicki: ... we have a lot of it going on. But, anyway, that's all.

Robb: Perfect. Perfect.

Nicki: What else is new?

Robb: Man, just busy. We're running and gunning pretty hard. Kids in school, homeschool, and then doing a one day a week program, where they do some art and astronomy. And just feeling all that out.

Nicki: Yep, doing Jujitsu and all the things.

Robb: Indeed.

Nicki: Let's see, we are wrapping up our last week of the rebellion here, too. We're just about there of the Rebel Reset, so just about there, been a good one.

Robb: It's always a good run.

Nicki: If you guys can't tell, we're-

Robb: Kind of smoked.

Nicki: ... staring at each other, like, what are we supposed to say? So maybe we should just move on, move on, move on down the road.

Robb: Move on down the road. Ease on down.

Nicki: Ease on down.

Robb: Ease on down.

Nicki: Ease down... Yes. Okay. Before-

Robb: Our life is becoming a musical as we get closer and closer to-

Nicki: Well, there we go-

Robb: Oh, that is a good-

Nicki: ... we did go see a musical. Big Fork, Montana, which is a little town just on the east coast, northern east coast part of Flathead Lake, just south of Kalispell, has a wonderful little theater. This was our first time going. We've heard tons about it. And they did a showing of Annie, Annie Junior, it was called, and went and watched that on Sunday. And it was amazing.

Robb: Ton of fun.

Nicki: It was so much fun. It was all kid actors, I believe, even I think high schoolers for some of the more adult parts like Daddy Warbucks and such. But just really, really enjoyable, really fun, really impressed with the program. Sagan's thinking she might want to try out for something at some point, so we'll see.

Robb: Could be cool.

Nicki: Could be cool. Yep. Okay, news topic, hubs, what do you have for us?

Robb: So this week is from Farmer's Weekly, and it's talking about using livestock to create more and better soil. So you're reading the Life of Fred with the girls as part of their homeschool, which I don't know if we've talked about that too much.

Nicki: I think we mentioned it a few years ago, when I first got the books, when somebody had asked a question about homeschooling materials. And in full transparency, I bought the first four books, I think it was over two years ago, and then we started reading a couple chapters, but we just didn't get into the routine with it. But this year, we've started at the very beginning, even though it's pretty basic math for the girls at this point, but we have the books, and so following the storyline. And I don't know where you're going with your question, but I'm kind of derailing and giving some context here with-

Robb: No, no, it's good.

Nicki: ... Life of Fred, but I'm so impressed with it. It's so fun. It's funny. The girls love it. It's a fabulous story. And the thing that's the best about it is that it's fully integrative. It's not just math, it's a story. And in the story you learn all kinds of things math related and-

Robb: Ordinal numbers-

Nicki: ... otherwise.

Robb: ... cardinal numbers.

Nicki: What does orthogonal mean? What is an idiom? What's an involuntary action versus a voluntary action? All of these concepts, what does it mean to get hoodwinked by someone and taken advantage of? And who do you trust? And just all of these concepts of life are woven into this story. And so it's super cool.

Robb: And where I'm going today, you all unpacked first order and second order errors? It-

Nicki: And, yeah, the chapter today they talk about, yes, first order, and... Was it first order? Was that-

Robb: Is that how they describe it?

Nicki: It's a... No, there's a different-

Robb: Or primary or secondary numbers.

Nicki: No, no, no, no, no. I'm blanking on the actual term. It's like that though.

Robb: Okay. And give the listeners a rundown of which is which.

Nicki: So in the story, Fred's on this bus, and-

Robb: You can just broadly give...

Nicki: Okay, so basically if you have the wrong information, then that's a first order. I don't think first order is the quite right thing. I'm totally blanking on it. So there's ways-

Robb: You're killing me, smalls.

Nicki: Sorry, if you have the wrong information, that's one type of an error, and if you believe you have the right information, but it's actually wrong, that's the second-

Robb: The secondary type. And so in that book, it makes-

Nicki: Type one and type two errors.

Robb: Type one and type two errors.

Nicki: Sorry, that was killing me.

Robb: Yeah, sorry. Sorry.

Nicki: I knew it was not order. It's like diabetes-

Robb: Type one and type two errors.

Nicki: ... type one, type two.

Robb: That's a good way to remember it, even though, clearly, neither one of us-

Nicki: No.

Robb: ... did initially. And I've seen this pop up and it's one of these almost kind of engineering things where people will get kind of hoity-toity breaking things down, but the type two errors are far more dangerous. So one of the-

Nicki: Yes.

Robb: ... examples is assuming that a gun is loaded, and in fact, it is not.

Nicki: Assuming, that it's unloaded-

Robb: Unloaded.

Nicki: ... when in fact it's not.

Robb: Almost all of the mistakes that I see being made from climate change to our food systems to economic policies, and I'll even throw in there the way that people are tackling a lot of the social justice stuff, I would argue are these type two errors. Folks are assuming that they've got the goods and they don't. I would argue, by and large.

Robb: And this climate change food thing is probably more in my purview, so I'll stick to that. But this is assuming that we've got the right of things that growing meat in the lab, synthetic meat, that traditional methods of animal husbandry or whatnot are destroying the planet. And it couldn't be more wrong, and it couldn't be more dangerous, because it is so interesting that the type two errors are these life and death things. Like the things that usually come out of type two errors of assuming you've got the right answer, and then it being wrong are so catastrophically dangerous.

Robb: And so I'm going to start trying to dig up more in the kind of holistic management, regenerative ag scene for these news topics, and also energy, because it affects so much stuff. We've been getting type two errors within, say, medicine for ages, just assuming that low fat diets will fix everything. And-

Nicki: Assuming that fat is the demon.

Robb: The demon and the enemy and everything. There's been a lot of assumptions made there that have arguably had huge, catastrophic consequences. And it's funny, because

for ages I've made the case that we know more about any given disease process that you care to name, but, yet, these things tend to get worse and worse over time, which shouldn't be possible. It's kind of understanding how your cell phone works and all the integrated circuits, and everything else that goes into it, but, yet, they get worse and more expensive when they in fact get cheaper and better via Moore's Law and all that.

Robb: So I think this is a great thing for folks to look at and it's something that I would really beg listeners to share broadly. I don't spend a lot of time on social media, but I've been getting involved in these kind of Twitter things where there are these folks that are just absolutely certain that lab grown meat is the future of our food. And one of these guys, this guy Rob Percival, a representative for this thing called the Soil Association, it seems to just be this front for this vegan group. Where they say that they're about the soil, they say that they're about regenerative ag, and it's literally talking to children.

Robb: If we just don't eat animals, then they won't die. And we just need row crops as far as the eye will see, and then no animals will die. And it's like, are you kidding me? And I've asked this guy multiple times, point blank, "Have you ever even tried reading our book, Sacred Cow?" "No," and clearly has no inclination of doing so, because I'm suspecting there's some sort of a financial tie there or emotional tie or something to continuing this thing.

Robb: But these type two errors are going to kill a lot of people and create a lot of pain and suffering. So it's on us to be the big kids, and put on our big kid pants and try to undo these type two errors by having, hopefully, good information. And also applying this empiricism of, well, let's run this through some experiments and see which one is actually working. Let's see where the claims diverge from reality and all that type of stuff. And so we've got-

Nicki: I like it.

Robb: ... links to that in the show notes.

Nicki: Okay, sounds good. All right, and The Healthy Rebellion Radio is sponsored by our Salty AF Electrolyte company LMNT. And as the weather starts to cool off, I thought I'd share a little pro tip, LMNT electrolytes don't have to be consumed cold. In fact, most of our flavors taste just as amazing in hot water as they do in cold water. And I've mentioned before how much I love lemon habanero in hot water, but orange salt in hot water, raspberry salt in hot water, they're all good. And Robb, you also enjoy mixing LMNT in hot tea.

Robb: I do. I do.

Nicki: Hot tea, cold tea, I haven't tried watermelon in hot water yet. I'll have to try that one out.

Robb: I know we're founders of the company and we're supposed to be pimping this thing. I would say that there's a limited number of-

Nicki: Hot watermelon.

Robb: ... offers that are in fact good in hot water. And I would definitely say that watermelon is not one of them.

Nicki: Have you tried it?

Robb: I've tried it.

Nicki: Oh, you have? Okay. I haven't.

Robb: In my opinion, it's horrible.

Nicki: I'm going to. Okay. Well, I know for sure that orange, raspberry, lemon habanero, chocolate salt, those are all good in hot water.

Robb: And I would say that they are all better in hot tea, as a tea base, instead of just water, but personal preference.

Nicki: Right. Yeah, I like them in water. Anywho, you can get your LMNT at drinklmnt.com/robb. That's drinkL-M-N-T.com/R-O-B-B, remember the value bundle, you buy three boxes, get the fourth box free. And that URL again is drinklmnt.com/robb.

Robb: Cool.

Nicki: Okay, we've got three questions today. The first one is from Becky on addressing stall in weight loss. She says, Hi, longtime listener, I've been doing low carb and intermittent fasting, clean 18, six, or 20, four, so 18 hours on, fasting six hour eating window, or 20 and four, for about a year and I lost 70 pounds. Hooray. I still make Robb's electrolytes. Anyway, I've been stalling on my progress for a couple of months. My long term goal is about a 100 pounds, which would put me in the 100 pound loss range, with a healthy approach to maintenance. I reserve the right to want to go beyond that as well, depending on how my thighs look at that weight. So she's fallen off the rails a couple of times this year, because she wasn't seeing the results to sustain her through the discomfort and fasting of low carb. Can you help?

Nicki: I didn't do a ton of exercise, maybe long walks a couple of times a week, but very inconsistently, because I thought you can't gain muscle and lose weight at the same time. Was I wrong? I don't know, send help or a Costco bag of Reese's Cups.

Robb: The Reese's Cups would be the easier one. Man, where to-

Nicki: I think this question here, can you gain muscle and lose weight at the same time?

Robb: Well, and the important thing there is lose fat at the same time. And for kind of a novice lifter, you absolutely can. And that is honestly something that we would really want to do, because in any type of a calorie restricted scenario, we're going to have a tendency to lose some amount of lean muscle mass during a fat loss protocol. And if you lift weights judiciously, make sure that your protein is on point, then you may end up losing no lean muscle mass, and maybe even gain some lean muscle mass. And this is called body recomposition. You can do it. Again, somebody who's already very lean, very muscular, an advanced lifter, not likely to get a huge change favorably that way, but at least, if that person's trying to lean out, then the exercise is going to be an important piece.

Nicki: I feel this desire to hit this a 100 pound weight loss goal, which I think is awesome, right? It's a big number. It's a huge accomplishment. But we don't know what her starting weight was, and I guess I would just say, Becky, how do I want to say this? Maybe you only end up losing 90 pounds, but you look as awesome as you want to look, right?

Robb: Right.

Nicki: Depending how my thighs look at that weight, I wouldn't get fixated on that 100 pounds. I would get more fixated on your body composition. I think we have this photo that we share in the keto masterclass where there's a woman who weighs 185 pounds in the first photo, and 185 pounds in the second photo, but she looks like a completely different person. In the first photo, she is her before and the second one she's training and getting stronger. So her scale weight doesn't change, but physically she looks like amazing.

Robb: Probably like eight-

Nicki: It's like night and day.

Robb: ... dress sizes smaller.

Nicki: A night and day difference. Her inch inches around her hips and waist and all of her measurements improved dramatically, but that scale number-

Robb: Didn't budge.

Nicki: ... was the same. It didn't budge. So, again, we don't know what your starting weight is, but I wouldn't get so fixated on the 100 pounds. I mean if you truly do have a 100 pounds of fat to lose, certainly, go for that. But focusing on that body composition and lifting weights is going to help you get there. So if you're stalled, I think, for sure-

Robb: I would definitely lift the weights. The thing that weirds me out on this is when I hear 18, six intermittent fast, I'm pretty okay with that. But then I start seeing 20, 4, 20 hours fasting, four eating, and I start getting a little squirrely with that. Because we do need to figure out a way to introduce a calorie deficit, if we're going to lose some body fat. Fasting can be a route to that, but what we end up seeing is that people end up under eating protein. And I don't know if this turns into a deal where there's sufficient stress that the body is kind of like, "I don't want to drop those additional last five or 10 pounds or what have you." But I would really want to know how much protein is Becky eating? Hopefully, she's getting at least a gram of protein per pound to body weight.

Robb: Has she run her macros so that she knows about what calories she needs? And then we're kind of retro engineering the story from there, where we've got a mild, maybe a 10% calorie deficit, and then some strength training, and maybe a little bit of zone two cardio. The zone two cardio gets dismissed a lot, and I think we've got a question on zone two here in just a moment. But I've been doing some zone two cardio and I was reasonably lean before, I'm really lean now. And maybe to a degree that I need to step my calorie intake up a little bit. But little bit of exercise, a little bit of resistance training, zone two, and then definitely making sure that you're hitting that gram of protein per pound of body weight or ideal body weight, however you want to steer that.

Robb: Just good stuff happens with that. Magic happens with that. And I would definitely stay more on the 18, six side of the fasting story. Again, the main power there is it's a good tool for calorie control, but it is a stress, and if we get to a point where the body is sufficiently stressed, it just kind of digs in its heels, and makes it harder to lose weight. And particularly body fat, you'll start tending to shed muscle and lean body mass, which-

Nicki: You don't want that.

Robb: ... you don't want that.

Nicki: You don't want that.

Robb: Yeah.

Nicki: Yep. So definitely focusing on the protein, not exceeding the 18, six-

Robb: Yep.

Nicki: ... and definitely doing some exercise.

Robb: Yep.

Nicki: Yep. Cool. All right. Kristen has a question on zone two cardio. Hi, Robb and Nicki, I heard you mentioned doing your zone two on the show last week or the week before maybe. I wondered what dose frequency you use for your zone two work. Lately, I've been strength training four times a week and I try to get in at least two days of zone two dedicated for at least 30 minutes. And then will typically go for a hike with my dog and husband on a third day. But I'm wondering if this is enough. I also listen to Peter Attia's show, and he talks about doing four days a week of zone two work. That just sounded overwhelming.

Nicki: And depending on the strength training plan I'm using at the time between a full-time job and a 40 minute commute, I don't always have time to fit that much in. I've started trying to add maybe 10 to 15 minutes of zone two to three conditioning type work at the end of one of my shorter lifting days. Think Tabata sets of jump rope and kettleball swings, or jump rope and farmer's carries or something to that effect. But is this enough? Basically, my goals are optimal general health. I typically do a couple 5K's and possibly a half marathon once a year. And I know how to adjust my training to get my endurance beefed up to handle this volume. But on the average daily, I'm just wondering what is the optimal dose?

Robb: Optimal is really going to depend on what your goals are. And what Attia has been laying out, and I appreciate his angle on this, is trying to build as much capacity in this early middle age, which I'm kind of assuming that's where-

Nicki: Is that where-

Robb: ... she is.

Nicki: ... you are or she is?

Robb: We all are, seemingly. We certainly don't attract the-

Nicki: Early middle age, what is early middle age these days?

Robb: I don't know.

Nicki: Because 50's the new 40, and 40's the new 30, so...

Robb: We're not dead yet, but earlier is better. At about 35 we start getting non-trivial trends down in strength and cardiovascular capacity. If we train hard and beef that stuff up, then we've got more head room for that to decline over time. Attia has this thing the

centenarian Olympics or centenarian decathlon, I forget which one it is, but it's basically trying to project forward, and imagining that you're a hundred and what would you want to be able to do, reasonably? Like pick up your grandkid, go for a hike, do a pull-up, whatever. And if we know where that is and then we know what the rate of decline typically is with people as they age, then we need to reverse engineer that. So we need a $\dot{V}O_2$ max that as we decline with age, we're going to have enough there to withstand that. We have a certain rate of decay of muscle mass and power production, so we need enough to hedge the bets on all that type of stuff.

Robb: And so the enough is really up to you. It is worth mentioning, and Attia it does a good job of illustrating this, that the biggest benefit when we look at exercise, when we compare groups of people, when you go from sedentary to doing anything, literally, just doing a short walk, you get like 50% of all the benefit that there is there. And then there's a law of diminishing returns, where if you want that next 5%, 2%, 1%, then it takes asymptotically more effort to be able to get that. And Kristen, I suspect that you're probably, absolutely extracting probably the bulk of the benefit that there is. You're going to need to invest a disproportionately larger amount of time to get any additional upside on this stuff.

Robb: I will say that I like the idea of doing some brief conditioning at the end of strength work, but there is kind of a reality that doing conditioning work at the end of strength work tends to compete with the adaptations that we get from strength work. So both the muscle mass and the strength gains do, to some degree, tend to get interfered with if we're sticking conditioning in the mix there. It does complicate things.

Robb: Also, if you are not an advanced lifter then that may not matter, because although there's some degree of interference there, concurrent training does work particularly in novice to intermediate people. So I remember when I was powerlifting, I was still riding a 10 speed bike around everywhere, because I just wanted to do it for exercise. I had a motorcycle at the time, but I still just rode my bike a lot. And then my powerlifting coach was basically like, "Do not even look at that bike." And within a year and a half I put 200 pounds on my back squat doing that, because the riding that bike everywhere and hours and hours a week of bike riding, so antagonized my strength work that I couldn't make any progress. And then when I cut that out, I made enormous strength gains, and I also had problems going up a flight upstairs, from a cardiovascular standpoint. So there are trade-offs-

Nicki: Trade-offs. Yes.

Robb: ... on stuff. Do you have any other thoughts? So she asked a-

Nicki: I don't think so.

Robb: ... little bit of what I do. I have been able, I'm lucky our schedule allows me maybe about three to four days a week, I'll get up and do 40 minutes-ish of zone two work. Now, an interesting thing is that you can do some zone five work, some of that sprint interval type stuff to improve $\dot{V}O_2$ max at the end of your zone two work, and it won't antagonize the zone two work. So you do low intensity stuff up front that really gooses all of the lipolytic, the fat burning enzymes, and that whole aerobic system. And then you finish with the intense burst activity.

Robb: If you do the intense burst activity on the front end, then the body tends to stay in that glycolytic process and you don't mobilize fat and use fat as effectively. So you could look at doing zone two for 30 minutes to 40 minutes, and then finishing with two to 10

minutes of zone five intervals as just a super long warmup to get you to the zone five training.

Nicki: Sounds good.

Robb: Cool.

Nicki: Cool. Cool. And our third question for the day is from Lori on gadolinium toxicity. She says, Hi, from Three Forks, Montana. I grew up in Bozeman and have lived here most of my life minus college. Hope you are enjoying the fall. We are, it's lovely.

Robb: Indeed.

Nicki: It's gorgeous. It's fabulous. My question is about gadolinium toxicity. My daughter-in-law had a scan after having gallstones removed, ever since, she's been having symptoms in line with gadolinium toxicity. Do you have any suggestions for her to help with this condition? Not sure if any diet or exercise program will help. Thank you. Love your podcast and books.

Robb: Man, I had not heard about this for ages, and gadolinium is a rare earth mineral that is used in different types of imaging like MRIs and whatnot. And there's, ironically, a good number of class action lawsuits floating around the interwebs from people negatively affected from this process, so it's tough. It's one of these risk/reward things, like if you have a life threatening situation, potentially-

Nicki: And you need imaging.

Robb: ... and you need the particular type of imaging that's facilitated by this, maybe it's worthwhile to do it. But then you have the potential of retaining this in your system and some long term toxicity. On the treatment side, some people have experienced benefits from chelation therapy. You have to really, really look around to find somebody to do chelation therapy. Not that many people do it. There are a lot of charlatans and kind of shysters that do chelation therapy.

Robb: Chelation therapy itself has its own bag of risk/reward profile. And the most optimistic stuff that I looked at suggested that aggressive chelation therapy will get maybe about 75% of the metal out of your system, the heavy metal toxicity. Doesn't seem to address all of it. And by expensive, I think that this stuff can run like 25 grand a year to do-

Nicki: Oh, wow.

Robb: ... consistent chelation therapy. So it's a non-trivial deal. Credible ways of removing it from the system, that's kind of the main stuff that I've seen. There are some sites out there that claim that taking chlorella and spirulina and stuff like that act as chelating agents. I haven't seen anything super credible to support that. But it's a tough deal and I don't see a ton of really great options around dealing with this other than the chelation therapy. And, again, it's expensive, has some hazard associated with it. And doesn't typically-

Nicki: What is involved with that therapy?

Robb: The oral, it's an IV drip, usually like sodium EDTA, which is the chelating agent. It's a organic acid that's charged on both ends, and it's a big, wiggly organic acid that will then bind two different metal ions. And, fortunately, these different metal ions have different

gradients of where they precipitate out with the sodium EDTA. Because what you could do is dump a bunch of this in your system and strip all the metal out, all the magnesium. And so, fortunately, and interestingly, some of these heavy metals like lead and mercury and stuff like that tend to precipitate out at concentrations or faster than what would happen with, say, like calcium or magnesium.

Robb: So there is some good kind of kinetic profile that supports using that stuff. Then once the sodium EDTA, if that's what they're using, or similar molecules, it gets filtered out via the kidneys, because it's this-

Nicki: So you just urinate.

Robb: You just urinate it out. And this is one of the ways that they're able to quantify this stuff. They'll do a urine collection after this and look at, "Oh, we extracted this many micrograms of mercury or lead or what have you." So can work, can be used. There are places that do it, but, again, expensive. And there are some risks associated with the chelation therapy itself.

Nicki: Goodness. Lori, sending all of our thoughts to you and your daughter-in-law. And, hopefully, you can find something that will help with that. Let's see, was that our final question for this week?

Robb: That was it.

Nicki: I think that was it for this week. Any closing thoughts, hubs?

Robb: Enjoy your fall.

Nicki: Enjoy your fall. Yes, it's been spectacular here.

Robb: Definitely, fall is the time to be in

Nicki: Spectacular. And it's my-

Robb: ... northern Montana.

Nicki: ... favorite season, all around. And it was one of the things that I had a hard time with in Texas, because there wasn't much fall.

Robb: Well, and you had a hard time in San Diego with this too.

Nicki: Yep. And I went to college in San Diego and there was no fall. Palm trees don't change colors. So, yeah, loving it. Loving the fall, for sure.

Nicki: Okay, I guess until next week, make sure you check out our show sponsor LMNT for any electrolytes you might need. You can grab those at drinkLMNT.com/robb. That's drinkLMNT.com/R-O-B-B. And until then, get outside, get some light in your eyes, circadian entrainment, and enjoy the fall.

Robb: Bye, everybody.

Nicki: Bye.