

[00:00:00] **Dr Mike T Nelson:** Welcome back to the Flex Diet podcast. I'm your host, Dr. Mike T. Nelson. On this podcast, we talk all about things to improve performance, add muscle, and improve body composition, all without destroying your health in the process using a flexible framework. Today on the podcast, we've got Dr. Kurt Escobar, and I think you'll really enjoy this conversation all about the wacky world of autophagy.

[00:00:32] You may have heard about autophagy in relation to longevity and fasting and what you'll find out today is It might not be exactly what you thought based on the hype. Dr. Kurt has some great information He just had a brand new YouTube channel, Which is biology beards and barbells. If you've ever met him in person, he is a large mammal with an epic beard And he's got a website that's the same. I will link to that below. Biology Beards and Barbells and lots of great information. What I really liked about this is not only is he a legitimate expert in the field, did his PhD in this area, is currently teaching and doing research, he also still works as a trainer and does consulting.

[00:01:25] So he's got both feet in the world of nutrition and research and autophagy, exercise, and also the land of practical application which is something that I really enjoy. So it's rare you get people who are living in both of those fields that can then transfer good, solid information into useful, practical, passionate things you can do to be better in the gym.

[00:01:57] And if you enjoyed this podcast, You can get more from me, go to my website, MikeTNelson.com forward slash podcast. You can see all the other podcasts, you can find other guest episodes I've done. And then if you scroll down, there'll be a way to get onto the newsletter, which is if you enjoyed this podcast, I have a lot more great information that goes out to the newsletter typically about five or six days a week.

[00:02:23] And work to make it somewhat entertaining and also informational. One other side note after recording this podcast you may have noticed we referenced a podcast with Dr. Matthew Stratton about intermittent fasting. That will be out next week, so stay tuned for that. I don't think the out of order will affect anything per se here.

[00:02:47] And then also I'll put a note from Dr. Escobar who followed up on some of the just down in the weeds stuff about the fasting mimicking diet. He took that for IF in one of the places, so we do have a correction there. And then also about one of the ZOO papers looking at a higher protein IF protocol.

[00:03:09] So I'll put that follow up for those who want on the website. There'll be a link to get it just to make sure that we are actually correct. And again, it's super hard to remember the intricacies of all these studies, especially when I just called him up and said, Hey, you want to do a podcast on autophagy?

[00:03:27] He said, Sure. So we didn't really discuss which studies to go over or anything like that. So that little minor correction will be on the website. I think you'll really enjoy this podcast. Again, we talked about autophagy and training. And also some intermittent fasting and how to make all of this practical.

[00:03:46] So enjoy this podcast with Dr. Kurt Escobar.

[00:03:52]

[00:03:53] **Dr Mike T Nelson:** Hey, welcome back to the FlexDiet podcast. I'm here with

[00:03:57] **Dr Kurt Escobar:** Dr.

[00:03:58] Kirk Escobar. How are you today, sir?

[00:04:01] **Dr Mike T Nelson:** Doing well. Thank you for having me. Yeah, no problem. And you were just saying you just got back from doing a talk in Columbia. Correct.

[00:04:09] **Dr Kurt Escobar:** Yeah, with motion sports nutrition. They've done some work with the ISS and they put on ISS in Columbia. I think this is going to be their sixth year in November which will be down there for being able to present.

[00:04:21] But they asked me to go down and present at their first ever. It's called the International Meeting of Sports Nutrition. And this is just their group themselves. It was in Barranquilla, Colombia. My first time in, in South America, actually my first time out of the country, aside from Mexico, but it was it was a very good time, very good conference.

[00:04:45] The. They do a very good job. Very professional put together. And the speakers were very good as well. A couple from different parts of Colombia, Venezuela, Costa Rica. So I got to learn some stuff and practice my Spanish.

[00:05:00] **Dr Mike T Nelson:** Oh, nice. How'd that go?

[00:05:03] **Dr Kurt Escobar:** It I've been working on it.

[00:05:04] So it helped a little bit. Yeah. Yeah.

[00:05:09] **Dr Mike T Nelson:** And when we go to Costa Rica, another Spanish speaking countries, my wife always laughs at me because she's your Spanish sounds like a white gringo. I'm like, yeah what did you expect? It's like barely passable. And it's so funny cause everyone we met, especially in the last trip on Costa Rica was super, super nice.

[00:05:26] And. It was interesting, like I would try to speak Spanish in certain, more, touristy

[00:05:32] **Dr Kurt Escobar:** places.

[00:05:33] **Dr Mike T Nelson:** And then I would just speak English back to me. They were like, oh, nice try, but it's alright, we got this. Yeah. Oh, fun. And Dr. Josh Cotter isn't being too mean to you there?

[00:05:46] **Dr Kurt Escobar:** Nope, we're yep, doing well.

[00:05:48] Working with some students, doing some Been some research going and yeah, it's been nice to work with him and our other lab mate, Evan Schick, they're a good group of guys to work with. So

[00:05:58] **Dr Mike T Nelson:** nice. And your microphone sounds just a little scratchy for some reason. I don't know. Maybe it's a connection on my end or something, but I can put it a little further away.

[00:06:10] Yeah. Try that. That's a little better. Okay. Yeah. Yeah. And then I think the topic today, we're going to talk about the wild wacky world of autophagy. Because I was just talking to your buddy, Dr. Matthew Stratton, this morning and he said that you forgot to cite one of his papers, so he's going to send you a nasty note.

[00:06:32] I'm kidding.

[00:06:35] **Dr Kurt Escobar:** You told me that at the conference. I, hey man, you should have, you me anyway.

[00:06:43] **Dr Mike T Nelson:** How did you get into studying autophagy and maybe you can give us a formal definition of it because if you go out on the internet it seems like autophagy is the cure all for appearing to be everything and that if I just fast long enough, autophagy will solve all my issues. So I don't screw all this sports nutrition and I just need not to eat and I'll be

[00:07:07] **Dr Kurt Escobar:** good.

[00:07:08] If you just stop eating, you'll live forever.

[00:07:10] **Dr Mike T Nelson:** Yes. Yeah.

[00:07:13] **Dr Kurt Escobar:** Yeah. Autophagy, just to define it on the front end, is, you can think of it as a cellular recycling system. It's a degradation system. There's a couple in our cells, in humans and other animals and stuff like that. But it functions to degrade and recycle.

[00:07:31] old dysfunctional damaged proteins, organelles, and mitochondria. It's very important in the maintenance of cellular function, cellular homeostasis. And if you expand out from the cell to the tissue, tissue function, tissue homeostasis and the system function homeostasis and at the level of the human, overall health.

[00:07:53] So it's got a big role in maintaining health and preventing the number of chronic degenerative diseases and also involved in the aging process. But yeah, there's a lot of embellishment to, to put it, but as far as how I got into it, it was really random chance. I did my undergrad at Fresno state after a couple of years of junior college and not knowing what I wanted to do. But transferred to Fresno state, got into exercise physiology, got interested in exercise physiology, decided to do a master's, stayed there to work with my professors that I had a relationship with and then so I really like studying exercise physiology and at that time was getting into exercise nutrition.

[00:08:37] I did my thesis on CrossFit and carbohydrate intake. So it was really into the athletic performance, sports, nutrition aspect. And wanted to go study that for my PhD and decided to go to UNM university, New Mexico to work with Dr. Kirksey. And he was the one that I was going to go work with.

[00:08:58] But right before I was about to head out that, that summer, prior to the fall, I was going to start. He took a job at Lindenwood where he's at now. So he was going to leave after my first semester. And I really didn't know what I was going to do. He was the reason I was going to go.

[00:09:17] I thought about, not going, I thought about taking a year off and find another program, but on my visit there, I met a couple of different students and different faculty. And one of the faculties, Dr. Christine, who had a research relationship with someone in the department of internal medicine is a biology guy and he was studying heat shock proteins and autophagy.

[00:09:44] And the last couple of years prior to that, they had linked up to start autophagy.

[00:09:51] And so I had talked to her after Dr. Kirk said, let me know that he was going to leave after a semester. And she sent me a couple of papers and said, Hey, if you're interested in being involved, if you still want to come, give these papers a read and we can talk and discuss.

[00:10:06] And if you're interested, you can be involved in this work while you're here. If you come here, I read those papers. I had no idea what I was reading. I'm like VO₂, lactate, RER, like those things I got cortisol, testosterone, whatever. But, looking at my first light microscopy with the fluorescence, these green.

[00:10:29] Bubbles and green lights. Yeah. But it was interesting talk to a couple of students that were doing that work and decided to go and really it was just pure random circumstance that I got involved in autophagy or even. Learned what it was at that

[00:10:48] **Dr Mike T Nelson:** time. Interesting. I it's always fascinating to me how if you just keep doing stuff and try to go in one particular direction, like nothing ever really goes as planned, but yet you get to where you wanted to go, like I, I did the same thing where I did my bachelor of arts.

[00:11:09] Someone did engineering and a master's in that did five years floating around in a PhD program in biomedical engineering, and then ended up leaving to go over to exercise physiology. In the first day, like my two topics ended up being heart rate variability and metabolic flexibility and 15 years later, now I'm still talking about metabolic flexibility, and I probably would have never possibly gotten into it or even HRV without, just switching and then going over there and my advisor is hey, we got some stuff that involves math and he's as like most of the time, you don't take a lot of math and exercise physiology, unless you're in, hardcore biomechanics or some sub areas you might. And so he's looking around the table and he points, he goes, you new math boy, whatever is your name?

[00:11:51] These are your topics now, crap, but it actually turned out to be a good thing.

[00:11:58] **Dr Kurt Escobar:** Yeah, it's weird how things sort out.

[00:12:03] **Dr Mike T Nelson:** So what is your thought about, did you ever think autophagy would become a popular thing within fitness? Because I would imagine once you started looking at it, I'd, I might be wrong on the years, but I don't think many people were really talking about it.

[00:12:18] It wasn't really a thing in fitness at that time. And my recollection is correct.

[00:12:24] **Dr Kurt Escobar:** Yeah. 2014.

[00:12:28] I started my PhD 2014, 15, 16. There was, there was nothing. Like I said, I hadn't even heard that word before. And now, if you go on social media or whatever, anything fitness or nutrition, you scroll long enough, you're going to get something on autophagy. So I really didn't see that coming.

[00:12:49] Maybe I should have, because I thought it was interesting. It's oh, it's involved with exercise. is involved with promoting the adaptations. And while I was studying that I got into the caloric restriction literature, and then intermittent fasting, potential literature when it comes to lifespan extension and promoting age related health, back in 2018 19, we published a paper looking at exercise and caloric restriction activating the autophagy to promote longevity and healthy aging, things like that.

[00:13:25] Which, at that point, there really wasn't a whole lot. on it, but, it caught my interest at least, as it relates to exercise and health and nutrition and stuff like that. How the fitness business world works is the next thing.

[00:13:44] And you're not, all of it is bad information. Yeah. Yeah. But some of it can take, a small bit of truth and just I guess embellish what the practical applications are, which, was the main focus of my talk at ISSN in Florida in June,

[00:14:04] **Dr Mike T Nelson:** what are your thoughts on the, it seems that a global view you've got the, although it's not as popular now, The severe caloric restriction, super cut your calories.

[00:14:17] I don't worry about testosterone, like exercise. You don't really need that many muscles. That's burning too many calories. Like just be super lean, super low versus kind of the other side is more. We know VO2 max is associated with longevity, lower body mass, muscle mass, grip strength. So yeah, you don't want to be a fat bastard, but you probably want to err more on the function side.

[00:14:45] Like what can your body do? And that's going to be better for longevity. Any thoughts between sort of those two kind of opposing camps?

[00:14:54] **Dr Kurt Escobar:** Yeah. Yeah. I think. If you go one end of the one end of the spectrum on the extreme or the other, usually you're probably going to ride. Yeah, it is interesting.

[00:15:09] Some people that are really into the caloric restriction, intermittent fasting type stuff. The level of lean body mass is, on the lower end, which, not everyone needs to be, a bodybuilder or like to look good at the beach or whatever, but like you were alluding to the, and I forget the specific numbers and impact and whatnot, but, one of the main indicators of all cause mortality and overall health is like the amount of lean muscle mass or lean body mass that you'd have and the amount of, strength.

[00:15:38] As grip strength, like you mentioned, is a really good marker for that, and quad strength and things like that. So you know, if you, the people that really go into the caloric restriction, intermittent fasting type stuff, and if it's at the loss of lean body mass, that's a little too much, a little too much, but also at the other end, and I say, I'm probably guilty of this too, because I do not like doing any sort of aerobic activity.

[00:16:08] **Dr Mike T Nelson:** I play a little basketball. Most meatheads don't like aerobic activity.

[00:16:11] **Dr Kurt Escobar:** The only aerobic stuff that I really do on a regular basis is I play basketball at the rec center on campus once in a while.

[00:16:20] But yeah, having a good VO two max, good aerobic fitness, as you mentioned, is, it's the best biomarker for overall health and like I'll cause mortality and things like that. Definitely want to work to develop both of those or maintain both of those. And again, by no means am I a perfect example of the

[00:16:38] **Dr Mike T Nelson:** cardio one, but yeah.

[00:16:41] Yeah. But I think that's also what is the old argument of what is necessary versus sufficient, right? Because in fitness, everyone. Has to go to the extreme. And I think we had the aerobic craze because that was the only, it wasn't the only thing, but it was an easy thing you could study in the lab in the advent of going from Douglas bags, the metabolic cards to treadmills.

[00:17:05] And Oh, look at all this cool stuff we can get and people can exercise in these confined conditions and trying to measure a string training. That's hard. We just didn't have a lot of. Equipment per se to do it. Was the Bergstrom needle was what 1963. So up until then we couldn't really poke something in muscle and take out chunks of tissue and look at it.

[00:17:27] So I think we're more biased to the aerobic side. And then we swung the other way with more of lean body mass. And now to me, it seems like it's swinging back more, almost more to the aerobic side, but maybe more with the advent of CrossFit and metcons and a little different Avenue.

[00:17:47] But again, there's truth. I think to all of it, right? You probably don't need a vo2 max of 70 milliliters per kg per minute, right? But If you're in the 20s, I think you're hosed Yeah, probably somewhere 40s maybe low 50s. I mean depending on who you read what you believe and all that kind of stuff too and As there's a huge genetic component to that too.

[00:18:10] So I've been able to test VO2 max on a fair amount of people and. It's shocking. Some people who don't do a lot of cardio, but still exercise, their VO2 max is pretty freaking impressive. And then there's other people like myself would do a fair amount of aerobic stuff and not a ton. It's not something I enjoy, but, and I just find if my aerobic capacity, my VO2 max starts getting below 43, 45.

[00:18:34] Like I just don't feel as good. Like my ability to just have energy day in and day out and to train just. Like starts going off a cliff too. So again, there's probably some happy medium between all these metrics as to what is best. And it's probably not an extreme on either end of the spectrum.

[00:18:51] **Dr Kurt Escobar:** Yeah. Yeah. And the, you mentioned the genetic aspect to it, it's yeah, that it is. There is a big genetic aspect to a lot of any sort of phenotype, right? Yeah. The people like you mentioned the example of someone that maybe doesn't do a lot of aerobic activity, but has a high VO two max.

[00:19:08] Despite that, it's we all know people that maybe don't lift that much or do a lot of resistance training, but they're just very muscle, right? Totally. But that genetic predisposition.

[00:19:21] **Dr Mike T Nelson:** And related to autophagy,

[00:19:23] **Dr Kurt Escobar:** do you, I guess the

[00:19:25] **Dr Mike T Nelson:** basic question would be, does fasting actually increase autophagy?

[00:19:33] **Dr Kurt Escobar:** That is the ultimate question.

[00:19:36] **Dr Mike T Nelson:** I'll start with the easy ones first. Yeah.

[00:19:41] **Dr Kurt Escobar:** Anytime you talk about intermittent fasting it's, You got to think about what is the caloric context of that fasting,

[00:19:51] **Dr Mike T Nelson:** Even the term intermittent fasting could be, we should probably back up and define what we mean by that too, because that has its own definitions of lots of stuff,

[00:20:02] **Dr Kurt Escobar:** but yeah, intermittent fasting generally refers to either on a daily basis or even a multi, there's lots of different protocols, but usually intermittent fasting is A practice where one fasts for a number of hours per day and then feeds for a specific number of hours.

[00:20:23] Per day. Now, that specific, 24 hour protocol generally refers to time restricted feeding. Matt can, I'm sure Matt can break down all of the

[00:20:33] **Dr Mike T Nelson:** specifics. I know it's time restricted eating, right? We got to get the terms right because they changed it. That annoys me to no end, but I know researchers get pissed at me because I still use TRF,

[00:20:42] **Dr Kurt Escobar:** but.

[00:20:44] That's hard to keep up with all the acronyms. I know. Basic point you fast for a certain amount of time and then you eat for a specific amount of time. . And with regard to act, turning on autophagy and actually just to back up on that point, the way that sometimes autophagy is presented is, we need to do X, y, Z to turn on a autophagy.

[00:21:06] When you train like this, really this to turn on autophagy and, autophagy is always on. If it's not on, like you're gonna dissect. Yeah. The, there's always some baseline level that is, is going on in each of our tissues and cells and organs and whatnot. And, there's data to show that each cell in each tissue is going to have like different, baseline rates and different responses.

[00:21:29] My dissertation, one of the aspects of my dissertation was looking at autophagy response to exercise in skeletal muscle and white blood cells and even You know, the same exercise protocol elicits a little bit different response between those tissues. But with regard to the the autophagy, what was I saying?

[00:21:50] Oh, yeah. It's not an on and off switch is where I'm going with it. And it's, the question is, can autophagy be, say, up regulated if we do certain behavior, exercise, nutrition strategies, right? And Even, with that, is more autophagy always a good thing? That is an open question. There's data to show, and I had presented this at ISSN, it was, this was in mice, they took several groups of mice.

[00:22:21] One group of mice, they performed like a appropriately programmed exercise protocol, aerobic resistance, and I think concurrent as well. And then another group of mice, they just beat them up. They over trained them. And after a number of weeks, it was the over trained mice that had higher levels of autophagy, while the appropriately trained mice They got all the adaptations, all the positive effects, positive outcomes of each of the training programs, but they didn't have increased autophagy after that period of training.

[00:22:59] Increasing autophagy is not always a necessary or a good thing, because autophagy can be upregulated in dysfunctional pathological conditions as well. In terms of does intermittent fasting upregulate autophagy, as far as I know, and again, I put this ISSN presentation together pretty recently, there were only two papers that looked at, maybe Matt can correct me on that, but I wish he'd send me that paper when he published it,

[00:23:35] that I'll just say there's very few data to show whether or not is upregulated with intermittent fasting with or without caloric restriction in humans. The data that I'm aware with, aware of there's two articles. One was Ramadan fasting. And they didn't have any dietary caloric adherence or caloric restriction or caloric prescription.

[00:24:01] It was like ad libidum when they were able to eat. However, they do that with Ramadan. I'm not familiar with the practice to be honest with you. But and the other was a time restricted feeding protocol and there were some

increased markers of autophagy but they were measured in whole blood, so not to say that's like a bad thing, but no it's different than maybe some of the things that people on.

[00:24:29] YouTube or social media or are saying you talk to turn on top of G and fat cells or muscle or, the brain or the liver or whatever. So at this point, there's some data to show that potentially it can, whereas the data show that it does, but in terms of, what the actual protocol or prescription of fasting period and caloric restriction magnitude would be, there's not enough data to really say.

[00:24:58] You should fast like this, or you should eat like this to turn on autophagy, which that's my biggest issue is, when people say you should do X, Y, Z to turn on autophagy, there ain't no data for that. I have not seen that data, but the prescriptive aspect is the thing that is a little bit I think people are getting a little over there, a little over their skis

[00:25:21] **Dr Mike T Nelson:** with.

[00:25:23] Yeah, historically, especially if you look at the longevity data, which we have more of, it just doesn't translate very well to humans, right? If you're a nematode, hey, wow, caloric restriction is pretty impressive, right? If you're a fruit fly, pretty impressive. If you're a mouse, sort primate,

[00:25:48] There's two main studies on that and one of them, correct me if I'm wrong, I think one of the research assistants felt bad for him and started feeding them halfway through the trial, I think, and destroyed like a multi million dollar, trial set up and humans, it's

[00:26:04] **Dr Kurt Escobar:** yeah, the in, in lower organisms, the caloric restriction

[00:26:10] **Dr Mike T Nelson:** is, Yeah, it's

[00:26:13] **Dr Kurt Escobar:** amazing intervention, right?

[00:26:15] Like you mentioned, like a nematode or E. coli or fruit fly. Yeah, you're increasing lifespan with two or three times. But as you go up in, say complexity, the mice, I think it was like 30 or 40, something like that. And then, like you mentioned the chimpanzees non-human primates.

[00:26:32] Even with that, we'll say methodological shortcoming, what they had seen was a decreased prevalence of age-related disease and then of the few

long-term caloric restriction data that exists. You're not extending the lifespan, but you are reducing age related disease, diabetes, heart disease, neurodegenerative disease, stuff like that, which, that's not the downfall of that because that yeah, like that's as important as anything, right?

[00:27:04] But in terms of, living longer and adding years to your life, you won't die earlier, so there's, you can look at it that way. But it's much. Less of a pronounced effect in humans compared to some of the other model organisms that colorectal restriction and other methods of autophagy enhancement that research

[00:27:27] **Dr Mike T Nelson:** has shown.

[00:27:28] Yeah. And that's why I bring it up because I have my doubts about the transfer of that in, especially in autophagy to humans and maybe it isn't, like you said, we have very limited data, but historically speaking, as you get more complex to humans, like human homeostasis just tends to ruin most things.

[00:27:52] And then you've got species specific stuff like I remember a whole book chapter for the Isis and years ago on essential fatty acids and had a whole thing in there about CLA and mice is freaking amazing like a massive body recomposition effects for an over the counter dietary supplement and in humans.

[00:28:11] Data is just so unimpressive, you're like, Oh, look at all this rodent data. This is going to be amazing. And you look at the human trials and you're just like like a kilogram over six months of fat loss. Just yeah. If you're a rat, it's amazing.

[00:28:29] **Dr Kurt Escobar:** Yeah. And that's, not to throw any shade at animal research or even like cell culture. Yeah, I did a little cell culture research at UNM and trying to get that going here and at Long Beach but yeah, the translatability from one model to the human model is Can be real dicey sometimes.

[00:28:51] **Dr Mike T Nelson:** Yeah, obviously the benefit of cell cultures and animal studies You can do a lot of things you can do in humans, too.

[00:28:57] It's like you said, It's not all bad and it's obviously a good starting point. You can do some mechanistic stuff and it's cheaper. It's way easier to manage than those pesky humans and recruitment and all the hoops you have to go through for very good reasons and ethics and all this stuff we want to do, which I agree with.

[00:29:12] It's just. So there's a time and a place for it. I just get nervous when people make that jump, not you specifically, but people on the internet of look at all this data and they don't tell you that this was in a fricking nematode or a rat, and they're assuming that this fact is going to show up in humans.

[00:29:32] And then the data we have in humans just doesn't match that at all. That just annoys me to no end.

[00:29:38] **Dr Kurt Escobar:** Yeah. Yeah. We're talking about the rodent data. I know there's a new Ninja Turtles movie out. Oh, there you go. And I could imagine Master Splinter doing some

[00:29:49] **Dr Mike T Nelson:** sort of

[00:29:54] **Dr Kurt Escobar:** Yeah, that's a good point. And, I gave an example of that in my talk at ISSN. I found something on YouTube or some website or something. And they had cited a paper. that showed autophagy was increased to a greater degree when exercise was performed in the fasted state. And that was pretty much all the information and context I was given in that specific, I think it was a blog or something.

[00:30:27] I was like, okay, that's interesting. So I looked up the paper. I had read the paper before. I knew that paper. What the person didn't put in that blog or YouTube thing was It was in mice, right? So not humans, presumably his audience is, are humans, not master splinter. But, and then the other thing was he, they took that finding that was again rodents that autophagy was upregulated, more fasted exercise, and then took that and said, so you should perform exercise in a fasted state so you can upregulate autophagy more so you can burn more fat.

[00:31:09] **Dr Mike T Nelson:** Oh, wow.

[00:31:12] **Dr Kurt Escobar:** A couple of logical fallacies or whatever the, fallacy hierarchy is all wrong steps of thinking. But they didn't measure a top of gene adipose tissue. So I can't remember, I think it was muscle that was, so to say something's going to happen in fat cells when they didn't measure something in fat cells and a different tissue.

[00:31:35] And then to relate that to changes in body composition. That's just, one, you got the model wrong, two, you got the tissue wrong, and three, you got the outcome wrong.

[00:31:44] **Dr Mike T Nelson:** But it sounds sexy.

[00:31:46] **Dr Kurt Escobar:** It does. Yeah, I know. And that's why, that's why it's done. It's,

[00:31:52] **Dr Mike T Nelson:** the hustle. Yeah. I call that the LOL effect, the leapers of logic.

[00:31:57] It's we just jump over these massive caverns, cavernous, holes and I'm okay for extrapolation of research because yeah, especially if you're trying to make it practical, there's not a lot of human studies, it's less on athletes, all that kind of stuff. But we're allowed to at least say what you're doing, say, Hey, in this animal data.

[00:32:18] Here's what we saw. This doesn't mean it's going to transfer to humans, but if there's not really much of a negative downside, Hey, if you want to try it, go for it. That's fine with me. But like you said, when you're getting mechanisms just skipped over and in the wrong tissue and from an animal, and you're just doing it to sound kind of sexy, it's like, Oh, come on, man.

[00:32:41] **Dr Kurt Escobar:** Yeah. And there's a lot of that. I'm not on, I'm not on social media. I got Instagram or TikTok, whatever. I'm very. I'm not big into, I'm not really into like fitness YouTube, but there's a couple of people that I'll check out

[00:32:54] **Dr Mike T Nelson:** obviously. Oh, thank you.

[00:32:58] **Dr Kurt Escobar:** It's

[00:32:58] It's, I don't want to, I don't wanna say it's like a gimmick, but it's like a you say something very like scientific to make it sound like what your knowledge or your program or whatever it is that you're selling or whatever it is you're promoting is. Different than everything else.

[00:33:15] Yeah. You've got the secret protocol. I've got the secret method, the secret, whatever to anti age and longevity and reach your greatest goals and all of that. Which, like you were saying the mechanisms are important. They're. How things happen in terms of, focusing on a mechanism rather than the outcome as a practitioner.

[00:33:43] Like you're missing the point if you're doing that, right? My entire adult life I've done personal training. So during my undergrad, my master's.

Except during my PhD, I wasn't doing personal training at that time. But even now I'm working with people. I'm working with older adults right now in and if you're working with someone.

[00:34:03] how you get to their goal or their desired outcome. Like they don't care.

[00:34:09] **Dr Mike T Nelson:** No,

[00:34:10] **Dr Kurt Escobar:** not usually. Yeah. Yeah. All they care about is, getting stronger from their body composition, lowering their blood pressure, improving their, reducing their blood pressure medication, improving their a one C right.

[00:34:23] And so as a practitioner, knowing the mechanisms, knowing the physiology behind it. Is like important, right? It's very good. It gives you a rationale as to why you might do a certain thing with a certain individual, with a certain client. But at the end of the day if you're trying to take, if you're trying to get your guidance and your information in terms of how to work with people from mechanistic data, it ain't gonna work, what you want to look at and want to focus on is what are effective training protocols, what are effective dietary interventions, what are effective supplements for the desired outcome for this individual.

[00:35:02] And, client education is important. Some individuals are very interested in some of the science and physiology, and if you can speak to that and answer their questions that goes a long way in terms of them feeling confident and comfortable with you but at the end of the day, it's just, are they getting to their goals, and trying to bamboozle them with.

[00:35:23] LC 3 2 lipidation and P 62 sequestral one and lysosomal degradation, like that ain't gonna get them

[00:35:30] **Dr Mike T Nelson:** to their goal, yeah, that's, I've often joked that if I have a client here and I've got 17 randomized controlled studies that says they shouldn't have been able to get the result that they just got.

[00:35:45] They don't give a shit about any of those studies, right? Cause they already got the thing that they got, right? And I may wonder what the hell is going on. Are they some freak out liar or, like what's going on? Why it doesn't match up. But again, it's the research gives you the direction.

[00:36:00] Me search gives you the answer. I don't think I stole that from Sean Casey, but you should know the research, like you're going to be better off for it. You're going to probably get to things that are more effective for clients to get them to a better result. But most of my clients don't care about that.

[00:36:18] They care that I care about it, but they don't specifically care. And, a lot of people I work with are trainers, so they may have more questions than most people because they are trying to understand the process too. But I think there's this sort of myth that if we understand mechanisms more, we'll get better outputs.

[00:36:37] And my argument is that imagine... The physiology is still very much like a black box. If we understand the mechanism a little bit, to me, that tells you what other input should you put in the box to get a different output that doesn't necessarily mean that's going to magically give you this output, it may get you closer to something else, but you still have to put a different input into the box.

[00:37:00] I think there's this thing where if we always.

[00:37:02] **Dr Kurt Escobar:** Try to figure out how the box is

[00:37:03] **Dr Mike T Nelson:** working. We'll get better outcomes where I think most people do better at looking at simply, I put in this input, I got this output. Okay. I put in this input. I got this output. Okay. Don't worry so much about what's in the box.

[00:37:15] That's important, but I think there's just something so sexy about having to name it with a mechanism that we get caught up in that too.

[00:37:25] **Dr Kurt Escobar:** Yeah, absolutely. And. I would say in my younger days, I would get caught up in that too, because, if you're younger and trying to prove yourself and, trying to Establish yourself and your confidence, whatever you might I might've over overburdened some of my clients with

[00:37:44] **Dr Mike T Nelson:** physiological.

[00:37:44] Oh, I definitely did. I beat the crap out of the poor bastards. I got worst results. Yeah.

[00:37:54] **Dr Kurt Escobar:** Yeah. But it's like you say it's the output. That's why people are coming to you. It's the output. And one thing that one of the

talks I gave in Columbia. A couple of days ago was a variation of my talk that I gave at ISSN and as I was revising and tweaking it, I came up with a nice closing line to it and, and I wish I thought of that for ISSN in June, but the idea was, again, it's not about targeting a mechanism.

[00:38:31] It's about targeting, the outcome. And if you target the outcome, right? So if you train effectively, if you eat effectively and healthfully and whatnot, whether that's core restriction or intermittent fasting, or t r e or I'll ask Matt what all the acronyms are. But if you're doing the right things to get the outcome, autophagy is gonna be activated.

[00:38:52] , as much as it needs to be. You know what I mean? Rather than focusing on activating autophagies focus on the outcome and if autophagy is involved to what a degree, whatever degree it needs to be, like, it's going to be.

[00:39:04] **Dr Mike T Nelson:** Yeah, that's like I sometimes get reams of metabolic heart data or high end data from a lot of athletes or random people on the internet and sometimes I'll just ask them.

[00:39:17] I'm looking through all of it and I'm like, what was your output? Like you just did this fancy, whatever test, you have a metabolic card. You've got five moxies strapped to them. Cool. That's awesome. Did they row faster? What was the outcome of all this? And a lot of times they're like, I don't know.

[00:39:35] I forgot to look, cause you get so hung up in the. The mechanism and figuring out what their rate limiter is and what the blood flow or sensory eliminated or who knows what it's like you need to know, did they do better or not? Because I could give you some half baked answer, but it's not going to really mean a whole lot.

[00:39:55] Or if you do the inverse, if you have very little technology, like good output. For training, I still write my stuff down in an old school training notebook, and I monitor volume, density, and intensity. And if it's going up in my key lifts, I'm probably doing something right. It never goes as fast as what you want, but, if you're doing some output just see what the output is.

[00:40:17] And if it's getting better over time, and again, it's not going to always increase linearly, it's going to be ups and downs. You're probably doing more things right than wrong, and then, and that's good. And then you can get... Answer if you want, which I love technology. I've got frigging moxie. I have a frigging metabolic heart at my house.

[00:40:33] I use in the garage, it's great, but you have to still remember like the output, because especially if you're a trainer. That's literally what's going to be paying your bills. And that's what clients are paying for,

[00:40:45] **Dr Kurt Escobar:** right? Yeah. If strength is going up and if speed is going up or lean body mass is going up, you're not really caring about how much phosphorylation at P 70s, six K whatever's is going

[00:40:59] **Dr Mike T Nelson:** on.

[00:41:02] Yeah. A last couple of questions on autophagy. If you were, so one of the things I heard on the internet, and I spent all five minutes to pull up these questions, so forgive me,

[00:41:14] **Dr Kurt Escobar:** many minutes.

[00:41:16] **Dr Mike T Nelson:** Yeah, I was I actually find I do put stuff out on social media, but I find I've, I try not to consume as much social media because I, yeah, it doesn't do well for my psyche, but the rumor was, I won't say who said it, but very credible person that.

[00:41:34] If you fast for longer, especially like you start getting into a three day fast. So by fasting here, we're saying consumption of only water, maybe electrolytes, no food, but you have a different type of autophagy that it's a chaperone mediated autophagy. And that may be more beneficial than the normal, my air quotes here, autophagy you get for just fasting for 24 to 48

[00:41:57] **Dr Kurt Escobar:** hours.

[00:42:00] That I

[00:42:01] **Dr Mike T Nelson:** do not know. Okay, I, that was a new one for me too. It sounds cool, but this isn't my area either.

[00:42:09] **Dr Kurt Escobar:** Yeah, and even distinguishing between, what's the say again, the outcomes. The health outcomes the functional outcomes of chaperone mediated autophagy versus say macro autophagy.

[00:42:22] I'm not familiar with. And whether or not that can be, say, selectively up regulated by different fasting periods I'm not sure as well. Yeah. Might have to do some research on that.

[00:42:35] **Dr Mike T Nelson:** Seem a little suspect. One other, related question, and I've batted this around in my own head for a while.

[00:42:45] At some point, so if your goal is to gain more lean body mass, we know that calories are going to help. Lifting heavy stuff is going to help. Protein is also going to help. Do you think there's going to be at some point a downside to being in more of a quote, my old air quotes here, anabolic state most of the time continually?

[00:43:07] So you're having your five meals of 20 to 40 grams of protein. You're constantly stimulating muscle protein synthesis. Your body count's not crazy,

[00:43:16] **Dr Kurt Escobar:** You're trying to gain more

[00:43:17] **Dr Mike T Nelson:** mass. You're definitely in a caloric surplus. I guess my bias is... I don't know because exercise is so protective, but I do wonder at some point if there is a threshold where he'd be doing a day of fasting for just overall health benefits, lowering insulin, maybe possibly not running muscle protein synthesis, still lifting, still being active.

[00:43:44] Maybe there might be a benefit to that. And I know that's It's incredibly out on an extremely theoretical ranch at this point.

[00:43:53] **Dr Kurt Escobar:** Oh there's actually some nice data on that of, I can't remember the entire specifics of it, but even doing, it was something along the lines of one 24 hour fast, like once every, I want to say either like once every one, two, or maybe even three months, it was something really not aggressive.

[00:44:15] Well, 25. Yeah. Yeah. Aggressive, but not, super, super intense or frequent. That that improved a number of metabolic health markers, just one 24 hour fast every like one, two or three months. I can't remember the specifics of it, but yeah, so even, even something as infrequent as that can, improve health.

[00:44:39] Yeah. Now, in terms of, balancing or with respect to trying to gain the body mass and being anabolic and muscle protein synthesis and things like that yeah, the concern or a concern would be is mTOR activation. , right? Because, unregulated or dysregulated or hyperactive mTOR, chronically elevated is associated with, number of diseases and aging and cancer and things like that.

[00:45:10] So the idea at least some might hypothesize is that if you're eating a higher protein diet or if you're doing a lot of resistance training, you're turning on mTOR with each protein meal, if it's sufficient enough in quality, quantity, obviously, and then increasing protein synthesis with resistance training is that pro aging, is that pro cancerous, and again, mechanistically, you could make that logical argument, but again, you've got to look at the actual outcome data, and individuals that are having pro aging.

[00:45:48] let's say a higher or adequate protein intake. And then also people that resistance train regularly and have, a good amount of lean body mass on, they're in good health. Yeah, they've got good, longevity markers and metabolic health markers, good functional outcomes.

[00:46:09] And the thing to distinguish between, say, chronically dysregulated hyperactive mTOR that's present in like cancer or even in some cases of other diseases is, the mTOR activation that comes with protein ingestion or that comes with resistance training is transient, right?

[00:46:32] It's temporary. And so if you consume, a protein meal sufficient again in quality and quantity. Yeah, you're turning on mtor, right? You're turning on protein synthesis, but that's only for a couple hours, right? And then also with regard to resistance training. If you're resistance training every day or, five days out of the week, mtor is on.

[00:46:54] Again, it's temporary. It's transient. I think the date on that is between 24 and 48 hours, depending on say the intensity and the rigor of the training, but also how new you are to training if you're new or seasoned, but yeah exactly. And that's tissue specific though. And that's specifically muscle tissue.

[00:47:12] So that's different than. Your resistance training can turn mTOR on in like your liver or your brain and you're going to get Alzheimer's or whatever. Yeah, that was when I first started getting into the caloric restriction and autophagy and mTOR, I was like if mTOR is bad, the protein intake and resistance training, but again there's a couple of disconnected dots in time, regular resistance training and lean body mass and adequate protein.

[00:47:39] To to make it a bad thing, like the outcome data, again, are not there for that, that there'd be the opposite.

[00:47:46] **Dr Mike T Nelson:** Yeah. And that's I generally agree. Like I said, I have made recommendations to people who are on the bleeding edge of I want

more muscle, I want more performance, but I really want to maximize longevity.

[00:48:00] Like your grip strength is good. Your lower body mass is good. Your VO two max is good. You're not doing any crazy lifestyle stuff. Your doc's watching your blood work. Like what else can I do? It's I would say. Maybe do a longer fast once every other week, I don't think you're gonna lose any appreciable amount of muscle mass.

[00:48:16] I do think you're gonna drop insulin. You're gonna lower blood glucose. Maybe you stop or turn off my little air quotes here again. Slow down mTOR for one day. Does that reset something? I don't know, but I have recommended that again. Highly theoretical. My thought being there may be some upside we don't know yet.

[00:48:35] I don't think they're gonna lose any body mass. You're not gonna lose view. They're not gonna lose. I don't think any other Metric that we know is important. And so I'm like, eh, hedge your bets in that direction. Again, when I point to any hard data that says, Ooh, this is the most amazing protocol ever. No,

[00:48:52] **Dr Kurt Escobar:** yeah again, doing some sort of fast, even if it's, relatively infrequent can have some positive health effects.

[00:48:59] Yeah. And then, there's also good data, interesting data. Grant Tinsley has done some work on this of resistance training outcomes during intermittent fasting and time restricted feeding. And, from what I can recall is, you can maintain for sure and still put on lean body mass and some strength with time restricted feeding.

[00:49:23] Although I think there are some data. Indicating there was a paper that just came out actually with a group that I collaborate. I've collaborated with that they seem to show that the data seemed to show that so to maximize at least strength in this particular paper of training during the feeding time may be more beneficial than training during the fasting time.

[00:49:47] Yeah. And again, I'm sure Matt can give a whole 45 minute

[00:49:53] **Dr Mike T Nelson:** presentation on that statement. Yeah. And that kind of just, and actually I just talked to Matt today, we talked a little bit about that too. So it'll be in the previous podcast, I'll link to it. And it just, I don't know. I talked to him about this too.

[00:50:06] Maybe you've noticed it is that I think you can increase strength. You can probably gain some lean body mass if you're slowly decreasing calories, but it just seems the longer you've been training, if you want to maximize. Everything strength and lean body mass, man, being in a caloric surplus is magical.

[00:50:29] Yeah,

[00:50:29] **Dr Kurt Escobar:** no, definitely. Yeah. And that was one thing that I didn't add to that. That last point was, it seems you can still put on lean body mass while doing intermittent fasting, but not likely to the same extent if you were to not be doing intermittent fasting and not be in a caloric deficit for sure.

[00:50:47] **Dr Mike T Nelson:** Yeah. Yeah. And that kind of matches what I've talked to a lot of high level coaches too, where they're like, if they have a weight class athlete, one guy I know in particular, I won't say his name, so it may not be public, but he's they took the same weight class athlete and they purposely had him in a lower calories because he was at the upper end of his weight class.

[00:51:09] He was still getting stronger, but they just couldn't afford for him to add any more size. He's already relatively lean as it was. So you couldn't really drop a lot of body fat. And he wanted to go up a weight class. And I think it was a natural athlete who was tested. He gained 20 pounds, I think in a year.

[00:51:26] But this is a guy who had been purposely underfeeding for probably four years, still exercising hard. And again, that's one of those outliers where people will hear that and they're like, Oh my God, that's crazy. But. Again, it's context and everything else. Like he, his body was just probably just needing calories and he was not getting them on purpose because he didn't, couldn't afford to add any more tissue.

[00:51:55] Awesome. As we wrap up, what are some of your research

[00:51:58] **Dr Kurt Escobar:** projects you're working on now? Yeah, I've got a couple of things. Going on right now and then getting going soon. One of them working with a couple of grad students.

[00:52:14] Mark it out here.

[00:52:15] **Dr Mike T Nelson:** Oh, you're back. You said you're working with a couple of grad students. Yeah. Working

[00:52:19] **Dr Kurt Escobar:** with a couple of grad students on post activation. It's not post activation potentiation. It's post activation. Performance enhancement

[00:52:29] **Dr Mike T Nelson:** is that a new thing or did they just change the term again?

[00:52:32] And I don't know about

[00:52:32] **Dr Kurt Escobar:** it I think My student told me this I think they changed the name because this type of work, like cars, we're not measuring motor unit activation. Okay. The performance enhancement so at least in this context that's more appropriate, but so we're looking at an isometric protocol and a dynamic protocol with and without caffeine.

[00:53:01] Oh,

[00:53:01] **Dr Mike T Nelson:** interesting.

[00:53:02] **Dr Kurt Escobar:** Yeah. And then another one, another another grad student also from Fresno state. So we've got the bulldog. We're going to look at the effect of creatine supplementation on the acute insulin sensitivity, glucose uptake response to exercise.

[00:53:24] **Dr Mike T Nelson:** Yeah. Huh.

[00:53:26] **Dr Kurt Escobar:** Very cool. We'll get that going this year here.

[00:53:30] Out of

[00:53:30] **Dr Mike T Nelson:** curiosity, what dose of caffeine are you using?

[00:53:33] **Dr Kurt Escobar:** We are using six milligrams per

[00:53:37] **Dr Mike T Nelson:** kilogram. Okay, so you're going right to the high end.

[00:53:41] **Dr Kurt Escobar:** Yeah. If there's an effect, we want to see it.

[00:53:44] **Dr Mike T Nelson:** Yeah. Yeah, so for listeners, like most of the effect of strength and power of

[00:53:49] **Dr Kurt Escobar:** caffeine is gonna be three mgs per kg to six mgss per kg.

[00:53:53] So if you're a

[00:53:54] **Dr Mike T Nelson:** 220 pound athlete, you're a hundred kilograms at six, you're gonna be at 600 milligrams, which is about three no dose. So it's a pretty stout dose, but yeah. Oh, that'll be cool. I'm excited to hear

[00:54:10] **Dr Kurt Escobar:** what you find with those studies. Yeah, looking forward to getting those going and finished up so

[00:54:16] **Dr Mike T Nelson:** awesome.

[00:54:18] Thank you so much for all your time here. Let us know where people can find you. I don't know if you're taking any graduate students. I know you're not a lot on social media. So maybe you just want to appear hidden in the lab somewhere and they have to find you in person at ISSN. But yeah, let us know.

[00:54:34] Yeah we're

[00:54:35] **Dr Kurt Escobar:** always looking for grad students in our master's program of exercise science. So if you're interested in studying some of the stuff that, I've talked about here, we've also got people that do biomechanics, motor control so a lot of different interests, a lot of different areas in our program.

[00:54:50] So check us out at Cal State Long Beach exercise science program. Our lab Dr. Cotter and Dr. Schick and I, the lab has an Instagram, It's the physiology of exercise and sport lab. lab, P E X S lab. So there's some stuff on there to check that out. One thing I am currently working on between numbers of stuff, including the start of the semester is I'm starting to make, I'm gonna do a YouTube channel podcast, so you have inspired me.

[00:55:27] Oh, wow. That's

[00:55:28] **Dr Mike T Nelson:** Scary. Oh, that's good. I think you'll have really good stuff.

[00:55:31] **Dr Kurt Escobar:** Yeah. So I'm not sure when this is going to go up, but By August 18th, which would be tomorrow I'm going to post at least part one of a video on autophagy. And so some of the stuff that we talked about here, I'm working on a video on that.

[00:55:47] I don't have it completely done, still working on it, but I have part one. So I just want to get that up. And if people are interested in hearing more about autophagy, they can check that out. And then the rest of the video is in production. And we'll continue to do some stuff that Hopefully people find interesting and useful.

[00:56:03] **Dr Mike T Nelson:** So cool. That's awesome. So you're doing a YouTube channel and a podcast or they want in the same thing.

[00:56:10] **Dr Kurt Escobar:** Kind of one in the same. I want to do smaller videos, where it's just a couple minutes of here's a paper or here's a topic, but then what I'm doing with this autophagy thing, that'll be probably like 45 minutes to an hour long and then also, what you do is interviewing and talking to other people in the field, researchers and having.

[00:56:30] Good, interesting conversations that people can learn a lot from I have watching your stuff. Oh, thank you. Yeah and that's called biology, beards and Barbells. Oh, there we go. I like the title. The YouTube channel is up. I'll get the video up soon by the 18th of August.

[00:56:47] And then also I've got a website by the same name, so if people wanna check that out.

[00:56:52] **Dr Mike T Nelson:** Yeah, we'll definitely link to it. And similar to what our buddy, Dr. Andy Galpin has done too, with this kind of five minute and 25 minute and longer videos too. It's a cool idea where you get little short snippets of something.

[00:57:04] And then if people are interested, they can, dive into longer material because as trying to greatly simplify complex topics into. A 30 second reel on Instagram like if I get one more direct message from someone who wants to do videos for me Who's just telling me that I need to do

[00:57:21] **Dr Kurt Escobar:** 20 second videos.

[00:57:23] **Dr Mike T Nelson:** I'm gonna scream. It's okay What can I really get across in 30 seconds? Maybe some extras from a podcast, some stuff like that to get them interested in the long form, that, that's cool. But to get a concept across and then expect on a business side that's going to transfer into a 30 hour certification, I'm trying to sell them like, yeah, get lost.

[00:57:45] **Dr Kurt Escobar:** Yeah. Yeah. It's, you got to maintain your sanity and Social media is definitely

[00:57:52] **Dr Mike T Nelson:** a test of that. Yeah. Yeah. So I also think of it as the next part I do about doing mostly newsletter and social media is a side note. It's I don't have to make any money from social media. If it works great.

[00:58:04] If it doesn't, whatever, it's not like the core of my business either. Yeah, I'm all right with it. If I get less views, whatever. So again,

[00:58:13] **Dr Kurt Escobar:** you're not trying to be a

[00:58:14] **Dr Mike T Nelson:** liver King. No, it's just the last thing is we wrap up like. You see the people who have been somewhat successful on social media or just in general, and then you, I often wonder, if they continue to be successful, they've pigeonholed themselves so far into one area, it's like, they're stuck, like they either have to admit they were wrong, Or they screwed up or they're going to go a different direction, or are they just like most of them do they just double down on that thing?

[00:58:47] Only, I just wonder how many of them just secretly hate their life.

[00:58:54] **Dr Kurt Escobar:** Yeah, that, that's a good question. Yeah. And it's, maybe just one point to follow up on that. Yeah. It doesn't disservice to people,

[00:59:02] **Dr Mike T Nelson:** Oh, totally. Yeah.

[00:59:03] **Dr Kurt Escobar:** Because.

[00:59:07] To the kind of what you're alluding to, what can you get across in 30 seconds? It's hard to get something across in 30 minutes. Yeah. You know what I mean? And a lot of people they're not formally educated. They're not familiar with the literature or research. And, individuals are not.

[00:59:24] Really in a position to assess the quality of the data that's being presented to them. And, they just go with whatever this person says, this influencer says, this doctor says, whatever they do, I'm going to do. And then it's, and then they get into a situation where now the person that they follow is doing something different, it's just Oh, no, I'm going to do that.

[00:59:46] And then they reverse their perspective on something's Oh, now I'm going to do that. It's I don't think it's a good strategy to base your definitely

exercise and nutrition habits around. But I think, people like yourself and others that, do a good job of putting out quality content is definitely can go a long way once it

[01:00:07] **Dr Mike T Nelson:** gets to people.

[01:00:08] Yeah thank you for that. I appreciate it. And that's one of the reasons why so far to date, I'm not saying I will forever. I don't have any sponsors on the podcast other than my own business. Like I've had a few offers and I'm just like, no, I'm not saying I'll never do it. I'm just saying it would have to really fit with what I'm doing or something.

[01:00:26] I'm probably already doing even in that. And it's maybe I'll think about it, and the good part then is, eh, you can just say whatever you want, do whatever, and if it works, great, and you, I can decide who I want to bring on, like yourself, have good conversations, get actual data from someone who's looked at.

[01:00:42] The particular researcher in it and is also a practitioner. And that, yeah, that makes me feel more warm and fuzzy and it's just more fun.

[01:00:52] **Dr Kurt Escobar:** If you're waiting for a cryptocurrency to come in, Hey, Dr. Mike, you

[01:00:56] **Dr Mike T Nelson:** sponsor our crew. This is the last one I turned down was the A trimmer for your private parts.

[01:01:03] So I said, no. I said, they're going to send me five of them. And I'm like, what do I do with five of them? That's my sponsorship. I get lost.

[01:01:13] **Dr Kurt Escobar:** I might bring up some questions about your anatomy, Dr. Mike.

[01:01:17] **Dr Mike T Nelson:** I know. It's like, how do I, it's I get it. And then some people I know do that as sponsorship for the podcast because there is hard costs.

[01:01:24] You have someone who helps with all the production and the servers and the software. And I get it. There's a cost involved. It's not just free. But. Yeah, I think everyone has to decide what is that line and we're how far they're gonna go on that and then That's their own personal decision.

[01:01:40] So yeah, I just to me. I'm like I just can't, I don't want to do that ad and I'm not doing it,

[01:01:49] but for you, maybe beard trimmers are great. Like those, we'll send them over to your podcast. They can be a sponsor there. Awesome. Thank you so much for all your time today and all your great knowledge. I really appreciate it. And we'll make sure to link to all those below and would highly encourage everyone to that Josh Cotter guy.

[01:02:08] He's the sneaky one. Yep. All right, cool, man. Thank you so much. Appreciate it. Thank you.

[01:02:14]

[01:02:15] **Dr Mike T Nelson:** Thank you so much for listening to the podcast. Really appreciate it. A huge thanks, Dr. Kurt Escobar, for being on the podcast. Like I said, we'll link to his YouTube channel and his website. If you want more information from him, you'll want to go deeper on some of the topics here.

[01:02:31] As I mentioned, there'll be a slight correction that'll be on the website there with the reference to some of the studies and the follow ups. And then stay tuned next week for the intermittent fasting episode from Dr. Matthew Stratton which will be out next week. Thank you so much for listening.

[01:02:48] I really appreciate it. If you enjoyed this, check out all the other podcasts I've done and get on to the daily newsletter list. And we send you good information. That's hopefully somewhat entertaining. They're usually not too long. Sometimes I get a little bit more lengthy, but always trying to make it practical for you to add more performance, improve your body composition and add some muscle.

[01:03:13] Thank you so much. I really appreciate it. We'll talk to all of you next week.

[01:03:19] You know something? That was a sweet number. It sure was. You know something else? What? I hate sweet numbers!

[01:03:27] **Nancy:** This podcast is for informational purposes only. The podcast is not intended as a substitute for professional medical advice, diagnosis, or treatment. You should not use the information on the podcast for diagnosing or treating a health problem or disease or prescribing any medication or other treatment.

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