

**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.

**Nicki:** Warning, when Rob 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 is always Disney+.

**Nicki:** We are live with another edition of the Healthy Rebellion Radio.

**Robb:** Look at you just jumping in there taking the-

**Nicki:** I'm taking the reins.

**Robb:** ... taking the reins.

**Nicki:** Hubs. Oh, we're going there, huh? Okay.

**Robb:** It's a cloudy day in New Braunfels, got to find something to fill the time.

**Nicki:** It is a little cloudy. We are going to plant some seedlings today though with the kiddos, despite the clouds.

**Robb:** Yep. Despite the clouds, it's supposed to be sunny later, so.

**Nicki:** Yeah. I've been trucking around, well not trucking around, but all the way from Reno, Nevada to new Braunfels, Texas, all of my seed starting equipment.

**Robb:** As well as.

**Nicki:** Much to Rob's chagrin.

**Robb:** Fuck, we're moving this again?

**Nicki:** Do we really want to pack this across the country like yes, yes we do. Yes we do. So anyway, I've got lights and the little warming pad that goes under the tray and we're going to start a bunch of seeds.

**Robb:** Oh, that's not all though. We have bee boxes and bee kits. Will we ever have bees? No, but we've got all that stuff.

**Nicki:** Yes. At some point. At some point, yes. I went down the bee keeping rabbit hole but never pulled the plug and got my own nuke and queen. So we never actually have had bees, but I do have all the supplies.

**Robb:** It's just your commitment issues showing up again.

**Nicki:** All right, let's dig in to today's episode. Rob, what do you have for us for a news topic?

**Robb:** Yeah, so there's a piece which I have links to for the show notes, COVID-19 and metabolic syndrome and association, too difficult to ignore. We've talked about this almost since day one with this whole COVID gig that the co-morbidities co mortalities that came out of China first and then everywhere else that we've seen from Italy to Spain to New York. People who have different metabolic conditions, specifically metabolic syndrome type things, hypertension, dyslipidemia, cardiovascular disease, renal disease, they don't fare very well. And so the association there is pretty crystal clear. This paper gets into some of the proposed mechanisms of what the problem is. And again, I'm just going to reiterate this point. We've been on this catastrophe track for a long time with our healthcare system and with metabolically driven disease. The timeline on that catastrophe, the rate of doubling is still an exponential, but it was a much longer rate of doubling than what we've seen with the problems that arrives from an infectious disease state.

**Robb:** But those chickens come home to roost eventually no matter what. And so I'm hopeful that this is something that we're able to get some synergy on. I throw all kinds of slings and arrows at the evidence based crowd and all that stuff, but some of these people have devoted enormous energy to sugar isn't a problem so long as you don't overeat. And it's that caveat of so long as you don't overeat it. When we overlay what we know about evolutionary biology in that humans, like most organisms are wired to eat more, move less. That's the survival strategy. And now we're in an environment where we can literally order food to our front door, have an infinite variety of flavor and pallet options. How the fuck are you going to win that?

**Robb:** I get that out of low carb land, there's some kind of ridiculous stuff that's thrown out there to, Oh, it's all insulin. Okay, maybe it's not all insulin, but at the end of the day, these hyper palatable, highly processed foods are clearly posing a problem. We're in a situation now with trying to deal with this COVID-19, hopefully we don't completely crater the whole global economy, but there's 22 million Americans that are out of work right now because our hospital systems are so strained already under the burden of just dealing with what's happening day to day, that there's no buffering.

**Nicki:** No capacity for it.

**Robb:** There's no upward capacity there. We have to figure out some sort of a unified front on this. The food manufacturers need to be held accountable. We've got to fucking get in, and the subsidies that underwrite the production of cheap, hyper palatable food, that shit's got to stop. We need to figure out a way of linking arms here and figuring out a way of going forward. For some of the folks that have been really critical say of like

Paleo and the ancestral health movement, some of these folks have been on shows and they're like, Oh, I believe in evolution and whatever. That's great. Okay, if that's the case, then how do we use the fundamental framework of biology, which is evolution via natural selection. If they think the Paleo diet idea is bunk, okay fine. Then you tell me how evolution informs its process. I think that I'm wired to eat and some other places I've laid that out there and I'm actually kind of waiting for that to be debunked. Do we not have a tendency to eat more and move less?

**Robb:** Do we not have these dueling banjos of a pallet fatigue and optimum foraging strategy to deal with? And if those are not really the issues, then what the fuck are the issues and then I'll follow those guys then. But as it stands right now, I've seen a lot of people devote enormous amount of energy into just ignoring a problem that was going to bankrupt us eventually and may bankrupt us now. It's unclear how severe the economic ramifications are going to be for this situation. I've jabbered on inanely long enough. But, those are my thoughts.

**Nicki:** It's starting to hit some of the mainstream media too though. There was a somebody shared an article in The Healthy Rebellion and I can't remember the headline, but it was pretty catchy and it was basically like "Are processed foods and junk foods making your COVID-19 outcomes worse?" Or something like that. And it was in a very catch phrase-y type publication. So, it's out there.

**Robb:** It's happening.

**Nicki:** So we'll see. We'll see what happens.

**Nicki:** Let's announce our t-shirt review winner this week we've got Robin O S essential wisdom. "Robb and Nicki are a fantastic podcast podcasting team, both insightful, humorous and knowledgeable. I listen to dozens of health and fitness podcasts and this one is at the top of my must listen to list. I always learn something from The Healthy Rebellion Radio. Highly recommend." Thank you Robin and for your t-shirt, your Healthy Rebellion Radio t-shirts, send us an email to [hello@robwolf.com](mailto:hello@robwolf.com) with your t-shirt size and your mailing address and we'll get one of those off in the mail to you.

**Robb:** Cool.

**Nicki:** I wanted to share some listener experience. In episode 23 we had a question from Erica about acne and afterwards we received an email from a listener that I thought we'd share and he says, "Hi Robb and Nicki. On the previous episode of the podcast, someone asked what specifically in the diet typically causes acne or something along those lines. I just wanted to chime in and say that for me the main culprit is rice. Hands down. Having been on a moderate to low carb Paleo diet for years now, I haven't had noticeable acne for a long time. But if I, let's say, indulge in a sushi buffet, then sure enough the next day it's like that rice wants to come out through my shoulders.

**Nicki:** Sorry for the mental image. Adult acne on the upper body was actually one of the main reasons I sought after and found the Paleo diet in Robb's first book and adhering to the

one month strict Paleo diet trial period recommended in the book was what completely turned things around for me, so thanks for all you do. Best regards, Matt". I just wanted to share that because it just goes to show how individual our experiences are and as you've said over and over again, but there's no one size fits all when it comes to this stuff. So for anybody else out there struggling with acne and you've cut out the dairy and that hasn't done the trick, keep tinkering.

**Robb:** Yeah, because this is something that Loren Cordain deserves a pretty good hat tip on. He tracked down the hyperinsulinemic linkage to acne ages ago and dairy is interesting in that it can affect that access in a couple of different ways. It stimulates the production of IGF-1 and it also causes the release of insulin, which again, in and of itself isn't necessarily the penultimate problem. But depending on the individual, some folks appear to have a disproportionately elevated insulin response to various foods. What's interesting with Matt, what would be interesting to me would be able to follow up and say, well do you cognitively feel worse after this thing? What would be really interesting is if he's like, "No, I feel fine, but I get acne". That would be a really, it's another one of these logic tree branches where it doesn't always experience the classic hypoglycemic symptoms or at least he doesn't right now. That would be super interesting.

**Nicki:** Definitely. All right. This episode of The Healthy Rebellion Radio is sponsored by Four Sigmatic. Four Sigmatic has you covered with a variety of go to beverages to support productivity, focus, and creativity, including their mushroom coffee with chaga and lion's mane. They have a whole suite of yummy mushroom products and ways to incorporate health boosting mushrooms into your daily routine. Robb, you've recently started mixing the Four Sigmatic adaptogen blend,

**Robb:** I need to show the Texas-

**Nicki:** Your Texas coffee mug... Into your, we're mostly doing decaf coffee these days, but you've been, I was like, "What are you mixing into there"? I saw you the other morning and you're mixing-

**Robb:** It tastes really good. I've done some Chinese medicine in the past and some something in their-

**Nicki:** One of the mushrooms probably...

**Robb:** I actually enjoyed it. It could be when of their mushrooms, but they have some astragalus and some other things above and beyond the mushrooms and it tastes really good. It's just kind of a nice thing to break stuff up. I really enjoy the flavor. Again, the cup of coffee and then putting two scoops of the adaptogen blend in there tastes awesome.

**Nicki:** And you can also mix it in with food. I know they say that sometimes people put it in soups and other... Sprinkle it on their food.

**Robb:** I have not tinkered with that. It's just been coffee.

**Nicki:** Just been coffee. Okay, well y'all can check it out by going to Four Sigmatic, [foursigmatic.com/rebel](https://foursigmatic.com/rebel). If you use code REBEL you can get 15% off your order. Robb, are you ready for our very first question today?

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

**Nicki:** Well, we've got one. We've got one from Brandon on creating a complete protein with beef protein powder. Brandon says, "Dear Robb, due to leaky gut, food sensitivities, hypothyroidism and intense strength training in the gym, I need plenty of protein but I can't get it all from my diet alone. And so I need to supplement with a protein powder. I cannot digest egg protein, rice protein, pea protein, or other vegetable protein, or whey protein in any form. Concentrate, isolate, hydrocelate, et cetera. I can though digest beef protein powder. Since it does not have the correct amino acid profile like whey however, to achieve proper muscle protein synthesis, can I supplement beef protein powder with branched chain amino acids or at least leucine to create the complete protein powder I need?"

**Robb:** This is one of those things where I kind of wish that we still could do the call in format because I have a lot of questions here. One of them, when I hear folks are like, "I've got leaky gut and food sensitivities. Oh and I train super fucking hard" and I'm kind of like, "why are you doing that"?

**Robb:** Chris Masterjohn had a piece ages ago where he was talking about, it was when he transitioned out of his academic track and he wanted to lean out. He had gained a bunch of weight, but he just had to get his stress levels under control first. He made some effort to just generally clean up his food, but really his focus was improved sleep and decreasing the stress load that he was under. He got that dealt with and then he started tackling the food piece because in his opinion he was under so much stress and he had so many wacky health things going on, he ended up with I think a cadmium exposure or maybe a mold exposure also. And he had to unpack all that stuff.

**Robb:** So, whenever I hear that there's something particularly gut related, we know that really intense training can transiently negatively affect the gut. And it's also another one of these things where why is steak and chicken and fish not enough to provide the protein you need? Like, I'm about 170 pounds. My needs are somewhere between like 120 and 150 grams of protein per day. Three meals a day, somewhere between 40 and 50 grams a wack. That's not that much. It should be a pretty modest thing. So I guess in a way I'm kind of calling bullshit on the need for the protein powder. A couple of things, not sure that there's really a legit need for protein powder.

**Robb:** If there is, if digestion is so compromised that we need to go to liquid foods, then the training need not be intense. It needs to be maintenance at best. It needs to be a trivial stimulus to your system. You need to rest and relax and restore, get on top of this stuff so that then we can pressure test the system and start ramping things up. All that said, I would default to as much whole real food protein sources as is humanly possible and then throwing in the beef hydrocelates and stuff like that, that actually can be good for balancing the glycine to thymine ratio so it can be good in that regard and can actually

be anti-inflammatory there. This is where like I would really want some specifics like how much real food protein is Brandon consuming. So what's the assumed deficit that we need to deal with here?

**Robb:** And then I guess, like adding some BCAAs the branched chain amino acids to get a little bit more of that anabolic signaling along with the hydrocelate that might be helpful. But again, there's just something fishy here. There's something about it that just kind of gets my spidey sense and perks my ears up and I'm like, there's something else going on here. Also this isn't, in my opinion, with the information we have, this isn't the real issue. There's some other issues that we need to address because in general for most people your whole food, real protein should be more than enough.

**Nicki:** Yeah. Okay. Our next question is from Bill on tendon repair. Bill says, "I've been active in the gym for some time now in one fashion or another. However, I'm noticing that my tendons and joints, if I'm not real careful, fail the live forever mandate. My muscles are very cooperative and champs at the bit for more action, but frankly the infrastructure lags. I've managed to tear shoulder tendons on both shoulder ball joints as well as exploded a bicep tendon off the shoulder entirely that hurt, etc. Etc. My question is how do I navigate this? I do use collagen. How long does it take for joint and tendon repairs? Other than this, I'm in good health. I've been keto for five years and I've moved into carnivore out of curiosity. Thank you. I really do enjoy your work and ethic. Bill. P S in case it matters. I'm 73 years old".

**Robb:** So a lot of thoughts on this. Let's back up a little bit. So on how long it takes things to repair. When we had coach Christopher Sommer on the show years ago and we need to get him back in for an updated visit, he talked about tendons and ligaments taking months heading towards a year to remodel because the low avascularization of those tissues, it can take quite a long time and then although like a fracture in a bone takes six weeks to heal, it also takes a long time for this stuff to come back around. So I would go out on a limb and say there's probably some mobility issues here. Like looking at something like Kinstretch to assess what are the movements you're doing, is it putting undue sheer force in different locations? I will say-

**Nicki:** And just improving your end range mobility and it will just help you feel better and be able to manage better.

**Robb:** It's loading the tendons and ligaments in those end range positions, which are really important. Yeah, isolation work, although can be good, is also the spot where people get some of these wacky tricep tendon ruptures and stuff like that. So I would really keep isolation movements like curls and tricep extensions and stuff like that. More in like that 15 to 20 rep range and, not knowing what type of rep range that he's using. Maybe he's lifting too hard too often. You might need some blocks of time where he's doing some pretty high volume bodybuilder type stuff. 20 rep sets, short rest periods to really get a lot of blood flow and get some nutrients heading in there.

**Nicki:** It makes me think of Grayson Strange. So Sarah and Grayson, we've talked about them before. They have basis health and performance in Chico and they recently let us all

through a CARs and Kinstretch reset inside The Healthy Rebellion. But when he first started learning Kinstretch and he realized he had these mobility deficits and range of motion movement deficits in his lifts. And so he basically stopped lifting for six months and strictly worked on his end range mobility, doing this capsule work in his shoulders and his hips before he then went back and started to progressively load it slowly over time because a lot of times because we've been sitting or because of whatever we've been doing throughout the bulk of our life, we have lost some of that really critical range of movement and then we just don't have the prerequisite to actually be loaded in those positions.

**Nicki:** And so that might be something going on here too. So Bill, I know with everything locked down A), finding a Kinstretch provider is challenging anyway because there's not a ton of them around yet. And then also we can't really go see people in person. But you could check out Basis Health & Performance. They do have some online stuff. They do do remote coaching. There are other providers that do remote coding as well.

**Robb:** And we've had people in The Rebellion work with them and get... One person at least avoided shoulder surgery immediately because of this. And I do have a link to a STEM talk interview with Dr David LeMay and he talks about pro resolution mediators. This is part of the recovery process, we need inflammation to stimulate recovery and this is one of the reasons why high dose vitamin C and stuff like that can be problematic for the adaptation exercise because it blunts the inflammatory response that then leads to resolution and sometimes the backend of that resolution process gets blocked. So I have a link to that. So I would think about higher volume training particularly on these isolation movements. I would definitely check out something like Kinstretch so that we are addressing any type of mobility or movement limitations and loading those things in the end range. And then checking out the talk with Dr. David LeMay.

**Nicki:** We'll note that link in the show notes. Okay. We have a question from Tim on sleep, his early riser history and ibuprofen. "Hey, I've been a listener for, I don't know how long, I have a pic of me holding up The Paleo Solution from September 12th, 2010. I'm 52 and was, still am but not by choice or need, an early riser for 25 plus years. Even though my job no longer requires that of me, I still wake up around four every day, weekends included, and I find it very, very difficult to go back to sleep.

**Nicki:** I eat clean except on special occasions. I do CrossFit five times a week and BJJ three or four times a week. BJJ is new and I feel like it is so hard. When I was young, things were automatic. I didn't think about wrestling moves or positions. They were just there. Sorry, not relevant, but infuriating. Every once in a while I will take ibuprofen really, very rarely, maybe five to 10 days a year, but it seems whenever I do take it, I sleep until my wife's alarm wakes me up. It could, of course, be coincidence, but is there any reason ibuprofen could help me stay asleep or any other things I could take to mimic the effect without the drawbacks? By the way, I have no trouble falling asleep and my wife hates that about me. Thanks for keeping at it, Tim".

**Robb:** So I did some poking around on this and it's interesting, there's a lot of studies looking at does ibuprofen affect sleep quality one way or the other? And so they've got a general

population of people and they put them through like the sleep lab analysis and the evidence based stuff suggests that ibuprofen has absolutely no effect on sleep one way or the other. But then interestingly if you search "ibuprofen sleep quality", "ibuprofen improved sleep", some iterations off of that. There's a shit load of chatter where people are like, "dude, I sleep way better when I take ibuprofen. What's the deal with that"? And there's clearly nonsteroidal anti inflammatory. So, if there's a gut issue, if there's some sort of systemic inflammatory response, these things will tend to elevate cortisol, elevate adrenaline. And that will absolutely, fire up your, wake cycle, you're going to tend to have less restful sleep.

**Robb:** It's pretty clear that serially or consistently taking NSAIDs that the epidemiology on it is pretty compelling that it's bad news. We don't necessarily want to do that every day all the time. There are some products like Zyflamend from New Chapter that works in that COX-2 inhibition pathway. It uses some super critical extracts of turmeric and ginger and different things that have some clinical efficacy around that. I'm still curious if kind of a whack like that is going to have the same knock on effects as ibuprofen. It hasn't been studied, it's sold as a healthier, more beneficial alternative to things like standard anti-inflammatories but it really does seem to have legit efficacy from an anti-inflammatory painkilling perspective. So it really makes me question whether or not it's actually all that safe comparatively. I don't know. I just don't know. But that could be something that's going on and the Zyflamend could be something that you could tinker with and see if you get improved sleep quality.

**Nicki:** I'm wondering, because I see CrossFit five times a week, which depending on where you're doing CrossFit, and what time? And the same thing with BJJ, are you training in the evening classes and is the programming sort of like Fran then bike like, what is the programming like throughout the week? Is it balls to the wall? Is it that type of a gym or are you doing some strength work? And it's not always a competition kind of a thing. And same thing with your Brazilian jiu-jitsu school, is it a competition oriented school where you've got a lot of young people that are trying to kill you and you're in fight or flight mode the whole time that you're training? Because I see that and I see lots of cortisol and I don't know, maybe that's affecting his sleep.

**Robb:** Absolutely could. Yep.

**Nicki:** If you can train earlier in the day, that could help if you are training in the evening. And then the other thing would be to try to moderate the intensity of both.

**Robb:** One thing just occurred to me, chiliPAD, a lot of folks have reported that if they use a chiliPAD, it's a thing that goes on the topper of your mattress and it moves water through it and you can control the temperature and make it colder or warmer. It depends on the situation, but the folks for whom that works, they're like, "I don't even want to travel anymore," because they sleep so well with the chiliPAD, so it could be an option also.

**Nicki:** Our next question is from Daniel on protein levels with training in IGA-

**Robb:** Nephropathy.

**Nicki:** Nephropathy. We were missing an H. let's see. Daniel says "Howdy. Thank you for all the great info you guys are putting out there. I got diagnosed with IGA nephropathy a couple of years ago, but symptoms disappeared. Gracias good food, and it seems like it has slowed down and is not progressing. The challenge for me is all the conflicting things I hear about protein intake. Ideally I want to try keto gains and bump my protein up a bit, but the IGA thing has gotten me paranoid. Any thoughts welcomed. Viva, la revolucion, Daniel".

**Robb:** So when you poke around on this, and we've had podcasts, I've done a two part piece ages ago at robbwolf.com clearing up kidney confusion and looking at the like, is protein a driver of kidney disease? And the answer is absent preexisting kidney disease, no, it's not accelerating things. What's really interesting is if you thoroughly analyze the data around this, even people that are in later stage kidney failure, protein curtailment may or may not really do all that much. It's a very murky thing. And this is a situation in which there's a standard of care process that's been adopted and that's kind of it. And it's where it goes. But when you dig into the pathophysiology of this IGA driven nephropathy, the linkage to insulin resistance is just shocking and I have some links to this in the show notes and we've seen good examples of folks who had a preexisting disease like this.

**Robb:** They go on a lower carb keto, Paleo type approach and their numbers improved dramatically. And so two thoughts here. One is it sounds like Daniel got on top of this by some dietary modification already and so the disease process is likely gone because it likely has a strong insulin driver to it. That's one layer to this. The other layer is that the keto gains recommendations for protein are not that high. Like for me again, 170 pound reasonably lean person, the lower end of their recommendations, it's about 120 grams a day. The higher end is about 150 grams a day and that's not really that much at the end of the day. So again-

**Nicki:** It's a lot more than the 30 grams of protein that some doctors are saying is sufficient.

**Robb:** That is true. And those doctors look like 10 gallons of shit in a five gallon bag. So it's working out great for them.

**Robb:** So again, this is something that clearly... it sounds like Daniel is monitoring this over time. It seems reasonable to tinker with this and just monitor and how do you look, how do you feel, how do you perform? And then like always, we have that fallback of checking on various lab values to make sure that what we're doing is actually serving us and not hindering us.

**Robb:** I kind of go back to Loren Cordain's earliest... one of his earliest papers where he had a recommendation for a medium size female. It was his Paleo diet, contemporary foods, Paleo diet thing. So it's basically, trying to build a Paleo type diet with modern foods. And the protein recommendation for a medium sized female was like 212 grams of protein. So it was remarkably high protein compared to what people are generally

comfortable consuming these days. Even some of the pieces that I did on my longevity talk when we look at the food consumption within the mid Victorian era, women, because of their activity level, we're consuming 200-250 grams of protein a day and men, commensurately more so again, I think that once we remove that hyperinsulinemic state with something akin to ancestral living, it changes the game a lot.

**Nicki:** Okay. Our fifth and final question this week is from Brandon on sodium potassium pump and the optimal balance. "Robb, I noticed your electrolytes have a five to one ratio, 200 milligrams of potassium and a thousand milligrams of sodium. Was wondering what went into that ratio. I always thought we needed more potassium, almost double just to our sodium intake or is this formula based on maximum peak exercise performance? Just curious".

**Robb:** Yeah, we get a lot of questions around the element formulations and I prefer the questions versus the, "Hey, you guys fucked up your formula". Which we get that fairly frequently too. And it's just kind of funny because not that Tyler and Luis and I are geniuses, but you would think that if you go to put together a product that there would be some actual thought that goes into it and not just like, "Oh, we just threw shit together". But, and I know that's not what Brandon is saying here, but we've had people imply that and it's just kind of like jeez, whatever. But, so what we did in formulating element is we looked at the meals from a couple of hundred people, about 220 people. We looked at their properly formulated ketogenic diet around these keto gains ratios, mainly from whole unprocessed foods.

**Robb:** And we looked at the calcium, magnesium, potassium, sodium people were ticking the box on calcium. The magnesium they did pretty good on, but were a little bit deficient. Same deal with potassium. And then the sodium was woefully inadequate for what the basically understood needs are for in particular a ketogenic state. Although again, when we look at some of the studies that have been done, even in type two diabetic heart patients, that five grams of sodium intake per day is the low ebb of morbidity and mortality. There's a U curve with very steep increases in morbidity, mortality at low intakes and then a flat side of the right hand side of the curve. You have to get up almost 10 grams a day to have the same morbidity. Mortality is two grams a day. And again, this is in a sick population.

**Robb:** So the long and short of it is that element is formulated to supplement a good diet. It's not formulated to replace the totality of electrolyte consumption. So if you eat meat and vegetables and nuts and seeds and this is where... Even though we caution people in keto land, don't go crazy on nuts and stuff like that, you do actually get a lot more nutrition from that than you do just like bacon fat. And it's not say that bacon fat is horrible. I just made some bacon fat mayonnaise and it was incredible but, there is a reality that just purified fat doesn't really provide that much in the way of nutrition. It provides some calories and that may be fine in the grand scheme of things, but this is where if people can smartly formulate these Paleo keto type nutritional plans and avoid as much as possible these processed foods, then we tend to get a lot of nutrition that comes along for the ride.

**Robb:** We did put some thought into this and really what this was, was addressing the main problem, which was sodium deficiency and then propping up the potassium and magnesium and then the calcium folks were generally pretty good on.

**Nicki:** That is all of our questions for this week. Thanks everyone for joining us. Please check out our show sponsor Four Sigmatic. Remember, you can get 15% off your order with code REBEL when you go to [foursigmatic.com/rebel](https://foursigmatic.com/rebel). Please share this episode if something, one of the topics we covered, you think of a friend that might be interested in that, please tap on the share icon in the podcast app and share with your friends. And of course we'd love for you to subscribe and leave us a review on iTunes or wherever you go for your podcasting experience.

**Robb:** Thank you wife.

**Nicki:** Thanks hubs.

**Robb:** And we'll see y'all soon. Take care.