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.

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 Plus.

Robb: Howdy folks.

Nicki: Hello everyone.

Robb: Nicki started hacking just as we-

Nicki: I was like, I have a tickle my throat. Right when he pushed the record button, and of course he didn't stop it to start over. He just pushed the record button.

Robb: We operate without a net, wife.

Nicki: This is true. This is true when it comes to this podcast. This is absolutely true.

Welcome back everybody. This is episode 127 of the Healthy Rebellion Radio. How you doing, hubs?

Robb: Better than you.

Nicki: Better than me? Yeah, I woke up a little flat this morning.

Robb: A little flat today.

Nicki: A little flat today. Yes. But we might get snow this weekend. There's a 50% chance of snow. We've been running the stove because it's been chilly. So the seasons are a changing.

Robb: They are.

Nicki: You carved the pumpkin with the girls.

Robb: And it looked like a passable cat when it was done, which is what they wanted.

Nicki: Yeah. Sagan wanted it to look like a cat and did a pretty darn good job.

Robb: It's not bad.

Nicki: She drew it on with a Sharpie and-

Robb: They largely cut it, so.

Nicki: Yeah. Zoe's mostly interested in the pumpkin seeds, so she wasn't-

Robb: Which I don't blame her on that.

Nicki: She wasn't too concerned about doing much of the carving. I'm trying to think of what else is going on. I think we could just jump right into this one.

Robb: Cool. My news topic, I have two pieces here, and I've honestly had to go to ground over this over the past couple of days because I was just going to freak out and say something that would probably get me canceled. Even though cancellations seemed to be less frequent, I think more people are just like bugger off at this point. So this is... I'm linking to the badgato and the title of this is Omicrom Gain of Function Research: Truly There is no Practice So Stupid That Humans Will Not Keep Doing It, is the subtitle. And it basically looks at this piece, role of spike protein in the pathogenic and antigenic behavior of SARS CoV one or CoV two, BA point one Omicron.

Here's what they did. This is from the paper. We generated chimeric recombinant SARS CoV two encoding the S gene, which is for that spike protein on the backbone of an ancestral SARS CoV two isolate. And so basically what they did is they took elements of the current Omicron version of, or fairly current Omicron version of SARS or COVID, whatever we're calling it at this point, which is by all accounts pretty benign. It's incredibly infectious.

It spreads the like dickens. The last I heard the are nought was equal to or greater than measles, which I think at that point was the most transmissible thing known at that point. But they took the transmissibility elements of the current version and grafted it back onto the nasty, going to kill you elements of previous versions. And the mouse line that this was exposed to, the current iteration is non fatal. This new hybrid version had an 80% fatality rate. And this is basically more gain of function research, which you just can't... Like I'm losing my mind. We've talked about this on this show and the show is not that big in the grand scheme of things. So I don't know how much impact this has. Other people talked about this, like Dark Horse and different folks like that. I just, I'm at a loss for words for how dangerous this is even. And this is all... It's so weird because-

Nicki: The hubris, right? It's like, oh, well maybe... First of all, why? What are you trying... Is the ideal outcome of this? And everybody was like, oh-

Robb: Can I be a dick?

Nicki: Sure.

Robb: The mask wearing COVID apologist crowd, ironically, will say this is so that we can gain an insight into this stuff so that we know how to treat it later, which is patently false.

Absolutely false.

Nicki: So we can get ahead of it if something like this occurs, but how would something like this version of COVID? Like you've said, it's already less deadly, more transmissible, less deadly. That's how viruses tend to go.

Robb: That's where we want to go.

Nicki: Great. So what would it take for this one that they created in a lab to actually come about now on its own? What are the odds of that? Why would they need to get ahead of that?

Robb: Something like the... So, the 1918 flu pandemic is maybe an example of this where there were three kind of primary phases. The phase one was not super gnarly. The phase three was bad, but not as gnarly as the phase two. So it did get worse. And what... I'm by no means an expert on it, but just it appeared that there was a combination of both worse transmissibility and pathogenicity, which usually doesn't happen. Usually it gets less pathogenic as time goes on because the goal of the thing isn't to kill people, it's to spread. That's the game theoretical model there. So I mean it's possible this stuff can turn a corner. Some of the concerns early with... Well again, and we've talked about the SARS CoV one and the MERS, sister or related viruses, which received gain of function research, apparently, like the Peter Dasik's Eco Health Alliance, we've talked about this stuff.

The SARS CoV one and MERS have about a 30% case fatality rate. And this is, again, I sound like a broken record. I say this stuff in my own head, we've said it on the podcast, so I feel like I'm literally am a broken record. But this isn't a like, oh, you got bit by a shark and you happen to have COVID at the same time. Death. This is like no joke, 30%. Like a hundred people get it, 30 die, the 70 that live are sick, really sick. And that's pretty well established. The only thing going for us with SARS one and MERS and some of these other things, is that they're really difficult to catch. You have to the aerosolized infectious nature is not really there. You have to really be in close proximity. You have to really try to catch this stuff.

Nicki: But making this one that has an 80% mortality rate-

Robb: In mice.

Nicki: In mice, okay.

Robb: In mice. But-

Nicki: Humanized-

Robb: These are humanized mice.

Nicki: Lung tissues or whatever of the mice.

Robb: But, shit.

Nicki: If that happened, it would end civilization as we know it.

Robb: So it probably, a 30% legitimate case fatality rate could be a civilization ender. Because... And Nikki and I were talking about this, so it's a little bit Groundhog's Day for us, but this stuff is really important, I believe to talk about. A 30% case... Maybe a 10%. We saw... The last-

Nicki: Even the shutdown was like-

Robb: One percent, approximately, case fatality rate. And there there's some, maybe it was. Maybe it wasn't, but about a 1%. And dude, it fucked stuff up. It shut things down. And a lot of the shutdown shouldn't have happened because that was never part of pandemic response planning. But there were enough people that got sick, there were enough situations-

Nicki: Staffing shortages and whatnot.

Robb: Staffing shortages, overwhelmed hospitals. Hospitals got overwhelmed. There were people dying in the droves in the beginning. In the beginning there was no joke about that. If it had been 10 times worse and 10 times more doctors died. 10 times more police died. 10 times more parents died on and on and on-

Nicki: Electricians, plumbers.

Robb: You might have had like massive civil-

Nicki: Grocers, farmers.

Robb: ... Civil unrest.

You start getting into civil unrest and maybe some power stations get taken down, maybe fuel doesn't get transported around the planet the way it should. And then you start having people freeze to death, starve to death. And so anything I think above a 10% case fatality rate is going to be a really bad day for civilization. And 80%. So just imagine that potentially 80% of the planet is expunged from the virus, which I think that there are a lot of people these days that think that would be a wonderful thing and they're assholes. But that's a whole other side deal.

But it, there's no infrastructure left. The brain drain is so huge. There's nobody left who knows how to do enough things to make the world work the way that it needs to work to get the done that we do. If there are people left, we're literally back to maybe a little bit above stone age technology. And we reset the clock on trying to dig ourselves out of this. And in the process of all that happening, water systems fail. So cholera outbreaks explode. This is where the whole thing just snowballs. So if you didn't get killed from the main thing, then it's-

Nicki: Your chance of getting killed from any number of other things skyrockets.

Robb: Yeah. It's just massive. So the only things that... And I can't remember the podcast we were listening to. We mentioned this on this podcast, but there was a scientist who said, the main reason why gain of function research is popular or allowable is it's actually quite easy to do. You're just serially passaging the vector through these organisms. That is actually quite easy to do. You do the genetic sequencing, you write this whole thing up and you get grant after grant to do this stuff. So there's this kind of perverse incentive to do it because it's easy and it gets funded even though huge segments of this gain of function research stuff was supposed to be shut down. And the very people who likely created the current pandemic that we've been dealing with for three years and were put in charge of managing the response are still issuing grants for this.

Nicki: This study took place at Boston-

Robb: This was at Boston University.

Nicki: And it was funded by-

Robb: NIH-

Nicki: NIH and Big Pharma.

Robb: And so another sharp person, Ujipius-

Nicki: This is a sub stack. I don't know if it's "you-jyp-ius" or "you-gyp-ius

Robb: Eugyppie, yeah.

Nicki: But it's a plague chronicle. And he's out of Germany, I believe.

Robb: Yeah. He's had super interesting insights both on COVID and also the energy situation within Germany. "Boston University falsely denies gain of function accusation, lamely claims creation of chimeric SARS two virus will lead to, quote, targeted therapeutic interventions to help fight against future pandemics." This is absolute busllshit. And I've been struggling to... The main case that I would say around this, the reason why it's bullshit is that this stuff evolves so quickly that there isn't some novel insight that you're going to figure out because you don't know what thing you're going to be fighting at that time.

Nicki: And the thing that you think you're going to be fighting could mutate super quickly such that the thing that... Whatever therapeutic you created no longer works-

Robb: Is applicable to it. Which we saw with this, we started seeing that the things that were targeted towards alpha variant were no longer really all that efficacious with a delta variant and were completely worthless, more or less, for omicron, other than maybe some very targeted situations. The only other viable reason to do gain of function research is to find a pathogen that you want to weaponize and then you develop a vaccine that hopefully isn't leaky and that you can get into your population and the population of your allies in such a way that everybody is immunized ahead of the release of this thing. Because we've seen what happens when you try to immunize mid pandemic, it doesn't work that well. There's an original antigenic sin, there's antibody dependent enhancement which ends up tuning the immune response to that archaic, now evolutionarily defunct flavor of this stuff. If you do have a leaky vaccine, you would at least need to get this at a population wide level out ahead of it first so that the first wave of the released virus ends up hitting the same type of immune response.

But because it's leaky, you're still going to have transmission. There's still the possibility for evolution to occur there and for the virus to work around this. But the two reasons to do gain of function research are either that you're an unethical scientist and the system is broken and it's easy to do, cheap to do, but well funded to do, or you want to weaponize this stuff. And god, if it's not dangerous to weaponize biologicals because they're alive and they will evolve and you can't control them, you can't predict where they're going to go. You might get a chimera strain of this plus that naturally out in the wild and then you are fucked.

I am going to someday do a sub stack on this hopefully in the next couple of weeks, but I've really had to just sit on my hands because the stuff... If you're concerned about social justice stuff, if you're concerned about environmental stuff, if you're concerned about this, you're concerned about that and you're not concerned about the fact that these assholes are still getting funding for gain of function research, I'm sorry, but you're an idiot. Your risk analysis... And maybe you just aren't aware and that's fine. And I know I'm like totally going crazy here. This is existential thread stuff. This is, pick whatever terrorist group you don't like, in saying, "Hey, let's put you on a lottery for maybe getting a couple of suitcase nukes. Sound good?" And it's worse than that because, and Nicki and I were talking about this, a suitcase nuke going off... And those don't really exist, but let's just say for argument's sake that it does-

Nicki: It goes off in a city. It targets that particular city.

Robb: It targets that city-

Nicki: And that's awful-

Robb: ... And that's awful-

Nicki: But it doesn't have the potential to spread globally the way that, like what we saw.

Robb: Biologicals do. Geez Louise. So man, I don't know how to rally against this, but this is something that the people doing this stuff need to be held accountable and never, ever again, never again. There is no upside to be gained from this stuff. We will have plenty to contend with the yearly flu, influenza strains that come in and we're going to get some gnarly one just due to shitty luck at some point. We will be well tested to just handle the stuff that nature throws at us, especially considering that fewer than 7% of our population are metabolically healthy. And so everybody is already one foot in the grave and the other on a banana peel.

And we've got all the barrels pointed at us, they're all loaded. We don't need to then further exacerbate the problem with this. And in a lot of ways, what I feel like is happening here is the continuation of this gain of function research is basically trying to justify what's been done previously. Instead of trying to hide... They can't hide it. They tried to hide it for ages, but now it's kind of like, well, this is all totally fine. This is totally normal. Oh, it's very unfortunate that this got out and killed a million people in the US and shut the economy down and has created all this other havoc and chaos and it basically forced a novel medical therapeutic upon a global population in a way that violates all kinds of human rights conventions.

Nicki: And locked people in their country. Such that they can't go visit family members and loved ones that are dying and giving birth in other countries.

Robb: And on and on and on. But what I think part of this is, they're normalizing the application of gain of function research, even though they're saying that it's not gain of function research, so that they can retro tune the Alfred Hitchcock like tunnel through time in this thing in such a way that it's like, no, it's fine. We've always done this, and we'll always do this because it's valuable, even though it's not.

Nicki: Change the definition will change the meaning of the word.

Robb: So folks, I really encourage you to read up on this stuff and please stay on top of it and post it and talk about it and ask questions. Maybe I've got this all wrong. I hope I do. I really don't think I do. But this is something that is a no joke deal where I think some people should hang from yard arms off of this and many of the people are now household names and whatnot. At a minimum, there needs to be-

Nicki: Many of the people have-

Robb: ... Comments on this.

Nicki: ... Now have thousands of pets named after them.

Oh, goodness.

Robb: So anyway-

Nicki: That's probably good on this.

Robb: That's probably good on this. But please dig into those two links. Please look into this and let's make some noise about this. We need to push back against this. And I don't know exactly what that looks like, but I'm hopeful that we're able to get something together such that we can get a legit moratorium on this stuff. The US should not be funding gain of function research anywhere and anybody else doing it, this should be looked at as weapons of mass disruption and should be dealt with appropriately.

Nicki: Amen. All right. The Healthy Rebellion Radio is sponsored by our salty AF electrolyte company, Element. Our listeners might be the exception, but most people don't realize how important electrolytes, sodium in particular, are for health. From everything from muscle contractions to nerve impulses, sodium is key. Element makes it easy to get your electrolytes without the sugar and other crap that's found in normal or typical hydration beverages. So if you're an athlete or you train regularly, if you have a physical job, if you're eating keto or low carb, if you live in a hot or humid climate, if you suffer from muscle cramps, Element is for you. We have a host of flavors to please every taste bud. You can grab yours at Drink Element dot com slash Robb. That's drink, L-M-N-T dot com slash R-O-B-B. And we have a little... I'm going to just tease out a little winter something coming towards the end of this month, early November. And we'll see if it's... We'll see how it goes. That's all we'll say.

Robb: Cryptic.

Nicki: Cryptic, but keep your eyes open for that. Okay, we've got three questions for you all this week. The first one is from Kevin regarding protein amounts per meal. "Hi, Nikki and Robb. A few episodes ago, Robb discussed how getting 30 grams of protein in a meal was important because it makes a process in our bodies start. Maybe you could explain that a little further. And my bigger question is, at what point is it too much protein at one sitting? Is there an approximate number of grams where you won't get the benefit of the protein or is it more important to hit the overall protein goal for the day? Also, would splitting a 70 gram meal into two 35 gram meals be more beneficial? And if so, what is the necessary wait time between those meals? Thanks for all you do, Kevin."

Robb: It's actually like 35 questions in here. So Kevin, I steal most of this stuff from Dr. Gabrielle Lyon and folks like her who are much my better on the protein story. But in general, there seems to be a bit of a consensus. Always dodgy too lean in consensus too much. But the science does seem to support this notion that if you want anabolic signaling from branch chain amino acids, specifically leucine, you need about 25 grams of effective protein to get that happening. If you're taking away protein isolate, you want 25 grams of effective protein. Below that, you are unlikely to get much in the way of anabolic signaling. And so there's kind of this minimum threshold there. And then poking around trying to figure out what the upper limit is on a per meal basis. There's not really a specific upper limit. I mean clearly at some point gastrointestinal distress sets in and you just can't eat that much and all that type of stuff.

Nicki: It would be dependent on the person's size?

Robb: Size is going to be a factor. And this is even, at this minimum, this protein minimum, I wonder about that too. Again, five foot two female, six foot four male. I think that there's probably differences there. So these are rough guidelines. Peter Atia made a comment offhand, which I have not dug into, but he suggested that protein consumption over about 40 grams of protein per dose, that the body gets a anabolic signaling, but you begin just oxidizing those amino acids and they get broken down and

used as fuel instead of body maintenance and stuff like that. So is that good or bad? Well, it kind of depends. That can be a really slow release method of maintaining blood glucose response. And this is largely the way that the Bernstein Diabetes solution recommends managing both type one and type two diabetes, which is a low carb, moderate fat, high protein diet, so that the liver is getting enough protein to meet growth needs and anabolic needs.

But also it ends up converting a non-trivial amount of the amino acids into glucose, but that glucose is then titrated out of the liver in a pretty precise fashion. So whether that's good or bad is dependent on what you have going on. Also, higher protein intake is pretty highly satiating. So if one is trying to lose body fat, then the higher protein intake is arguably better because of the satiety effect. Because of the thermic effect. We don't get as much calories out of a given amount of protein because of the way that it's metabolized. So Kevin also asks some great questions around the timing with this. How long from one meal to another would you need to wait to really... So that you don't have an overlap on say, the previous meal to the next meal? And it's about two hours. Plus or minus maybe an hour and a half for some people, but about two hours.

And if you look at just body building lore, they recommended eating a protein rich meal about every two hours. And for maximum anabolic activity, maximum satiety so that you gain muscle, minimize body fat gain. That's probably a great recommendation. One of the problems with this super high frequency of feeding is that it is pro-inflammatory and there's no two ways around it. Every time we eat, we get an inflammatory response. I don't know that that really makes a strong case for a one meal a day protocol. And we've talked about this in other shows where if you're only eating highly infrequent meals, you need way more protein than you do to maintain muscle mass or having an adequate anabolic response. You would need to eat far more protein in that meal than what you would eat if you were doing two meals and a snack or four small meals broken throughout the day.

So there's trade offs with all this stuff. Would splitting a 70 gram meal into two 35 gram meals be beneficial? Maybe from the perspective of consistent anabolic signaling throughout the day. I do know some people, for me, the digestive thing is a interesting trade off. I don't want to be snacking all day because that kind of bombs my digestion out. But at the same time, a massive meal doesn't really work well for me too. So like breakfast, lunch, dinner, maybe a snack, maybe two meals and a snack is kind of the place that I play out there. So again, there's just a lot of variables ranging from, what's your goal? Body composition change, body re-composition, gain muscle, lose body fat, only lose body fat, maximize muscle, hypertrophy signaling, mitigate gut issues? I know Bobby Maximus, who's a pretty well known strength and conditioning coach and MMA fighter, he ended up having some really serious ulcerative colitis type gut issues and he found that he just needed to eat... One, he needed a compositional change to his diet.

So I think some things like gluten and dairy ended up being problematic for him. I'm going by memory, so I could be wrong on that, but I think what he found was smaller, more frequent meals was the ticket for him. Whereas some other people, they just have to spread out their meals and although they can't be huge necessarily, they don't do well with every two hours, every two and a half hour eating. So I think that that's, again, if you have gut issues, then you may need to tackle this in a way that's like... I would love to be 10 pounds heavier with muscle, but I just can't eat that much food. It is just not going to happen. I struggle to just maintain what I've got. So I've got to cater more to my gut issue limitations, even though I have some goals that I would like to see that would be facilitated by maybe more food intake, more protein and taking more frequent eating.

Nicki: It's almost like there's no one size fits all when it comes to nutrition.

Robb: Really not. There's a lot of moving parts and the whole thing is largely driven by your goals. But also I would throw out there some of the limitations that you have. And somebody like me, I have some compromised gut health that I do a pretty good job of managing, but I still have to pay attention to certain things to make it work and I have to cater more towards making sure my gut doesn't fail than being concerned about the other stuff.

Nicki: Okay. Our next question is regarding blood sugar regulation from Aquila. "Hi Robb. I'm a fan of yours and have listened to a number of podcasts with you as a guest. Great work and thanks for fighting the good Fight. I am very fortunate to have good health and eat an animal-based diet accompanied by fruits and vegetables from our garden and local farmers. I was raised by hippie parents who fed me high quality unprocessed foods and my digestion tends to work well. My partner, however, has some big problems with her glucose levels and doesn't know what to do. She was raised on a sadly standard American diet consisting of lots of grains, processed snack foods, sugar and generic grocery store produce and meats. Her mother has type one diabetes and is quite frankly in bad shape. My partner, Lindsey, was diagnosed with type two diabetes when she was 18 and prescribed metformin, which gave her bad stomach pain and other side effects.

The doctor never mentioned anything about changing her diet. It was bad at the time, which made Lindsay think something wasn't right. She's now 34 and in the last decade has come a long ways with her health. She's now physically active on a regular basis, quite fit and eats what most would consider a very healthy diet. She avoids grains almost entirely and eats primarily meat, fruits and vegetables. Our son is two and she is still breastfeeding. Basically, anytime Lindsay eats even a small amount of carbs like potato, fresh corn, strawberries, et cetera, her blood sugar spikes and she feels the physical effects. It seems as though her glucose levels were staying at healthier levels a few years ago, but now are zigzagging pretty hard. She doesn't know what to do to increase her insulin sensitivity or have more regulated blood sugar levels. It feels really unsustainable for her and she's concerned about the long term effects. I know you're not a doctor and very busy, but if you have any insight it would be very appreciated."

Robb: Yeah, it's funny, I am not a breastfeeding mother, but I am very similar to this. I was never formally diagnosed with type two diabetes, but too many carbs will get me on kind of a blood sugar roller coaster. We did our experiments with Wired to Eat where Nikki ate 50 grams of carbs. I ate 50 grams of carbs from white rice and Nicki's blood sugar barely budged upwards and mine got to nearly diabetic levels. So there are some people for whom you just have to find what is a workable glycemic load for the individual. And for me, it's usually I can get up to maybe 7,500 grams of carbs on days where I'm pretty physically active. If I'm really physically active, I might be able to sneak in a little bit more. But I really do pretty well from a blood sugar perspective being around that ketogenic level, 30 to 50 grams on most days.

And again, on days when I'm really physically active, I can eat more carbs and still have passable ketone levels, which seems to be the thing that keeps my brain happy, tends to normalize my blood sugar levels. And I'm lean. I'm probably eight, 9% body fat, physically active, carry a decent amount of muscle mass. I've tried doing blood donation in the past. If I had iron overload, I don't really think that that was an issue. This wouldn't necessarily be an issue for Aquila's wife or partner. Omega-3 fats, two grams a day, Alpha lipoic acid, strength training, aerobics-

Nicki: Walking-

Robb: Walking, pre and post meals-

Nicki: ... Pre and post meals. And then I think also, we talk about this in the carb test and she doesn't necessarily need to do that, but just maybe keeping a little notebook of how she feels after these carbs. Because maybe potato, fresh corn and strawberries are really problematic for her, but maybe she would do better with rice instead of potato or blueberries instead of strawberries. I don't know. But we have found that a lot of people, they get some pretty interesting insights when they really start charting and paying attention. Just some foods elevate blood sugars in certain people more than others.

Robb: And there's two pieces of that. There's just the carbohydrate content of the food. And then for some people, if they have an immunogenic response, if their immune system just doesn't like the food, that can register as a stress. And so you can get a cortisol induced blood sugar response. So the main thing is that we have to play to this clinically. And Lily Nichols' work around gestational diabetes and dealing with blood sugar regulation around pregnancy and breastfeeding, she might be a good resource just because the material is written by a woman, it deals with all kinds of mom related stuff. And that might, Lily and her work might be a good resource for getting in and looking at this stuff. But again, lifting weights, exercise, some zone two, a little bit of interval training. Walking.

Nicki: You know what? Squatchee just posted an interesting article in the rebellion and I didn't read the whole thing, but the gist of it was something about doing calf raises, even if you're sitting and you're just elevating your heel off the ground onto the ball of your foot, like calf raises. And I can't remember if it was pre or post meal, but it reduced blood sugar-

Robb: Significantly?

Nicki: Significantly.

Robb: Oh, wow.

Nicki: So that was an interesting, and again, I just glanced at it. I didn't get a chance to read the whole thing, but definitely activity pre and post, can definitely help with blood sugar.

Robb: This is one of those things that folks talk about. The NEAT factor, the non-exercise activity. Fidgety people just tend to burn a few more calories and just that movement ends up... Any amount of movement that we do ends up stimulating to some degree this non-insulin mediated glucose disposal where we can lower blood glucose levels. I would say it's probably better post meal to do that, but you could probably do some pre and do some post, but-

Nicki: We'll dig out that article up and we'll put it in the show notes for anybody.

Robb: But this is where even doing 10 body weight squats and some pushups against a counter or something like that. Movement breaks throughout the day. Post exercise, like doing a walk and then.

Nicki: And then really watching sleep. Sleep is huge for blood sugar regulation. So I know it's hard when you have a youngster that may or may not sleep well through the night, but really being... If she can get super protective around her sleep, make sure she's getting enough sleep. Make sure that it's a dark room, all the stuff that we've talked about with

regards to sleep hygiene. That just definitely helps set the stage for better blood sugar regulation overall.

Robb: Nice. Nice.

Nicki: Okay. All right. The last question this week is from Ryan on vasectomies. "Hey Robb and Nicki, this is a follow-up question from way back in episode 63, I tried to find the JAMA study or studies that you referenced about vasectomy causing a decrease in testosterone and couldn't find much. There was one meta-analysis from 2017 about prostate cancer, but it stated, quote, 'Although one study found that serum testosterone levels are elevated in men who underwent a vasectomy more than 20 years ago relative to men who did not undergo a vasectomy, most studies have shown no changes in testosterone levels following vasectomy.' Unquote. Do you have any other information or updates on this topic? My wife and I are done with kids and a vasectomy is tempting in some ways, but I'd hate to mess up my endogenous testosterone production."

Robb: The short answer is I have no additional update on this. I did a little bit of poking around, but what I've found is just contradictory. I've seen some examples, again, like the material we cited in episode 63 where it suggested, at least in some people you can see a non-trivial decrease in libido and testosterone levels, a shift towards a more estrogen dominant kind of profile. And then there's lots and lots of material that seems to say the opposite to that effect. And I just don't know what the real story is. And it may depend on the individual. This is one, again, one of the problems with aggregating data. If you have some people that there's no... Maybe, like this one study that's cited here, maybe some people see a testosterone boost for whatever reason, and some people see a decrease. And if you average the thousand, then there's no change there. And the people on the bad side of that it are going to not clinically do all that well. So.

Nicki: It would be interesting... I guess if it were me. I mean, you had a vasectomy, knowing what your testosterone levels are now. I think if you're going into it with really robust levels, then maybe if I were male, I'd be like, okay, maybe that's... I'm starting with really robust levels and I know there's some chance of it dropping some amount, but I'm okay with that because of where I'm starting. But if you're a man who's starting with mediocre levels and there's that risk, that might be kind of a way to gauge it. Because I know talking to Kirk Parsley, there have been so many people in the military who go through these just hellacious training and getting deployed and sleep and stress and all of this, and they're testosterone goes to shit. Super, super low. And so again, that's probably, it just depends on where you are in the spectrum when you're making this decision. I think if you were pretty low or even average or slightly below average, you'd have to decide if that was a risk you were worth willing to take.

Robb: Well, and at a minimum checking levels before, and then checking afterwards so that there are things like enclomaphine and whatnot, which can help boost endogenous production. So could look into some things like that. But I think just having a benchmark is smart. Both of the actual levels and just kind of clinically how you look, feel and perform and all that. So not a lot to offer there, apologies. But it seems like there's a signal there. But I don't know. I don't know. I've also seen probably more information saying, nothing to be concerned about here, than the other. Yeah.

Nicki: Okay. I think that's a wrap for this episode. I'm trying to think if there's any other closing comments.

Robb: Just circling back, I really do encourage people to read up about that gain of function research and folks should be hopping mad about that. And this should be something that, the few people that pull this card that we're going to learn something in this process that's going to help us later. No. The risk reward profile is not there.

Nicki: Well, you were telling me something that Brett and Heather had shared with regards to the current pandemic. People were saying, claiming that there was gain of function research happening in the Wuhan Institute and that people were like-

Robb: That is a great point.

Nicki: ... It wasn't gain of function, but if it was-

Robb: It didn't help us.

Nicki: It didn't help us. If the idea was to be able to understand so we could get ahead of something, that didn't come to pass.

Robb: Right. At best, there was a claim that we were able to sequence this thing overnight and then in a weekend start spinning up production of vaccines, which seems super dubious to me, but that's a whole other topic. But it clearly didn't avoid this thing. And look how much time it took, even. It was two, two and a half years before they started saying, "Hey, we're going to tweak the boosters to match omicron." Okay. It's just the logical breakdown there. And also just systematically where this thing fails in so many ways, it's just incredible. Again, this is where I really do need to collect my thoughts, but do it in a way that doesn't get me outright canceled because it just makes me so angry. But I really do encourage people to dig into this and this is something that we need to, among the many other things that we're concerned with in the world, but I do think that this is a big deal.

Nicki: Okay. Well folks, thank you for tuning in to another episode of the Healthy Rebellion Radio. Remember to check out our show sponsor element for all your electrolyte needs, and you can find those at drink L-M-N-T dot com slash Robb. And hope you all enjoy the weekend. We're potentially getting some snow. Not sure how much it will stick. Also turning 45-

Robb: And that will stick.

Nicki: That will stick. Anyway, have a wonderful weekend everyone. We'll catch you next week.

Robb: Bye, everybody.