

[00:00:00] **Dr Lonnie Lowery:** All right, welcome listeners to a Remote episode of iron radio org live from the hotel room. That's right We've done it in the past, but the audio should be good here We are just gonna do a rundown of day by day, talk by talk of what just happened at the International Society of Sports Nutrition event.

There was some surprising stuff. What we're going to do is just go through each talk. I'll just make a comment about it and then I'll get Mike's response and any kind of relative, relatively important information. The talk the talks on day one opened with Guillermo Escalante and one of the things that he mentioned because he had some other people involved with this was that creatine apparently, and I didn't know this, Mike, I think you did.

Creatine is illegal to buy if you're under 18 in the, is it the whole state of New York?

[00:00:56] **Dr Mike T Nelson:** Yeah. I believe New York passed the ruling on it. Rick was telling me about that. Rick Collins. Rick Collins.

[00:01:01] **Dr Lonnie Lowery:** It sounds like Harvard did there was a study there or a group, the Striped. Yeah, I don't know about that, but yeah.

Study that says dietary supplements, are related to eating disorders. I think that's what the evidence or the scariness is. And to fight that, apparently there's this Move Nutrition Network. Is Rick Collins behind that or just involved? I know he's the lawyer for ISSN.

[00:01:24] **Dr Mike T Nelson:** Yeah, I don't know if he's directly involved or not, but I know they were trying to get people together and get people educated because unfortunately most people, if you pull them on the street, they're like, Oh, creatine, that's a steroid.

And it's not even remotely close to a steroid. Vitamin D and cholesterol are way more of a steroid than creatine is, but no one's freaking out over those.

[00:01:49] **Dr Lonnie Lowery:** Right, yeah. I think it's especially dangerous when an ignorant politician Yeah. thinks that creatine is a steroid. And then, yeah, all these kids are, and ironically, later in the conference, we had some direct evidence about it could be good. Creatine for kids could be good. Or even proposing studies for pregnant women.

[00:02:09] **Dr Mike T Nelson:** Yeah.

[00:02:10] **Dr Lonnie Lowery:** So, that's a far cry from not letting, a 16 year old who's in the gym take his damn creatine.

[00:02:15] **Dr Mike T Nelson:** Yeah. And we have, what'd they say, over a thousand peer reviewed studies on creatine now.

A thousand. So, if you, I remember Tom Inkland on one saying, he's well, because someone was asking him about safety of his protein or creatine or something. And he's We have way more safety data on that than the ketchup that's in your refrigerator right now. Right.

[00:02:37] **Dr Lonnie Lowery:** High

[00:02:38] **Dr Mike T Nelson:** fructose

[00:02:38] **Dr Lonnie Lowery:** corn syrup garbage.

Yeah. Yeah. So, if people are interested, I guess you could probably just Google move nutrition network. The prompt is also for researchers to try to capture even more safety data. Yes. As you do this, not just performance, but safety data. But again, if we have opinion based politics, that's what makes this hard.

Because if there's already a thousand studies, How much data? I know they need data for the court cases, but yeah, it almost seems like we need political activists to try to, push reality onto some of these lawmakers

[00:03:11] **Dr Mike T Nelson:** because holy God. Yeah, and Dr. Chris Lockwood made a really good point in his talk later on, too, of if you're running a study, his two points, which I thought were really great, was whatever safety data you can collect, it's going to be better.

Or even if you just report. No adverse effects or, one person reported nausea or whatever it is. If you can even just have a couple lines in the study that you're already doing all the data, you're already doing all the data collection, you got all the people enrolled, that's a huge benefit because we'll have more data to back up some of these, positions and what people are looking at.

And then on a separate note, testing, whatever the material, if you're testing and an herb to boost testosterone or whatever it is, sending it out for independent testing to make sure that what the study was done on is actually the material that you're looking at and not just trusting the manufacturer of it, which I thought

was a really good point because, you're recruiting human subjects, you're getting IRB approval, while you're doing all this work.

It is a little bit more of a pain to do a couple more steps to have the material analyzed, but I think it's going to go a long way to showing, this is actually what it was. And here's the analytical testing to prove that, or if it isn't, then Okay. Well, then we might have to rethink the outcome of this study because what we actually looked at and what we studied isn't what we thought we studied, right?

[00:04:37] **Dr Lonnie Lowery:** Yeah. Years ago, I rejected a creatine paper. I don't often reject papers when I review them, but they showed no weight gain and no performance enhancement with creatine after a loading phase. And they didn't bother to even review them. Make sure that the subjects consumed it. They didn't watch them consume it.

They didn't say, bring back the unused portion so we can give you like, oh, 92 percent was consumed. It's the same thing. It's not testing for content, but it's you can't tell me. It's just not good science. Validate what's going into the people first. So. Okay, just moving on.

The opening talk after that initial, it was almost a P. S. A. Wasn't it? Yeah. There was a talk about low energy availability. I just want to say one or two things. I didn't take much notes. There were no data to speak of in the talk, but it is very common for athletes, men and women not to eat enough.

Certainly like they go off season to on season, they start training their butts off. It's not like they automatically start eating more. There was a dietician there talking about and the conference was an interesting mix of dieticians and scientists. Yeah, definitely. Body literacy and things like that.

But I didn't have much more on that. I guess listeners can just walk away thinking, Yeah, I'm probably under eating. But one of the things I've always worried about that kind of stuff is you're always seeing it. We saw it later with the Masters athletes talk. People don't eat enough. It's but if their weight stable.

I don't know. Sometimes I think the carb guidelines are so high that we're almost like, you're not eating enough carbs. It's he's weight stable. And maybe the argument would be, yeah, he's weight stable at a lower BMR. His metabolic rate is slow. It could be better. More flux through the system could be better.

I get it. But did you have any thoughts about the low energy availability thing? That first one?

[00:06:23] **Dr Mike T Nelson:** My only thought was, and I'm sure you would agree with this, is that, Equations and all that stuff for prediction. Do they generally work on a population basis? Yeah, they do get you in the ballpark, but what I've noticed, especially with athletes and especially with people who are more active is the amount of variability on an individual basis from those equations is just crazy high.

So I don't really use them. I have new a seven day, log, I haven't get on the scale every day for seven days and I just look as your weight going up, is it neutral or going down? I just take that as my starting point, because trying to estimate stuff, especially carbohydrate intake I've found it's just incredibly variable.

So I think you have to look and do an individual based approach with each person that's coming in. and not just mass supply equations and assume you're going to be correct all the time. Yeah.

[00:07:16] **Dr Lonnie Lowery:** In the classroom, I talk about like the Harris Benedict equation, for example, height, weight, age, and sex. What about thyroid status or anything else that's going to drive, body comp?

Yeah. Yeah. Yeah. Totally. The next one was interesting as we just shotgun this for everybody here. There was a talk on GLP one agonists. We've talked about them on the show, of course, Maureen Gibbons, who is a physician, but she was not just giving her perspective as a physician, which by the way, she used to be an athletic trainer.

I think she said,

[00:07:45] **Dr Mike T Nelson:** yeah, correct.

[00:07:47] **Dr Lonnie Lowery:** But also as a patient who used them. So again, these are GLP one or GIP combo meds. Semaglutide, that kind of stuff and she gave the history of them and when things started to turn more popular, which was partly just based on, it sounded like patient compliance.

Like you could take it once a week. Now everybody's all in. Yeah. And we've talked on the show before about this before the incredible irony of once moms want to do this and not just dads to get leaner for summer or vacation or something now injecting stuff. It's not a P. E. D. Anymore. It's a physique injection with side effects, right?

And so including tremendous muscle loss if you're not very active. So yeah, that was interesting. We'll go V. Mongero. Oh, there's just a whole bunch. There's more coming down the pike. But one thing she said was interesting was the cardiovascular benefits, anti inflammatory, right? But what struck me the most, and then I'll ask you for your thoughts here, was that her personal experience was that it quieted the food noise and how transformational that was.

She didn't have to fight to diet. It just happened. There was no food noise. Anyway. What were your thoughts?

[00:09:02] **Dr Mike T Nelson:** Yeah. I did a whole podcast with my friend Krista. We talked all about this, but to me it's amazing. If you would have come to me, four years ago and said, Hey, We're going to have a new class of drugs and they are going to be so effective that people will slash their calories to incredibly low levels.

You can argue about, maybe the drugs weren't prescribed in the right dose and you gave them a little bit too much and et cetera. But the fact that happens five years ago, I would have said you're nuts. Like appetite is so multi redundant. We're never going to have a drug that's going to, crush appetite so hard that you're going to worry about lean body mass and people losing weight too fast.

And that's almost exactly where we're at right now. And she also said like up to 25 percent of what you lose is lean body mass. The one other classic study that was done in this showed up to 40 percent and as listeners know, lean body mass, isn't all just muscle. If you're a larger mammal, you've got, probably more bone tissue.

You've got all the other supportive structures. that are not fat, that are considered lean body mass to help support it. But what I've noticed with just a few clients I've had who have used these medications, again, maybe the prescription wasn't necessarily dialed in correctly. Their protein intake went really low like overnight just because their total amount of food they were consuming just dropped.

So it'll be interesting to see some follow up studies if they do a higher moderate protein with resistance training. How much of that can we mitigate of that lean body mass loss? Or is there some other mechanism going on there that we don't really understand yet? I'm definitely not an expert on the mechanisms of those drugs other than the basics.

[00:10:44] **Dr Lonnie Lowery:** Yeah, no, me either. There was a military talk, later we'll just speak about briefly, with the idea that military people, because they're expected to be physically active, like 5 days a week or whatever, it's going to be on the lower end of the fat free mass loss, right? Like 25 percent or something. Yeah, her quote was and this is really fascinating to me, but, I'm I had a near immediate reduction in food noise after 40 years of struggle.

She also said my labs were normal but I still needed help. Amen to that. We've talked about that with testosterone, concentrations and everything else. You can have normal labs and still need help. If you're overweight, obese,

[00:11:26] **Dr Mike T Nelson:** whatever. Yeah, and I think if listeners are, into this.

I don't think these medications are going away. I think they're going to be almost like TRT is. You can get it on almost every street corner now. And I think there'll be an, Oh, the dosage will probably not be dialed into where it should be. And I think trainers will be left to pick up the pieces, so to speak of not the best management of these drugs.

And so making sure they're having enough protein, making sure they're getting their micronutrition, making sure they're not. Deficient and other micros and lifting and all this stuff for better or worse. I think it's going to fall on the heads of personal trainers in the future. Even more. Yeah. Yeah. Even hydration.

Yeah. All the hydration. That's a big thing because sometimes if the dosage is too high, like people won't even drink enough fluids, which can run into issues.

[00:12:18] **Dr Lonnie Lowery:** One final thought from me on this. I saw an article just recently about on a society wide basis. These meds are gonna have a massive impact.

Oh, yeah. What if the U. S. Is not on a fatal trajectory toward 90 percent of us being obese anymore, right? Like the drug companies catching, right? But just the financial and the health care cost. If we're not gonna have everybody being freaking, diabetic and having heart disease of one form or another, There's going to be huge financial impacts of this.

It's going to be transformative. It's more than just Physique. Yeah, fascinating.

[00:12:54] **Dr Mike T Nelson:** And some of the older versions now are coming off patent. So I'm really interested to see what's going to happen with that. And

again, counter argument is they're probably not as effective as the newer versions. Which, looking at some of the research, I would agree.

But It'll be interesting to see what the message is from pharmaceutical companies versus what does the data say, and if things are coming off patent, does that make it more cost effective for someone else to pick up the manufacturing cost of it, and again, increase the availability of them.

[00:13:26] **Dr Lonnie Lowery:** Yeah. The next talk was on Cognizant.

Katie Emerson, she was, she's a master's prepared registered dietitian. She was giving some of the background of the company behind it. They're not just health and wellness, but although they have an arm for this

I don't know. I don't, anything new out of that from you?

[00:13:45] **Dr Mike T Nelson:** Nothing new. They did a tap challenge game and they did show an increase in kind of mental energy. Again, cognitive performance, you can bin into all sorts of different sub areas. And for listeners CDP colon or cognizant is a form of choline.

If you've heard of alpha GPC, that's the one that's more commonly used in sports nutrition. But I've been a big fan of CDP. We've been seeing it at conferences. We saw Renshaw, present on this like years ago. There's a lot of accumulating data on it. And I think now it's becoming a little bit more.

Accepted if I do some formulations for companies like people have heard of it or even eight years ago I was like, hey, you gotta check this out and people are like what they look at the price of it And they'd usually be like no way So the price has come down a lot from what it was in the past But there's a lot of very good Supportive data of it.

Shout out to dr. Sue Kleiner. There's a company called boost They have it in a little sachet packet that you can take without any water You They have a few other electrolytes and some other stuff in there. I've seen it show up in little dip packets you stick in your mouth now. So it's, I think it'll be in all sorts of stuff.

I know Dr. Chris Lockwood has used it in the new C4 formulations. So I think you'll start seeing it a lot more now, which is nice because it does have a fair amount of supportive data on it.

[00:15:10] **Dr Lonnie Lowery:** It's one of the nootropics I've bought.

[00:15:12] **Dr Mike T Nelson:** Yeah, I've used it for years. Yeah,

[00:15:13] **Dr Lonnie Lowery:** and not regretted, right? But didn't you say, I think you had a similar experience that I did, that it's not a stimulant in nature, but it seems to have a background boost to my focus kind of thing.

And I don't want to sound like a commercial, but I'm trying to differentiate it from caffeine, right? Or anything else like that.

[00:15:32] **Dr Mike T Nelson:** Yeah. I was first, the first major supplement that I'm aware of that had it was shout out to my buddy Ben Escrow at Elemental Formulations. He had in his early version of a utopia, God back, God, is this like 10 or 11 years ago now?

And I'm biased cause I'm on their board, but he was one of the first people I saw who actually put it into a supplement that was formulated, but yeah, much more focused and not a, again, not a stimulant. And if you look at things that are not in the stimulant category that increased, we'll just say mental energy and my little air quotes here, your cognitive performance.

that have data. There's not a lot of them. It's a pretty, pretty short list. Yeah.

[00:16:15] **Dr Lonnie Lowery:** Yeah. Citicholine, it's a drug, right? In parts of Asia. Yeah. Japan, I think. Japan, yeah. Just my brief rundown, I basically just jotted down a few things. Nucleotide it's pharmaceutical in Japan. Long term memory support increases acetylcholine, increased phosphatidylcholine, increases phosphatidylserine or kind of all phospholipids that you might be interested in, increases NTP which you can think of as a form of brain injury, I'm sorry, brain energy, 250 to 500 milligrams, according to a study by McGlade in 2012, decreased cognitive errors after 28 days in women yeah, it's one of the ones, agreed, got some evidence, people might want to check that one out.

This next one, I don't think people will probably want to check out. Turkesterone and body composition. So companies are always coming along and making, the marketers making the claims. This is Leah, is it Jeanine? Yeah. giving this talk. And I believe she was from Joey's lab, right? She is. Yep.

A plant ectosteroid. Suppose it adaptogen. We just talked about that. I'm not a big fan of that term. But some of this came out because I guess on Joe Rogan, Lieberman was saying this is as powerful as Deca, right? Or Nandrolone.

Lieberman. Oh, Lieberman. Sorry. Sorry. Sorry. Lieberman. It's an anabolic steroid.

It's, and basically no it just didn't pan out in the research that she was doing no change in body mass or body fat, no change in hand grip.

[00:17:49] **Dr Mike T Nelson:** Yeah, 28 days, 500 milligrams. The only thing they did say is that on the Pittsburgh Sleep Score, which is a way you can qualify sleep with a little questionnaire, there was some data that may help with that.

So, that was the only thing that was in the positive direction from that study. Which, I'm sure a lot of, and I did talk to him about what was the sourcing of it, and I'll have to follow up with Dr. Antonio, because he did the sourcing of that one, because People are very into turkesterone will say that depends on the source and where you get it from and the time and there's a lot of bunk material on the market and so, but you can say that about anything too.

And maybe there is some truth to it, but at least in this particular study, and I'll have to follow up with Joey on what the sourcing was. There wasn't really much of any difference.

[00:18:37] **Dr Lonnie Lowery:** No fishing expedition is what I'm looking at. Yeah. Looking for something, maybe, they weren't trying to find it necessarily just does this do anything?

Yeah. One note I'll make for nerds out there, they were doing t tests on change scores. It's not the best way to analyze those sorts of data. There's, there are other statistical techniques for nerds out there. Two way ANOVA, things like that, that I would have done. Because you lose information when you just, basically say, Does this percent increase?

Is that better than that percent increase? And there's I wonder why they analyze it that way. I know Joey understands that, so.

[00:19:14] **Dr Mike T Nelson:** Yeah, I don't know. Anytime people do different statistics from just, we'll say, the old basic statistics of, is this group different than this group? I get a little weary.

[00:19:26] **Dr Lonnie Lowery:** Okay, this next one, probably one of the most interesting talks that I recall. David Church, The Pyramid of Anabolism. So basically he was talking about all the different things that harm, muscle protein

synthesis. It's not just the dose of protein. I mean that, we get so much attention type or dose of protein.

But, sleep loss and drinking and everything else. So, you want to run down some of that?

[00:19:53] **Dr Mike T Nelson:** Yeah, so Dr. David Church has been on my podcast before. Awesome guy. I always love chatting with him. So he's working in Dr. Arnie Fernald's lab looking at different tracer methods to look at the effect of amino acids on muscle protein synthesis and their lab does all sorts of cool stuff.

But some of the things he highlighted, which I thought was great, is a super old study from George Cahill's lab. If you've ever looked at some of the research they did many years ago, you should look it up because we probably would never do these studies again now. So, heh, the one that always stands out to me is He had ketogenic diet people check their ketone levels.

And I think he actually did an infusion of insulin, which, not recommended to do this, and found that they were okay because they were using ketones. Like stuff that I don't think any IRB lab would ever approve right now, but it's still fascinating that it was done on humans. And it was safe.

They didn't show any issues because they had high levels of ketones. But the one thing he mentioned, which was a Cahill study, was that they had human subjects do a 90 day fast. Again, I don't think this would ever get approved again now. And what they showed was that plasma amino acid levels were stable the entire time.

So your body has to keep amino acids in the blood relatively stable. They're fasting, so there's no exogenous, there's no other source of protein or amino acids coming in. So, they have to come from muscle. And they did show, other studies have confirmed this, that there is a huge amount of muscle loss in very extended fast.

So your body needs a certain amount of amino acids that it has to keep in the plasma. If those aren't coming in, from food, your stored form of those amino acids is going to be muscle tissue. Yeah.

[00:21:40] **Dr Lonnie Lowery:** Yeah.

[00:21:40] **Dr Mike T Nelson:** Your body's going to feast on your

[00:21:41] **Dr Lonnie Lowery:** pecs if you don't eat them. Some of the numbers that I jotted down here it looked like layman 2020 sleep deprivation, 25 percent reduction in the anabolic response to a meal.

I'm going to paint with a broad brush. Yeah. Yeah. Wilkinson 2008 sleep restriction. So this was five days of just four hours sleep. decreases muscle protein synthesis. Although exercise seemed to rescue the response. I think all of our listeners know lifting is a big deal. You need that stimulus.

But yeah, sleep bueno par in 2015, 12 beers. So again, not playing games here. Exercise actually did not help rescue. that loss in muscle protein synthesis. Oxfelt 2023 very low calorie intakes of 50 percent of typical over 10 days. Women had a decrease in in protein synthesis, decrease in anabolism, that kind of thing.

Essentially, he was saying Trying to emphasize, I think church was that, all these things, especially the resistance training just has such a large effect compared to the things we often talk about. Are you distributing protein and properly across the day? He's what about the total daily dose and thinking about these control variables?

So like with you, I guess when you work with clients, when the rubber hits the road, you've got to say, listen, it's not just, oh, you should sleep, honey, but you should sleep or you're going to have a 25 percent reduction. Good. in, anabolism, or you're under eating. What's that going to mean?

You're not building muscle. Anyways, any other thoughts on that?

[00:23:16] **Dr Mike T Nelson:** Yeah. They did a study on military personnel. I think this was on military. I don't have the notes here where they did some pretty crazy stuff. I think it was sleep restriction, a lot of exercise training, and this is the correct study if I remember right.

And they showed that the group that they supplemented actual testosterone in And there wasn't a huge difference in total loss, but they held on to a lot more muscle tissue. So I thought that was pretty interesting. And that kind of matches, some stuff like Dr. Keith Barr has talked about that yes, testosterone is an anabolic agent, but one of the theories is that it's a massive anti catabolic agent that you're really preventing a lot of loss of muscle tissue.

And this study confirmed that. And then one other thing was when I talked to him later, he did a very cool study looking at four ounces of beef compared to, I

think it was one, and then two Impossible Burgers. He presented some of this data last year, we talked about it on the podcast. But what's crazy is when you put up the amount of essential amino acids in the Impossible Burger, it was pretty darn high.

10 or 15 grams, Where you should expect that it should be very comparable, if not even better, than the smaller amount of meat. But what he showed was, it was not. And I asked him about that, and I'm like, well what the heck is going on with that? Because we've always learned that, leucine is the main amino acid that turns on that process, and you need the building blocks, you need essential amino acids.

And he said when they looked at the plasma levels in the Impossible Burger group, They didn't go up. So we said somehow in that matrix, the essential amino acids are not making it into the blood levels. And because those blood levels of amino acids didn't go up, you didn't see that increase in muscle protein synthesis.

So that puts a real monkey wrench in my thing of Oh crap. So now we can't even really necessarily look at leucine and essential amino acid levels and everything and assume they're going to be the same because at least in this manufactured food. That turned out not to be the case and the four ounces of beef was actually still better.

[00:25:26] **Dr Lonnie Lowery:** Yeah. I've gone on quite a bit. Like with functional foods, the food matrix matters, and they invent this weird stuff. Yeah. Not to mention, just anecdotally, we've talked about this before, impossible burgers. The nutrient profile doesn't look that good. It looks like you're getting, quite a bit of fat and other stuff that I really wouldn't go for unless you're a vegan just for ethical reasons.

Sure. I can't. Get excited about that. The testosterone stuff did interest me that Varanofsky study 2020 testosterone over 21 days Saved net balance during low sleep and quote beat up. We beat them up according to some of the methodology Prevented fat free mass loss. There was some stuff on that.

I think church himself is just Publishing I guess 50 percent 15 percent increase in muscle anabolism, essentially when rats got androgens early in life, like they had this memory effect, it kept them anabolic like throughout their life, almost an argument for maybe young men could do a cycle of testosterone and benefit forevermore.

It almost sounded

[00:26:33] **Dr Mike T Nelson:** and I think in that study they gave the, to the rats or the mice when they were young and then they didn't give them anything until the equivalent of 30 human years. And they found that was a, like that difference later that they still had an upregulated response, like almost in human years, it'd be like 30 years later, which to me is, that's just like fascinating.

I asked him about that later at the thing, I'm like, what the heck is going on with that? And he was like, I don't

[00:27:01] **Dr Lonnie Lowery:** know. There are concepts like muscle memory,

[00:27:04] **Dr Mike T Nelson:** my own nuclear domain, all

[00:27:06] **Dr Lonnie Lowery:** that kind of stuff. Yeah. Yeah. Yeah. And one other thing too, and this has been a theme we've had on the podcast lately for mental health and other things, but I think it was DeVries 2015 I'm script.

I got scribbled notes here, but walking really maintains leg mass. Like it's amazing. Just do something and what that can do for just sparing a muscle mass. Pretty cool stuff. Yeah. Okay. What else do we have

[00:27:33] **Dr Mike T Nelson:** here? Did you have anything else on day one? Did you want to talk to Velocitol, maybe?

[00:27:41] **Dr Lonnie Lowery:** Okay. Yeah, if you want to.

[00:27:42] **Dr Mike T Nelson:** Yeah, so there was an ingredient called Velocitol that seems to promote insulin action. It looks like it's chromium picolinate and chromium histidine, I believe. And they did some interesting studies with that with small amounts of protein, like 6 grams of protein. They did show a little bit better response.

And then they did follow it up with another study comparing it to higher amounts of protein, I think it was 15 and 30 grams. And it did look like it might still be beneficial. Again, these are short abstract presentations that presenters only have a limited amount of time to show you the data, but it's interesting.

I don't know. I like to see further work in that area before I'm like, Ooh, this is the most amazing thing ever. But. Might be something to keep your eyes out

for, and, yeah, I don't know, it was interesting. I've been in the area of, that's cool, but I'd like to see more data before I run out and do anything with it.

[00:28:37] **Dr Lonnie Lowery:** Yeah, it was one of those presentations that looked too good to be true, frankly, on a few levels. Yeah, especially on

[00:28:43] **Dr Mike T Nelson:** the percent change.

[00:28:44] **Dr Lonnie Lowery:** Yeah, right, which is hard to interpret, sometimes fairly. Yeah. Sponsored by nutrition 2021. Yeah. Tim Zig and Foose did a lot of the data collection, but he didn't present the slides and I didn't understand why that was, but there's a couple of pubs here, zig and Foose journal of exercise and nutrition 2021. Ozdemir, I think it is European journal nutrition 2023. I had scribbled down. It was chromium, amylopectin, and histidine sounds, right. Patented combo. I don't know. The, none of those things are super exciting by themselves to me. Yeah. Arnie who was presenting that did say he, he suspected it was insulin mediated, but the idea of you can layer this on top of even something like whey protein.

Right. It's not like you're trying to correct the low digestibility or the low amino acid profile of a, a plant protein. That it's going to really increase all these outcomes, weight room outcomes, if you will. I'm a little skeptical right now. I'll take a look. There's been other attempts to enhance proteins effects like, the BC 30 and all that kind of stuff.

So I, these additives can be neat, maybe everybody just keep that on your radar Velocitol. It's a patented version of what I consider. Some recycled nutrients from the past, but adding it in a special way to protein could be, anything else there?

[00:30:08] **Dr Mike T Nelson:** No. Should we go on to day two briefly?

[00:30:11] **Dr Lonnie Lowery:** Yes. I, you have that in front of you and I do not.

[00:30:13] **Dr Mike T Nelson:** Yeah. So one of the, they had an interesting one about fight science from Dr. Corey Peacock, which is great. I'm talking about different weight cuts and they had a lot of data on it, especially around the COVID time. There was more kind of standardization across different groups, which was interesting.

So I would refer people to the studies that have been published there. If they're looking at what was the average weight cut and then also a weight regain. And what he thought was, I thought was most interesting is it wasn't in the slides or probably even in any of the studies, he was saying that anecdotally he noticed that people and athletes who had the hardest time cutting weight, Also had a much harder time regaining that weight the next time or, once they could get off the scale and they were officially weighed in.

And I thought that was interesting because just in the handful of people I've done stuff like that with, that matches what I've seen. If they have a really hard time making it down at weight, if we do get them there, man, I'm so worried because trying to, for them to regain weight, maybe it's due to stress, cortisol, who knows?

is very difficult. And I've talked to Dan Garner about this too. And he's mentioned his data that it just seems like if the weight cut goes smooth, the weight regain also goes smooth. So I thought that was very interesting that he mentioned that also.

[00:31:35] **Dr Lonnie Lowery:** Okay.

[00:31:35] **Dr Mike T Nelson:** Anything

[00:31:36] **Dr Lonnie Lowery:** else? What do we have else

[00:31:37] **Dr Mike T Nelson:** on date? We had Dr.

Sanders talking about data analysis. I'm not going to bore people too much with that, but the takeaway is you. You can use AI to do some stats now, which is wild. I just started playing with this and I didn't do it to the extent that he did. So it was cool to see that of, I was using AI to rearrange tables and to move data around and it's pretty darn good at it.

You still have to cross check it. But he was saying, using it for binning to create secondary analysis, combining large data sets. He does a lot of work with catapult, which you get just massive amounts of data out of it. So was pretty interesting. And he said, you can even have. I chat GPT four Oh, do the stats analysis and create the graphs for you.

And he said, when he's cross checked it, he said, most of the time it's pretty much right on. So I thought that was crazy. And I just had this flashback to all

the bio stats and all the classes I've taken where we had to write like the raw programs in order to do it. And then, Oh, we could use, we had to do that.

And I think SAS, and then we could use SPSS to do some stuff. And even simple things like creating a graph and trying to make it look right, and changing the range of it, or you want a box and whisker plot, or what, doing that kind of stuff, you can, I don't know, probably because I'm not a stats wizard.

Seems like I spent a lot of time doing that kind of stuff, where now I could literally type a prompt into AI to be like, Now regraph this as a blah blah blah plot instead and then poof like you have your graph Yeah,

[00:33:01] **Dr Lonnie Lowery:** I'm curious to do a lot of this like basically just use the right prompt because you don't want to screw it up You got I'm gonna go old school like he did and double check with oh, yeah But upload an Excel or a statistic or SPSS file And then say, Hey, chat GPT, run a Pearson correlation between these two columns of data in the spreadsheet and then graph it in this style.

And it just does it. Now, this makes me a little sad in that you're going to get people who don't understand statistics. They were never trained. I don't even know what am I doing? What's a Pearson are? How is that different from non parametric correlation? Whatever it might be. and just telling chat GPT to run a statistical analysis.

What's the correlation? But it is amazing. Like you're to your point, the time savings is going to be mind numbing. Once I double checked that the way I'm doing it. works compared to the old way, right? Which is more manual in the software itself instead of in the, check GPT.

Basically, you got to make them work together. Enter your data in your spreadsheet, run the stats or ask check GPT to run it. Now make me a pretty graph like you were saying. What's the P value? What's the R for the correlation or what's the I've got two groups over three days. Hey chat gpt run this or that stat Wow wow Yeah, so Yeah, i'm very eager to play with some of those ideas.

It never really even occurred to me that I could just command check GPT to do that. I've had that do stuff like write an outline for this book. Like here's our book chapter. Here's the abstract. Make an outline for a five page paper. Eight seconds later, there it is. And that would have taken me 90 minutes at least.

Yeah, so yeah, to do this with stats now. And again, yeah, this is probably doesn't apply to a lot of you guys, but if you're for a researcher, just commanding check GPT to run stats and then pretty graphs. What? Okay.

[00:34:57] **Dr Mike T Nelson:** Yeah, I had also flashbacks to when I did all the early HRV data, probably 14 years ago. Now we didn't have anything on phones.

He had to come into the lab. We had 15 grand of used equipment in order to capture the thing. And then I had to transfer it to the raw RRs. I had to write a friggin MATLAB program to do it. I had to cross check all the individual data and literally go through every RR by hand to make sure there's, outliers and graph it and all the monkey motion that goes into it.

Like now I can probably do that in a fraction of a time. And obviously there's custom programs that'll do that now too. So it's, I, on one hand, I'm like, it's. It's amazing and it's super useful. On the other hand, I get a little worried that if you haven't had at least do some of that stuff by hand, I'm not so sure you understand the process to get it.

And that's where I get a little worried.

[00:35:43] **Dr Lonnie Lowery:** Yeah. It's so many things like using AI with art. You've got to come full circle, do it yourself, then have AI do it. Because otherwise we're going to have people spewing stats online and they don't even have the mental framework on how to go about a research design.

Or which stats formulae, they need and all that kind of stuff. So,

[00:36:05] **Dr Mike T Nelson:** yeah. So Dr. Tartar did a really great talk on sleep and looking at melatonin. There's a lot of interesting things you hear online about pros and cons of melatonin. But she said the two main things that increase melatonin are the time of day.

So nighttime and darkness. So melatonin isn't technically something that makes you sleepy. Some people may report that from it. There's no LD50 for melatonin like they've given rats like just tons and tons of melatonin can't kill them They're like you can't kill them with melatonin. However, there isn't over a long term data on high melatonin use The half life is only 40 minutes They were looking at some other advanced genetic stuff the RS 7 3 5 9 8 3 7 4 People gonna get look at their 23 and me they can look at some of that stuff yeah, it was great.

And then the talk right after that, I think was from somebody else, but looking at blue, like blocking glasses do they actually help? I think this was also from her lab. I can't remember who was the lead author on it. So they had students where blue blocking glasses, Monday through Friday. They put them on in the evening.

They texted them. They make sure they were compliant. They had a sham intervention. And what was cool is they had a custom optics place, create them. That the lenses were still relatively clear. So you didn't obviously know if you've got like the orange colored glasses or non orange colored glasses, you knew which part of the group you were in.

Well, what they showed was that and just after the Monday through Friday of using them in the evening, they did see an increase in melatonin. And they also, it was cool as they cross check this by looking at a cognitive processing speed because they know that if sleep quality is improved, your cognitive process speed is going to be better.

Okay. And in the group that did wear the blue blocking glasses at night, that did see an increase in melatonin, they also did see an increase in cognitive processing speed, which was great. And I don't have an exact reference for that cause I don't think that data has actually been published yet.

Yeah.

[00:38:04] **Dr Lonnie Lowery:** I walked away from that thinking melatonin, all good. Yeah. Although, a few things, one is I've been hearing some stuff for the past two years from some industry friends that it could interfere with glucose tolerance and carb metabolism. And I haven't looked into that much myself. I didn't ask her about it, but maybe I'll follow up on that in the future.

Also, she was talking about really talking about, blue light bad at night. I get it. It's amazing to me when my wife works with some of her patients in a health mental health setting, they just think it's a sleeping pill. Like they don't understand this is to set your sleep time at night.

It's a chronobiology thing. But yeah, apparently the gen pop, not all of them understand. I think our listeners probably get it. Like you reset it. You take melatonin. You're not going to take that. I can't get to sleep. It's 11 30 p. m. I'm going to take my melatonin to knock me out. Bad idea. Bad idea. The other thing was a few weeks ago might have been a couple of months ago.

Actually, we were talking about how there was one study that suggested that it's not just about blocking the blue light, but it's even the intensity of the light can be a thing. So, that's just another consideration, but yeah, you can't discuss all this with someone like Jamie when she's at the podium.

And

[00:39:24] **Dr Mike T Nelson:** I just thought it was interesting that there isn't, at least that I could find, again, maybe I missed them, that, something as simple as a blue light blocking glasses, which God, I've used that on clients for seven or eight years now, there's not much published data on it. The reason makes sense.

If you actually are blocking blue light, we know the effects. So the outcome you would expect as to what they found, but. Define actual studies in humans. That's a sham, controlled, randomized trial, all that one nice, fun, wonderful stuff. When I looked at least a while ago, there wasn't much data in that area.

So it's cool to see someone actually looked at it and it did match what we would have expected.

[00:39:59] **Dr Lonnie Lowery:** It's surprising. There's not a ton of data because I mean with companies like F dot Lux or a F Lux, whatever they I've used that for years. Just the screen redner so I don't have bright blue light. And then Microsoft ripped that off.

And I think Apple did too to some extent. So they must know that consumers are getting that idea. That I don't want bright blue computer, bright computer screen in my face before I go to bed. So it's obviously sinking in on a kind of a large scale. Definitely. So we do need data.

[00:40:30] **Dr Mike T Nelson:** Next was my buddy, Dr.

Chris Lockwood. He gave a great talk about. So just some of the regulatory issues and things in the supplement industry. And the big one, which I did post on social media is, yes, dietary supplements are quite regulated, which I, and I've talked to him ad nauseum about this too, and we've mentioned it that if I hear one more person, and these are usually generally, I would say not industry specific people, but industry adjacent people who I'm not to rip on all MDs and RDs, but there tends to be more, but I've heard PhDs say this too.

Oh, those supplements are all evil. They're not regulated. And the fact is they are quite regulated. Now we could argue that maybe there isn't enough enforcement and there are still some bad apples in there. Yes, I would agree with both of those, but there is already enough laws on the books to regulate supplements.

They need to do GMP. They need to do all these other things. The FDA does have the power to, pull supplements. They do have the power to do enforcement. Now again, the FDA is probably drastically underfunded and a lot of these things probably don't happen. But the supplement industry is regulated and so that's one of my little pet peeves I hear all the time.

[00:41:44] **Dr Lonnie Lowery:** No, me too.

[00:41:45] **Dr Mike T Nelson:** Yeah, and he was talking about just different, test your raw materials and if we can collect any good safety data as we're doing this. It's just going to help the entire industry as a whole and hopefully that'll also weed out, some of the bad apples so that overall the industry doesn't have these kind of black eyes from A handful of people, not doing what they're supposed to be doing that kind of makes everybody else look bad

[00:42:07] **Dr Lonnie Lowery:** I know we have a lot of pretty advanced listeners on iron radio and one of the things that i've always raised an eyebrow is when They expect the industry to police itself because there's a built in conflict of interest there.

Oh sure I'm affiliated with these companies. Oh, look, they're all good They're they meet label claims and oh i'm going to critique whatever I can about these other companies I've just seen that happen behind the scenes so much You That I get it some type of industry policing itself because the question is always who's watching the watchdog,

[00:42:36] **Dr Mike T Nelson:** right?

He's watching the watcher Totally.

[00:42:40] **Dr Lonnie Lowery:** Okay. Anything else?

[00:42:41] **Dr Mike T Nelson:** I think the last one I had was dr Darren kandell gave a great talk. Obviously he's done tons of research on the area of creatine many years dr. Phil chilebek has done a ton of stuff on that. So creatine was first extracted in 1832 Which is pretty wild.

We do know, I'm not going to bore listeners with all the beneficial effects of creatine. But was, a couple of things that were new to me that were super interesting. That you can get pretty darn close to maximal loading on creatine in two days. This is for muscle, at a dose of 20 to 30 grams per day.

And once you're saturated, it'll take almost 30 days to get back to baseline. So if you cut out, all kind of red meat or any other sources of creatine, you don't take it as a supplement, you were saturated. You've got 30 days for that washout period to get back to baseline. And you can get saturated in two days at a high dose of 20 to 30 grams per day.

And once you're saturated, depending on how big of a mammal you are, it could be as low as 2 grams per day. And again, this is total creatine dose to stay saturated. And they did one study where even 3 grams per day over 30 days, they were still saturated at the end of that. So the amounts for muscle are probably a little bit lower than what we think.

Again, there's no negative effects to taking more than that. He said there's another paper called the Pharmacokinetics of Dietary Supplemental Creatine. He said it's one of the best papers ever on creatine, so I made a note to go re read that again. Creatine may have some anti catabolic effects in bone.

Yeah, they've done some great work on this. Yeah, the one study I posted on Instagram a while ago took them 10 years Chili Beck was a main author during Canada was on the paper Looking at bone and postmenopausal women and he said literally from when they started the study to when they finished it Was it 1.

5 million over like 10 years? It took them to do it. A short version on that is that they did see some potential benefits related to bone. They talked a little bit about the effect of creatine and the brain. 20 percent of your energy, your brain is being used possibly looking at a TBI. So traumatic brain injury, sleep deprivation, creatine seems to be very helpful in sleep deprivation.

There's more and more studies coming out on this. There's some older military studies on that. What's also interesting, which is almost a, I wouldn't say a throwaway comment he mentioned that he'll take personally, and she said this is not a recommendation, he's not an M. D., that personally he'll take 30 grams of creatine per day for 7 days before he does a long trip.

The thought being there that this may help with jet lag. And he said, anecdotally, it seems to work pretty good. So I thought that was a cool tip. Again, he's not saying there's any research on it or telling people to do this, but I

thought that was pretty interesting. Creatine and depression may help reduce the risk of that.

And I also had Dr. Rich Kreider talked about this. There's a new study looking at they saw effects in the brain with a single dose of creatine of, I think, 25 to 35 grams. So, And that was published in Nature, so I have a note to go back and re read that. And then for listeners, I've talked to Dr.

Eric Ralston, he's been on the podcast. I've talked to Dr. Scott Forbes about this too. We don't know for brain effects what dose of creatine is going to be best. But from talking to all those guys, probably 10 to 20 grams per day. So if you're looking at muscle, once you're saturated, you may be good on 2 to 3 grams.

If you're looking at more of the neurologic end of the spectrum, You know, your dosage might be higher, although those studies are very hard to do. You have to use MRS or some other type of imaging to look at the levels, what part of the brain, what function are you looking at, so. We have a long ways to go to still try to figure that out, but yeah, super interesting stuff.

A couple of

[00:46:32] **Dr Lonnie Lowery:** thoughts on this. Yeah. On the creatine loading thing, gosh, back in the mid nineties, we went out to Kettering Medical Center and we did some NMR spectroscopy. We loaded creatine and a month later we went back with no maintenance dose. and we were like 80 90 percent loaded. Wow, that's wild.

I think Pete Lemon published that in muscle and nerve the journal. I can't recall, but it really struck me like you don't. Once you load, you don't need much of this. Now, one of the issues in the food industry, of course, is a lot of the gen pop. They don't want to load, I think, or it's expensive or it causes problems or a single whack of 35 grams like Rick Crider was talking about.

Dude, osmotic diarrhea, like you have to put that in like a two liter jug. So warning to everybody, don't go try to take 35 grams of creatine all at once. It's not toxic in any way. It's just too concentrated. Protein powder would do that to you, if you made it too strong. But yeah, that was my question for that one.

So if you do follow up, I'd love to hear like an update in the future. Like. How do you do 35 grams of creatine all at once and you'd have to drink a bucket of water I don't know how else you would do it

[00:47:38] **Dr Mike T Nelson:** and that was per day, right? So in theory you could split it out between seven five gram doses or something like that I have to look at the study to see how they did it, but that's a

[00:47:45] **Dr Lonnie Lowery:** lot.

Yeah, it's a

[00:47:46] **Dr Mike T Nelson:** good point Yeah, don't try 35 grams at once
Yeah,

[00:47:51] **Dr Lonnie Lowery:** and then as far as the bone thing Not really surprising or the brain like we're talking you mentioned how energy demanding the brain is what a greedy demanding organ Of course it is. It's like you that's what you're about. That's where your personality lies That's where you're thinking and steering the the vehicle all day from your brain But from a bone perspective, yeah, if you have a little osteoblasts, I always remember blast builder, right?

Because there's also osteoclasts that break down bone, but of course they need energy to build bone. Yeah, it's going to be slow. And to his point about the multi year, really hard to do bone studies. It's not like muscle tissue. The turnover is years, right? Many months to years. It's not weeks. But the data are enough that, yeah, there's some women in my family that are osteopenic.

And, you know what, maybe it's time to start taking some creatine.

[00:48:41] **Dr Mike T Nelson:** Yeah. The last note I had on that too, I've done reviews of creatine and brain health for the Kierkegaard Institute for quite a while. And I, in the past earlier reviews, I was a little bit bigger fan of 10 to 20 grams potentially as a preventative, potentially reducing the risk of TBI and concussion.

From talking to Dr. Kandel and some other people, there isn't too much data in humans on that. Again, there's some very impressive mouse data on that. But mice tend to accumulate creatine in their brains quite differently than humans. That was from Dr. Rick Ralston. So I've changed my thought on that where I think maybe there might be some benefit there, but even post TBI, post concussion, there's more accumulating data in humans that using creatine post might be beneficial and we're not seeing as many negative effects there.

So, for people who do a lot of functional neurology, clinical neurology work. I'd be super interested to see if they have some patients who are using creatine in a more, clinical setting being observed and tested. Do we see better, functional outcomes? Can they do more neuro rehab? Cause in theory, it's helping survive, provide more brain energy, which should allow them to do, more neuro rehab work.

So I think that's a super fascinating area for the future. Right on.

[00:49:55] **Dr Lonnie Lowery:** Okay, let's jam through what we can here. On Thursday, there was the Mel Williams lecture on ergogenic AIDS. If people don't know, Mel Williams was a giant in exercise physiology. I use his textbook in sports nutrition to this day. A couple of just very quick thoughts on this.

There have been position stands from the ISSN on, ergogenic aids, forced nutrition supplementation, all that sort of thing. Mon 2018, there's also an IOC, right? International Olympic Committee supplement review. That's a lot like the ISSN one. Chad Kirkcik gave this talk and Dr. Kirkcik was talking about several things.

What jumped out at me? Other than the obvious stuff like, Oh, there's a thousand papers on creatine. It's good, quote, unquote, for so many things, but was that he didn't really mention in the highly evidenced column anything about leucine. And yet there was a lot of positive talk about HMB. And I didn't see anything at this conference about the negative studies on HMB.

I know Stu Phillips lab. They've looked into a big meta analysis on it. There's plenty of papers that kind of bring certain claims into question because that particular supplement, of course, HMB is related to leucine. It was just interesting that there was talk about HMB. It seems to have this resurgence within the ISS.

And I'm not sure why I've never let's put it this way. I've bought leucine before. I've never bought HMB. I don't think I'll probably ever buy HMB. It might have, in my opinion, niche benefits for people that are highly stressed in some way from an anti catabolic perspective. But yeah, he just did a sweeping review of all supplements, which is almost impossible to do.

[00:51:32] **Dr Mike T Nelson:** Yeah. And a lot of the HMB, if you do find some positive studies that encourage the listeners to look for other studies that either confirm that or not. And then also what was it compared to? Because a lot

of the more positive studies on HMB are done in very low protein or other kind of stress, extreme conditions.

Maybe some niche benefits, but yeah, I still have my

[00:51:53] **Dr Lonnie Lowery:** doubts. The reason I'm bringing that up at all is because, yeah, watch for a new round. I can think about what Phil or Rob would say, well, it's a new batch of, young bozos. It's about time

[00:52:04] **Dr Mike T Nelson:** for it to be positive and come back around again. Right.

Long enough people have forgotten about it. So it's due. Yeah. They don't

[00:52:11] **Dr Lonnie Lowery:** remember it's past, but you know what, who knows? Maybe there's some amazing new date. I'm not aware of. I'm trying to be open minded, but. Okay, what else do we have here? There was a probiotics study.

[00:52:23] **Dr Mike T Nelson:** Yeah, last thing I had just real quick on if people are looking at effective form of nitrate.

You want to take it two to three hours before. Your dose is probably 300 to 600 milligrams. And it was more positive in events that were in duration 12 to 40 minutes. So more your endurance type events. Side note on that, there's been well documented that if you use mouthwash because the nitrates have to be recycled through the saliva in your mouth, that'll kill all the little bacteria that are doing that.

So if you're a bro trying to use nitrates, don't use mouthwash. And then the market on this is getting better because you want to look to see if the product is actually standardized for nitrates. Because a lot of the beetroot extracts are not. And from talking to guys like Eric Trexler, who did his PhD in this area, the amount of nitrates in products is all over across the board.

So if you are looking to try to do that, make sure you contact the manufacturer and check to see what the amount of nitrates in the actual products are.

[00:53:18] **Dr Lonnie Lowery:** There's not much I can say about this, but I am aware of a beetroot nitrate analog that a biochemist is working on that he claims is superior for basal dilation.

Yeah. There's a

[00:53:30] **Dr Mike T Nelson:** couple

[00:53:30] **Dr Lonnie Lowery:** of

[00:53:30] **Dr Mike T Nelson:** them

[00:53:31] **Dr Lonnie Lowery:** in the pipe. Very curious about what he finds. And he's a respected biochemist university biochemist. So yeah that's a good one.

[00:53:38] **Dr Mike T Nelson:** Yeah. But yeah, there was a talk by Dr. Jeremy Townsend talking about probiotics a little bit which I think is still a very interesting area.

One thing that caught my attention, he said over 99 percent of our genes are bacterial in humans, which is wild. They did look at a *Bacillus subtilis*, a DE111, a probiotic that did show some information may increase body comp, although the follow up study wasn't necessarily positive. So, some mixed data on that, which might be interesting.

The population they were looking at was an athletic population. So maybe you'll see differences in people that weren't already lean. And he was saying just as a general back of the envelope thing, most probiotic strains, you're going to need around at least 1 billion to have an effect. And obviously that's a general statement, but for consumers looking at products last part too, is that they did some interesting studies where they had a probiotic group and they also had a second probiotic group where they did a heat kill where they actually killed the bacteria on purpose and had a placebo.

So in one of the studies, and I don't remember what strain it was, the active live and the heat kill group had the same outcome, which was different than placebo. So I thought that was super interesting that we may, obviously you probably want live little critters, but maybe there's something in the dead critters that's doing something too.

We don't really know at this point.

[00:55:00] **Dr Lonnie Lowery:** Quick thoughts on that. Agreed. The dose of 1 billion painting with a broad brush. That's not, that's good consumer info. So Yeah, I also jotted down dead ones. Also beneficial to me. That could speak of

something like a post biotic. Like they've little dead guys already secreted their good stuff and you're still getting the post.

It gets very confusing for people, right? Prebiotics, usually fibers, not always. There's even coffee components that aren't necessarily fibers that do some of this. But prebiotics feed the good guys. The probiotics are the live good guys. And then the post biotics are the stuff they make. Right. probably most notably like short chain fatty acids and stuff like that.

Also I've almost thrown in the towel that I am just not going to do super deep dives. There are too many. You've got the genus, the species and the strain, right? So I usually stop at the highest level of these bugs, like lactobacillus, got it. The lacto and the bifidobacteria, these are good guys.

That's about where I stop. But unfortunately, even deeper down from species, even down to strain, Different strains on the very minute level can have different biological effects. And I'm like, all right, well, then you know what? We're just have to do this study by study because I don't want to become a microbiologist.

And I guess both most listeners don't either, right? So, but they do any number of fascinating things for enhancing amino acid absorption to the gut brain access to immune function. Well, Mune is a popular brand that sort of is related to this space, with the beta glucans and stuff used to beta glucans.

And for myself, like I am not up to date on any of this literature anymore. To be honest, I just want to have an add time to it's outside my skill set and three. If I have questions, I just refer to Dr. Sarah Campbell's done lots of research on the effect of gut and exercise. My buddy, Dr. Ruscio, is a clinician who works with gut issues and even Dr.

[00:56:52] **Dr Mike T Nelson:** Ralph Yeager who's published a lot of stuff. So I'm fortunate that I can just contact them when I have questions, because It's a fascinating area and it's very moving real fast. There's a lot of very interesting stuff, but at the same point, there's so much we just don't know at this point too.

[00:57:08] **Dr Lonnie Lowery:** I would also, yeah recommend, point to Sarah at Campbell at Rutgers.

I've had her talk in the classroom and stuff. Yeah, it's too complex. Gut and exercise is so complex. When you say it's like outside of your wheelhouse, it's

outside of all of our wheelhouses unless you spend so much of your own time to specialize in it. If you don't mind, I'm just going to jump forward here.

Yeah, go. The enhanced games. This was a good one. So we had Michael Sagner, who is an MD, basically arguing for something that Phil brought up on the podcast months ago, which is, should we just embrace performance enhancing substances? He doesn't like PEDs because the D is for drug, right?

Performance enhancing drug. Let's not make this sound like drug and doping. They're performance enhancing substances. all of human history, we've used stimulants and all that kind of stuff. So it was just an interesting call to rethink, I guess the ethics of all this. It comes back to what I think we talked about on the podcast months ago, which was fine.

You don't put it in the rules anymore. It's every, anything goes. Open competitions like bodybuilding and powerlifting have always been and gotten shit for, to be honest. But on the flip side, yeah, these people are felons. So where do they live? Where do you hold these games? There's that. I suppose they're not felons, however, If you get a physician who is allowed to prescribe it somehow,

[00:58:37] **Dr Mike T Nelson:** but even then, if that physician is prescribing outside of what the medical establishment views as limits, you're back to felony charges.

Well, that's my point that

[00:58:46] **Dr Lonnie Lowery:** exactly the whole system would have to say, okay, physicians can do this. Yep. Yep. Or maybe there's a country that's more radical and liberal than another, like all of a sudden all the pro athletes are living in Finland or I don't know, Spain. Yeah. Somewhere in South America. Yeah.

Yeah. Yep. Yep. Anything else from you about the Enhanced

[00:59:04] **Dr Mike T Nelson:** Games? Yeah, I just thought it was interesting. It'll be very fascinating to see what happens with that. And he made a very good argument, showing that this has been going on for quite some time. The thing I'm most curious about is, one, who is going to actually compete in it, because if you think about it, if you're, let's say, an athlete who is maybe going to go to the Games and has a high chance of placing for a medal, Even if you are using, you're probably not going to go compete in the enhanced games, right?

So i'm curious to see even with them being enhanced You're probably still getting like the second tier of athletes competing there. That's my guess And it'd be fascinating to see if they have the same Events who does better right? So if you're looking at the 100 meter race in the olympics and you look at the 100 meter race in the enhanced games You Are those times close?

Especially in things that are timed event, like track and field, swimming, this kind of stuff. That's what I'm most interested in, because we'll have performance data from that. And it'd be super interesting if maybe the enhanced games does significantly better. Maybe they don't. I don't know. So that's what I'm most interested in, seeing what actually happens with that.

[01:00:18] **Dr Lonnie Lowery:** Right. I did want to say something. What stuck out to me the most, and you and I talked about this last night, was he said society through film and other things. Normalizes enhanced physiques like the rock. Yes, right. The rock is enhanced guys. Okay allegedly, right? It's amazing that people don't ask him more about this because back in the day if he was an athlete they probably would like Oh, you have 20 inch arms, yeah But society and film have normalized enhanced physiques and yet we illegalize it and that hypocrisy is ridiculous.

And I bet most of our listeners would be like, Yeah, man, preach it. But also he was saying we need he's suggesting testing every six weeks. Imaging, blood work, all that kind of stuff. Like literally every six weeks. Because we don't have data, especially on the polypharmacy. Oh yeah. I stack, an athlete could say, I stack Deca and Testosterone, or, and Trenbolone, and Beta agonists, and GH, and Thyroid.

Yeah, and so we don't have data. So, if you're going to be a good scientist about it, you want the data. So, that made, it made sense to me again, because over the years on this show, of course, we've talked about the hypocrisy. Again, we're like, we're back to the GLP one agonist. Once everybody wants it, they'll inject stuff for their physique.

But when just the bodybuilders wanted to do it for comp competitive purposes, Oh, shame on you. You cheater. Even when you're in an open event, which means non tested, anything goes, it's not in the rules. How is something like that cheating if it's not in the rules? So anyway, yeah

[01:01:52] **Dr Mike T Nelson:** last couple of other notes I had just in random stuff, there's something on D9 caffeine.

Which people should look out for. I spent like 45 minutes interrogating the poor guys there. They were super cool about stuff. But it looks like they did deuterated caffeine. So correct me if I'm wrong. They took the hydrogen ion there and replaced it with deuterium. And this allows it to not be broken down as much.

And the half life is a lot longer because caffeine gets broken down primarily into paraxanthine and then also secondarily into theophylline and theobromine. So it stays in the body as a caffeine molecule. They did show adenosine binding stuff. It does seem to have all the same effects as caffeine. The dosage is less.

He said about a 45 milligram dosage is equivalent to about a 20 milligram dose of caffeine. And I was asking him about, off the record, like sleep stuff. And he said so far they're doing more work on this, but they haven't noticed any negative effects on sleep. Now again, this is a handful of studies that are working right now.

It's mostly anecdotal. That to me was fascinating. So I'm like, if you're prolonging the half life of this stuff, like my first thought was looking at that graph is okay, these poor bastards are never going to sleep. And he's we haven't seen that, which to me is fascinating. They have no idea why.

So I'd say look for that probably next year. People can go back to summaries. I've done an ISSN about paraxanthine like two years ago now. That's still something that's out there. Yeah, I don't know if you have any thoughts on the D9 caffeine.

[01:03:26] **Dr Lonnie Lowery:** quickly. Yeah heavy hydrogen like that.

In research when we with tracers first of all, do duration. This is like stable. I so heavy, but not radioactive, but longer half life. And one of the issues with some of using these as tracers in the past is Yeah, I've read some papers about how you metabolize them differently.

And he's cashing in on that, right? Instead of just using it as a trace and be like, yeah, but because usually that's a negative, right? If you're trying to use something as a tracer through the body to see what happens with a substance, you don't want it behaving differently than the normal thing. But in this case, he does want it behaving differently.

So yeah, resisted to catabolism. The argument seemed to be that because it doesn't get metabolism in the liver, it doesn't break down into some of the other

usual caffeine metabolites. That those were suspected as the bad guys, if you will, for anxiety or whatever, paraxanthine and theophylline and the usual breakdown, cascade after you consume caffeine.

I made a note higher Cmax, right? The concentration was definitely higher by one to two hours, about 25 percent higher. So you need less. I saw in one graph, one milligram of D nine was equivalent to 4.4 milligrams of regular caffeine has grass status.

[01:04:44] **Dr Mike T Nelson:** So, yeah, that's what I was shocked about because that's the first question I asked him.

I'm like, if you're doing these adulterations, can you sell it as a supplement? And he said, so far they've applied for grass status and it looks like they should get it.

[01:04:57] **Dr Lonnie Lowery:** Take home for listeners, I think, if you're a real caffeine junkie and you want the spike even harder and longer Yeah, watch for this D9, right?

This heavy hydrogen caffeine, deuterated caffeine Bruce Lavin, I haven't heard of him before, but I live in a hole, right? Yeah, I haven't heard of him. These guys

[01:05:17] **Dr Mike T Nelson:** all, they transitioned from the pharmaceutical industry Because there's a whole like basically gold rush in the pharmaceutical industry of them taking this process to existing drugs And I think there was a one drug for psoriasis and a couple other things They got approval and they found that this molecule if they altered it they got way better clinical outcomes with it So the pharmaceutical industry I guess for the last couple years has been doing this to every molecule they can find And trying to get new patents on it and a couple of them have actually paid off and worked really well So the story is these guys left that industry and said well Let's just do this to the caffeine molecule and go into the supplement area And they've done like their homework like they've done the pk studies.

They've done toxicity. They've done adenosine binding So they're actually doing a lot of the science behind it to see what's going on right on

[01:06:07] **Dr Lonnie Lowery:** Yeah. And I have a lot of respect for people that work behind the scenes. You and I've done a lot of data collection and stuff for companies that doesn't necessarily see the light of day in some big position

paper, yeah I'm sure they've done their homework. Oh, there was a talk on masters athletes. You want to go there?

[01:06:22] **Dr Mike T Nelson:** Yeah. So Dr. Scott Forbes, he's been on my podcast too. Great guy, even though he's Canadian. I just give him shit about that. So he was doing, this will be published again, like what are like VO2 max and some of these outcomes in master levels athletes.

So these are, people are competing on the world stage. And one of them that just jumped out at me was they had an endurance athlete who were registering at age 60, a VO2 max of 55 milliliters per kg per minute. Which is bonkers. And when he put up some of the times that they're still running at different ages, still extremely impressive fast.

So again, these are the elite of the elite and the age group, but I think it's still interesting to see what is possible. With age, because I think most people's general assumption is everything just goes to complete shit. It doesn't matter. Or this would refute that and say, not really, again, how much of that is genetic, how much of it is training?

And How much of these are just the freaks of the freaks. But either way, seeing those numbers and seeing that like actual humans have done, these numbers is still extremely impressive. The 60 year old

[01:07:26] **Dr Lonnie Lowery:** VO two max, I wrote down 54, right? You have 55. That was the best mine ever was as a young man. Oh yeah.

You're right. And these are six year olds, if anything, it shows that the adaptability of the human body, even as it ages to exercise is remarkable. We did have a good hallway conversation. Yeah, about are the what about late entry? Are these remarkable guys? If their joints aren't beat up, I would argue maybe not.

A lot of them are like what you and I might experience when we're, I'm getting close to 60 myself now, my joints are shot because I've done this since I was an early teenager. Right. So yeah. What happens when a late entry, low mileage guys like, Oh, I'm going to start training.

And then in his, let's say between age 50 and 55, he becomes pretty damn elite. They might actually have a better chance in my opinion, although you made a good point, unless their adaptations are just blunted. Right. Clearly they're not too blunted. Yeah. Right. But yeah, so there's going to be a toss up, but I like the

idea of looking at Masters athletes and he was so jazzed about it when he was talking about it.

Oh yeah.

[01:08:30] **Dr Mike T Nelson:** And he does great research too. So it's, yeah. A couple of random things. I won't say the but look for other types of caffeine downstream metabolites. Patents have been filed for that. So if someone is an eager beaver, look for patents on that if they get approved. A couple of the random notes Global nootropics market is expected to hit 11.

7 billion by 2030. That was from Megan Leonard. There's a study looking at reverse dieting from Dr. Bill Campbell's lab. You may have the author on that. They surveyed 150 coaches. There's 8. 7 weeks was a reported average time of a reverse diet looking at about an increase of 116 kcals per week for women, 169 kcals per male.

Now again, this was what was reported. They are working to do an intervention actually on this data to see in reality what kind of pans out. But in terms of reporting, that's what they had with that. Fuco Xanthin no body comp changes per se, but did enhance potentially cardio respiratory fitness and some other interesting things. Origin of BMI, which was super interesting, was actually rebranded by Ansel Keys in 1972 which I thought was fascinating. And then Dr. Brandon Roberts, we talked about a little bit presented the data, looking at potentially the military's use of a GLP one agonist for body composition.

And so they're doing. More work in that area going forward.

[01:10:03] **Dr Lonnie Lowery:** Yeah, just addressing those, not necessarily in order. Yeah, the reverse dieting thing, we have no data for that really. So kudos to Bill's lab. Maybe we should get some of his smarty pants grad students on. and talk about that. We were had a hallway conversation about, and again, that's what's good about a lot of these conferences.

I get to

[01:10:22] **Dr Mike T Nelson:** talk to the person even presenting or running the labs and all that stuff.

[01:10:25] **Dr Lonnie Lowery:** It's but you guys are trying to refeed this tiny amount every week based on your modeling. And I'm like, you guys might want

to think about something like an infographic. You can show subjects because they're not going to be portioning stuff.

It becomes just almost impossible to comply with their own data suggested. Oh, it's going to be a big issue. So start with skim milk and then you're going to go to 1 percent milk and then 2 percent milk, something that a client can wrap their head around instead of, getting out with a gram scale for everything.

And I'm allowed to have like exactly, 50.7 more calories today. But we need those data so badly. Because we've all helped people get ready for competition. Women, for example, get so lean they lose their period. So that looks irresponsible unless you try to help them refeed back out of that, right?

And regain some of their their menstrual cycle, metabolic stuff. What have you? So that was something I did want to make one note just back to the Masters athletes is that we're talking about younger athletes tend to under eat. Well, Masters athletes also don't get enough. And this was very reminiscent of what I've seen with in the food industry.

Think about what do products that are I'm trying not to name names that are meant for older people. They're not just for the nursing home. Older folks don't get enough protein. For example, the one group that did the best finally, and some of our listeners appreciate this were the older power athlete women.

[01:11:52] **Dr Mike T Nelson:** Yeah. So they actually ate better getting a little bit more protein and some of the, micronutrients and stuff like that. But this makes sense to me. There's a lot of not just anabolic resistance with older people, but their appetites are just down. They just don't eat enough. No wonder they're taking some of these different protein and vitamin shakes.

[01:12:10] **Dr Lonnie Lowery:** That was a whirlwind tour of a lot of what we got here.

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