

## **Dr. Mike T Nelson**

Hey, welcome back to the Flex Diet Podcast. I'm your host, Dr. Mike T. Nelson. And on the show here, we talk about all things to increase muscle, lean body mass, improve body composition and performance, all without destroying your health in the process using a flexible approach. And related to that today, I've got my buddy, Dr. Dr. Tommy wood, and we're discussing how do you make science, still science but also sexy?

I think there's a trend to make science sexy, which is great. But when does it kind of go off of the rails. And this is from the perspective of educators, trainers, and coaches of people who are putting out content into the world. And people who are also consuming content, and a lot of you listening are probably doing both. And we also have divergent conversations where we talk a little bit about statistics. I hope that doesn't turn too many people off. But you can fast forward through that portion.

I think it's a good background and primer to at least understand what are the limits of some studies. I talked a little bit also about longevity, or use some examples of how much muscle do you really need to accumulate over the course of your life? How many steps should you take per day, especially for general the population, and the newsflash there is that you don't have to hit 10,000 steps per day to see a lot of benefits.

Listen to this one with Dr. Tommy Wood. And he's had other episodes here, which I'll link to below. I think he's probably the most frequent flyer of the podcast and it's always great to have him back on here. And if you're looking for ways to increase your robustness, and your resilience along with potential longevity benefits, check out the Physiologic Flexibility Certification. This is level two and the Flex Diet Cert would be level one.

How do you get really good at nutrition and recovery, more of the basics such as sleep, macronutrients, NEAT (non-exercise activity thermogenesis), walking, etc. We talk about the four leverage points of your body and how to incorporate newer things such as cold water immersion, sauna, breath techniques, regulation of glucose, ketones, and much more. To get on to the waitlist or to see if it is open, go to [physiologicflexibility.com](https://physiologicflexibility.com). I have all the information there. There's also a way I think you can contact me there if you have any specific questions. Enjoy this wide-ranging conversation with my good buddy, Dr. Tommy Wood.

Hey, what's going on? Welcome back to the podcast here. Dr. Mike T. Nelson. I'm back today with my good buddy, Dr. Dr. Tommy wood. Who's been on here before with our buddy, Dr. Ben House. I think Tommy was on months before that. I remember we recorded something in Costa Rica with the bugs chirping in the background and stuff too. So this might be the third time you're on here. So yeah, fewer snakes and stuff around this time. Long story if people don't know, Tommy got bit by a snake in Costa Rica.

## **Dr Tommy Wood**

Yeah. Good. Excited to be back. Excited to talk with you again. As always, I think things are going really well. It's actually been beginning of the year has been super busy, but in a good way. Like things are sort of waking up and catching up from a couple of years of being dormant.

**Dr. Mike T Nelson**

And then also Tommy knows that if he doesn't show up on the podcast, I'll change his training into some hellacious like 2k repeats or something.

**Dr Tommy Wood**

So yes, coach, I'm here.

**Dr. Mike T Nelson**

Looks like it's going good.

**Dr Tommy Wood**

Yeah. Yeah. Some new stuff to play around with a competition coming up. So yes, a lot of fun. I'm looking forward to it. Again, we're gonna have a crazy travel schedule going into the competition. So I'll just be kind of do whatever I can and show up but it's been a lot of fun so far.

**Dr. Mike T Nelson**

Yeah. And for people listening, what is the competition and the date?

**Dr Tommy Wood**

It's Viking fest which is the sort of the sort of the local strongman competition happens every year. Did it last year is my first competition last year. And it's May 22. And we have some things like an arm over arm seated carpal, there's a moving medley with a searcher carry sandbag, carry Farmer's Walk, there's a log press like ladders as first time playing around with the log. And then there's some weird deadlift for max reps using some strange earthquake bar or something. And then there's a mystery event that will just figure out what is all day. You know, as usual, like local strongman competition, this is something that you told me very early on is like, show up ready to do whatever, because it's gonna change and it's gonna be weird. It's like, just kind of I happen to be ready for it.

**Dr. Mike T Nelson**

I get it, like you're dealing with, you know, equipment. And like the one I did years ago, it was great, because one of the local people made all the equipment for it. So they made like the, we had to do like a small frame carry, I think was only like 450 or 500 pounds or something. So it wasn't like super heavy. I mean, as far as Frank carries ago, this is the local event. The part I goofed up though, was that they gloss painted the handles on it, and it was brand new, and nobody had used them before. And so like most strong men events, if anyone's done one, it's like, okay, frame carries up next, when I was just in the novice division, so they're like, alright, warm up. And then we're all looking around each other. And the frames already loaded to like 450 because it doesn't go any lighter. And I'm like, I guess I should see if I can deadlift it. So I picked it up. I'm like, okay, like, 30 seconds later, the guy's like, Alright, you guys ready? And you could not even get chalk to stick to the handle. It was the grip on it was just hellacious. So there's, there's always unknowns of who knows what. So that kind of makes it fun, too.

**Dr Tommy Wood**

So yeah, exactly. There's, I'm definitely less suited to sort of the real rigor of something like a powerlifting competition. So like this, this kind of the randomness and sort of the changing nature of the strongman events are much more like, in my in my wheelhouse or something that I enjoy. So it's all part of the experience.

**Dr. Mike T Nelson**

Yeah, nothing has been for me like the variety is much better. Yeah. But if people aren't expecting it, like if people transition, I've had a couple people transition from powerlifting strongman and I keep telling them, like, it's not going to be run the same way. Like if you're used to your meats, like being run like clockwork, like especially at a local level, it's it's just not and there's gonna be stuff there you didn't plan for is gonna be weird equipment that just just be okay with it, because everybody's using the same thing. So you're fine.

**Dr Tommy Wood**

One of the, at least from the last competition I did. One of the benefits of that was that they had sandbags that were we had to carry I think there were there were 200 pounds. They were definitely not 200 pounds. They were like 150 Maybe. And so that's the good stuff. That's the good part about things not being so tightly regulated.

**Dr. Mike T Nelson**

Yeah, I heard a story of I won't name the guy, but moderately high level competitors years ago, doing a car deadlift, and he's pretty sure they forgot to remove the weights from the heavyweight to the lighter weight division in the car. Because people went from hitting like 15 to 20 reps to like some people's zero d event. So yeah. Never know.

**Dr Tommy Wood**

Oh, yeah. I guess the first competition I did. We had that there was dinner. There was a simulated denistone event in that one. And Peter like we did it. We did a podcast about it. So people Yeah, heard about it. They have the last one. Well, one of the guys in the in the in my category, I guess is novice lightweight. He was just super short. So like, when he lifted the stones off the ground, they didn't really lift off. So like one edge of both weight was on the max holds. He was just like holding it there. The judge couldn't see that it wasn't there was still touching the ground. So like, I think he won the event despite not actually lifting the stones off the ground.

**Dr. Mike T Nelson**

Yeah, and he probably doesn't want to be the guy that they have to bring out the little pedestals for him to stand on. Well, today's topic I thought we would talk about how do we make the discussion of science sexy, but still have it be science? Because I think you can make a lot of things sexy, but how do you do that without sort of violating kind of the principles of science itself? Right and if you go around social media I like that there's a lot more science educators. And I think that's definitely a move in the right direction, which we, I think we both 100% Applaud.

But for people who are listening who don't have a background in science, like, what are some things, maybe a little warnings? Or kind of what follow up should they do on their own? Because I think there's a tendency, especially if you're not trained in what to look for, to be like, oh, so and so is a scientist person? Well, they, they must be 100%. Correct. And I mean, we've both been to conferences long enough. I remember being at the ACSM conference in 2005. And I won't say their names, or even the topic, but basically two of the top researchers and said area, were arguing about one paper that they both had read. And this went on for like 20 minutes. And I'm sitting there, and I'm going one, this is amazing, too. This is kind of scary. Three, I'm like, these are both like the top two people in their field, they're both looking at the same data from the same paper that I know they read. And yet they still don't agree. And to me, that was kind of like this lightbulb moment of like, oh, like everybody is unintentionally kind of biased by their own background and their own studies and what they've kind of done.

And you may have two people looking at the same data and not agree. And then related to that I went to work for a medical device company. We had, there was a potential recall that was going on, which has been made public years ago. So I'm not revealing anything I'm not supposed to. And we had an in house statistics guy was a PhD in stats from I don't know, some crazy school. And we weren't sure. So we hired another consultant who has a PhD in statistics and medical device, area and biology. And I had to sit there in a meeting for an hour every day for literally four weeks in a row. And watch these two dudes argue back and forth for the whole hour about stuff that I didn't even understand at all. And all I left with that was going shit. So now we've got two people who are in the same field who have their terminal degree in the area. And they can't even agree on what method is the best method to do. So it's not as always black and white, I think as what people think that it would be.

### **Dr Tommy Wood**

Yeah, this is I've done some, some more advanced statistics training recently, myself, because it's something I do a lot of in that incident. And when you get to sort of the upper level of statistics, if you get people who know what they're talking about, they'll tell you that actually, it's a very, like, a lot of it is very subjective.

### **Dr. Mike T Nelson**

Which blew me away, because I was told, statistics is the thing that answers all of our subjective questions.

### **Dr Tommy Wood**

Yeah. No, it's not because the way that you choose to frame the question. And the methods you apply, you know, it really boils down to how you interpret the scientific question. And that then comes back to how you subjectively think about what it is you want to learn. Plus, you know, there's some fudge factor in terms of, you know, often people will move things around a little bit once they start to see the data, which you technically shouldn't, shouldn't do in general, if you're trying to, like truly answer a question, rather than doing something exploratory. But yeah, there's a huge subjective factor in the way that you approach the analysis of the data.

And most people, right, if you're reading, if you're reading the Methods section of a paper, I guarantee that even people who understand like the actual methods, the things they did with the subjects or whatever, you're going to gloss over this fiscal analysis section, because you're just like, Oh, yes, that's whatever. But the way that people choose to do that will give you two very different answers. You've obviously seen that seen that in real life.

**Dr. Mike T Nelson**

Yeah. And I'm not a stats wizard by any stretch of the imagination. I have a minor in mathematics, which isn't necessarily stats and suffered through biostatistics, one through three and I did my, my minimum to know enough to hopefully not be super dangerous. But even when I look on peer reviews now, and I look at the question, and the question to me can be solved with what I would say is basic statistics. And they're doing something really crazy that I don't understand. Yeah, I'm like a external stats review, because my first question is, like, how, why did you pick this super complicated method?

And what are you trying to show that I don't understand like when you could use this other method that is very straightforward has been done for bazillions of years. That just makes me nervous. And then I looked to see who funded the study. And if it's funding of the thing where they have a potential positive impact, and especially supplement companies funding research, not to pin it on all that but that just makes me more suspicious. And I want someone who actually understands what they did to make sure that what they did is legit because I don't feel qualified at that point to say yea or nay.

**Dr Tommy Wood**

Yeah, that I mean, in general, I mean, it doesn't work with all questions, particularly things that require detail, like, very sort of high dimensionality data, that, you know, it does get tricky in terms of how to get that across and analyze it like omics stuff.

**Dr. Mike T Nelson**

Oh, sure. You're taking like this shit tons of data to just like throwing in the pot. And so it's difficult to get it across.

**Dr Tommy Wood**

But in general, I feel very strongly that most people, you should be able to answer the question by just showing people the data, right? Yes, you can make a graph where you look at the graph, you're like, oh, yeah, that's different. And so even if like, the statistical analysis shows that, you know, it's like the p value is not quite below 0.05. And it's not certainly statistically significant, for whatever reason, power or because they adjusted for a whole bunch of stuff. Like, you can look at the graph and be like, oh, yeah, yeah, there's a signal right there, I can see it. And like most people can intuitively do that. So if a paper doesn't show you the data, sort of hides it all in, in tables and random complex statistical analyses. Like, I usually tend to think that's, that's a red flag, because even people who don't understand statistics, like they're like, they can understand a graph like, oh, yeah, I see it right there.

**Dr. Mike T Nelson**

Yeah, and especially when I go to look at the raw data, and it's not there. I'm like, oh, okay, what, what's, what's going on?

**Dr Tommy Wood**

Yeah, I think I'm really, I'm a really annoying reviewer for papers. Because, like, my first question is always put all the data on the graph, like bar chart with like, mean and standard error of the mean, get out of here, just like you have 12 subjects, show me all the data like it's not, it's not that it's not that complex. And it's like literally, that always the first thing I write, because that's, that's the first step to sort of having people really appreciate what data looks like, and it's not tidy. But when you see all of it, you can really actually understand what's going on.

**Dr. Mike T Nelson**

Yeah, and especially a lot of times looking at, you know, what are some of the outliers or data they sort of threw out is, that's for like, all the really interesting questions potentially come from, right, because your first question then is, is that quote unquote, a real thing or not? If we can show that it is a real thing, then you know, what the hell is going on? I remember, Stu Phillips at a system years ago presenting this data looking at some hypertrophy response and a chronic study they did.

And he shows the graph, and there's all the data points are down here. And there's two data points, like two statistical significant deviations way up at the top. And I said, Hey, like, what, what the hell is going on with that? He's like, Oh, those are the beef brothers. There's, there's these two guys who like, I don't know how many pounds of beef, they per day, run the study. And I think it was a hypertrophy study. And they just got these massive gains compared to everybody else. And so then later, they did some studies looking at, you know, was it testosterone was there different changes, and that sort of led to this kind of extreme responders and this kind of other literature of looking at response rates. But if you didn't show a data plot with all the data, and you just said, Oh, we had two people were outliers, we throw them out, or we put them in the data. You wouldn't see that. Right?

**Dr Tommy Wood**

If you didn't show the data points, you'd have a bigger like standard deviation, you have a bigger error, and you have no appreciation for like where they are in terms of magnitude.

**Dr. Mike T Nelson**

Right now, it could be everyone is screwball. Or it could be one or two people left in, but you don't know. Right? Because you could, if you wanted to manufacture an artificial data set, you could get them to look different, but have the standard deviation be the same thing? Yeah, exactly. Yeah. Yeah. And then one of my studies was actually tossed out from my PhD research, because the standard deviation was too high.

We're doing some flow mediated dilation on people. And I showed it to my advisor, and he's like, Well, you just suck. Is this an aquifer? Your technique is bad. And I'm like, Dude, I did all the practices. I did everything. So they got pissed off. So I went back and looked at the data, because we had baseline before and then after intervention. And it turns out that the people enrolled in the study, were at the extreme ends of what is considered a normal response. So they didn't really very much over the interventions.

But their baselines were way out the extremes. So I argued that it wasn't necessarily my skill, but the fact that we just happened to get these people who were at both ends of the spectrum because a healthy population like you know, vessel function, and he's like, Well, don't worry, you can publish it now because your standard deviations to poor so I was like, shit so I had a can that whole study.

**Dr Tommy Wood**

It's stuff like that, expecting things to be homogeneous and people to be homogeneous like it just doesn't it stuff like that it drives me crazy like in in, in my fields right we have animal models of brain injury. And they are super variable, like incredibly variable for various light and it's usually anatomical anatomical variability from animal to animal. And I think that's really good, because humans are also super variable. But the problem is that it means that you can't just do an experiment that has like, eight animals, right? Yeah, more animal. It's very busy. But there is there's this like strength and important things in that variability. But everybody else tries to sweep that stuff under the rug. And I think that's one of the reasons why we don't do a good job of actually translating from animals to humans in general. Like, we really suck at it.

**Dr. Mike T Nelson**

Yeah, and even just variability itself is something that no one in the statistical world wants to talk about. Because if your data is not for people listening, normally distributed, right? It doesn't look like this nice kind of little bell shaped curve, where most of the people are in the middle. You have to account for that. And you have to use different methods to then look at that data. You can't add it all.

**Dr Tommy Wood**

They're not as nice or easy to interpret.

**Dr. Mike T Nelson**

And then, you know, obviously, I'm biased because I my whole PhD was on fine scale variability across physiologic systems. So we were purposely looking at what is the variability difference in different systems. But trying to get that through a review sometimes is almost impossible, because people are like, well, you don't have units on this thing. I'm like, it's a variability measurement. We're looking to see how different one measurement is from the next and the time course the temporal relationship matters. They're like, well, where's your where's your statistics? I'm like, it's not linear distributors. So we can't take your standard off the shelf statistics and show that to like, No, this is crap. So I have one study that literally went through 13 revisions. And eventually, I just pulled the plug on it and said, Fuck it. I'm not publishing. I feel like we're just bitching about stats.

**Dr Tommy Wood**

Okay, how do we get back on topic?

**Dr. Mike T Nelson**

So one listener left?

**Dr Tommy Wood**

Boring, making boring things sexy?

**Dr. Mike T Nelson**

I think we just did the opposite.

**Dr Tommy Wood**

I have thought about this a lot recently. And, but the best is really funny, because I think the best content, people produce the best content on social media. And that's where a lot of us get our site. It's not me, like people will post a new interesting study I like and I can go and get to dig into it. But I think the best content creators is just say the same things again, and again and again. But maybe they maybe they change the approach. Maybe they change the message slightly, maybe they change the application slightly, because different people will internalize it a different way.

And we also know that you probably need to hear things like 10 times, before it actually starts to sink in. It, it's similar to, you know, there'll be things that I tell my wife, and I tell her it five times, and then somebody else tells it to one. So she's like, look at this thing that I just, you know, that I just heard about, like, isn't this isn't this great. And it's like sometimes changing the person changing the mesh slightly. That's what gets things across. But that's not necessarily what people are drawn to what people are drawn to is novelty. And so the alternative is people who are like, I have a new thing that's really important, every week.

And, you know, here's this brand new information that only I know. And you know, or, and so that's one part of it. And as soon as people are presenting information like that, immediately, you have to be you have to be wary, because most people are like really good at one thing, or a couple of things. As soon as they profess to be experts in lots of things, then then you need to be concerned because they probably just read one paper, and are now telling you about it as if they're an expert. And oftentimes, we've we've talked about this. Sometimes they'll be like, Hey, this is brand new paper in this fancy journal. Here's this thing that you should do, because of it. But actually, there's like 20 years of applied research that this person hasn't read that completely disagrees with this one fancy paper.

Yet the fancy paper is the thing that they gets sold to you. And I also see, I also see people who, you know, they have an area of expertise, and they've developed a following because of it. But then there's this thing where either they feel the need to create novelty in order to keep people engaged, or people are asking them questions like, hey, because you talk about all this stuff, what's your opinion on this? And then they feel like they have to have an opinion. And then they write a blog post and have a have a podcast. And this is one of the main reasons why I increasingly don't like being on social media is because like, people asked me for opinions on things that I don't have an opinion about, but yeah, expected to have. I don't know.

But people probably don't want to hear me say, I don't know a lot. Yeah. Right. But but but then, you know, those who aspire to some degree of fame, or notoriety or whatever it is, and I think that drives a lot of it, to be honest. They find themselves having to have an opinion. And then you give yourself a crash course. And tell people like, things as if you're an expert on that area, when actually in reality, you've probably missed a whole bunch of stuff. And you don't really understand it that well.

**Dr. Mike T Nelson**

Yeah. And that's what's so hard to because if, let's say you're starting out, and you're swerving a little out of your lane, the amount of time it takes to be somewhat updated on the literature in the background is massive, you know, so like, even with peer reviews and stuff, like I just got one the other day, like soccer and jump training, and like, Heck, if I know, like, no, sorry, I'm not the reviewer for that, you know, especially at that level of detail, I can tell you basic stuff, but you know, and then the amount of time to go backwards and look at all the information.

And if you have something that's a bright, shiny new object, like every week or every day, there's just not enough time to go back and look at that. And not to pick on younger people. But if you're 19 years old, I know you haven't done all that you just haven't been on Earth long enough. Time to get through that kind of stuff. So that I think is different now than it used to be. I would say, maybe get your thoughts on this to that. Like 15 years ago, it was experts could never like kind of go out of their lane.

Right. I remember when John Berardi was publishing some stuff at a tea nation on nutrition. And he sent an article into TC on exercise. And TC is like, what are you doing talking about exercise? No one's gonna believe anything you say? He's like, Well, my PhD, I took a lot of stuff. It was an exercise metabolism. I just happened to focus more on nutrition. And he got just kind of crucified for talking about exercise. And he wasn't saying anything crazy. It was just like, really basic stuff like you would learn in an undergrad class. We're now it seems like the pendulum has shifted almost the other way. Where it's like almost all novelty. It's like, oh, you're an expert in, you know, TBI as well. You know, I just twisted my ankle, bro, what do I do?

**Dr Tommy Wood**

I don't really know. I don't really know what's driven that shit. I mean, I think the, the, you know, our access to information nowadays has maybe given us the illusion of knowledge, both in others, as well as ourselves. That that may be part of it. But then there's also, you know, if you're, if you're a professor at a fancy institution, and you've gotten 10s of millions of dollars to do research, and it's usually basic science research. And, you know, all these people all day tell you how smart you are. And then somebody comes along and you get offered book deals or podcasts or something. I just think there's this, there's this element of people being taught, like you've had smoke blowing up your ass all day, every day by people.

And all of a sudden you start to believe your own BS, because like, there's nobody around you who you trust to be like, Dude, you just don't understand that you just don't know that. And you know, you need to. And so so like, there's this drive for people to be this expert. And I think some of these things are now sort of being funneled down. And it will change over time, right? In five years time. It'll be somebody different. But right now you have like two or three, you know, famous scientists who was sort of like really driving certain narratives, even when some of the things that they're going into a really outside of their area of expertise, yet we sort of take it as take it as gospel because of their, you know, because of that notoriety.

**Dr. Mike T Nelson**

Yeah. And that's also hard to because as someone who is doing science, education, one of your goals is to have a bigger platform, because that allows you to make, you know, more change and to affect more people. But then it's, like you said that, the tricky line of how far do you stray outside of where you're at? And with social media, the sort of the feedback and the applause and everything is instant, right? So you start posting on something that's a little bit outside your area of expertise. Oh, my God, everyone loved that thing. Right. So it's sort of a intrinsic human nature, if left unchecked to try to do more of that. Yeah, right. And in one hand, yep, you are doing more education. But if that goes unchecked, then at some point, you are kind of swerving around the road, and now you're in the ditch, and now the car was entirely off the cliff.

### **Dr Tommy Wood**

That the thing that probably concerns me the most, right, so there are always gonna be people who are interested in that kind of stuff. And they just like voracious consumers of knowledge. Regardless of the application, I think that's great. You want to learn stuff, you want to hear about the latest papers. You know, even if you don't have formal training, in the scientific process, I think that's great. You know, I applaud people who want to learn new things as fabulous stuff.

What concerns me is when it detracts from what supposedly is the overall goal, and so like, if I, you know, if I'm a scientist, and trying to be a science educator, it's mainly in the area of health, right? So I want to help other people improve their health, or I want health in general to be improved with, you know, improving knowledge and or supporting the changes required to do that. And then also highlighting areas where, actually for some people that's really, really difficult, and how can we support them when they don't have the financial or other resources to do this stuff that would be easy for your eye to do if we wanted to.

That's, that's a big part of health, you know, the sort of the social determinants of health. And so that's my goal. And so if I were to continuously add novel, novelty, new things that you need to do these new 12 things that you need to do in this exact order, so that you can get an extra eight minutes of deep sleep tonight. I think that really detracts from the overall goal of improving people's health, because the things that matter will always be the same. And it's like, you call it violent consistency, right? The same boring stuff every day. That's what really matters. And so as soon as you add novelty lists of things, you need to do these 47 steps to do X. I think that really detracts from the thing that matters, which is violent consistency of those basic things.

### **Dr. Mike T Nelson**

Yeah, no, I, I agree with that. And this for myself, I always feel like I'm kind of walking on the fine line of, can I find new and novel ways to get people back to the basics? And if it is something that has, you know, data, or even if it doesn't, what is the context of it? And then also, like, what is a realistic expectation? Right? So you know, I did some videos about you know, beta alanine, and yeah, lots of data on it shows it's beneficial. But again, you're looking at I think it was a study done in elite rowers who were well divisible, you consider a leap, but they were doing a to K below seven minutes.

So they weren't like your average recreational people, you'd be pulling off the street. And I think a decrease their time by if I remember, right, three or four seconds, right? Which for that population with

just a supplement, but not additional training. That's pretty damn impressive. Yeah. But to the average person like to shave three seconds off of their nine minute 2k. You really need beta alanine, it's like No, bro, just get on the rower. So I always go back and forth of trying to explain that, yeah, this thing works. Here's the data, here's what it is. But trying to then put that back into context of, you know, here's what it was actually beneficial for, and you're still down in like the way single digits. And if you're an elite athlete, yeah, that matters, right to do that without additional training. That's pretty cool. If you don't even know what a rower is, who cares? Like Beta Alanine is like dead last on your list I should have to do.

### **Dr Tommy Wood**

Yeah, I mean, I think that's a great a great example. And there's another there's a nice stuff. I think, people like some people that I've seen that done a better job of this is like, let's look at relative effect sizes, right? Like here are the things that matter for the things that you care about. And so like longevity is a hot topic, I can use that as an example, because there's a nice, there's a nice paper that at least has a bit of this. And there's also some similar stuff for cognitive decline, which is another thing that a lot of people ask me about.

But like, if and this is also related to just like general activity, and if you look at this, there was a nice meta analysis, meta regression on walking like steps per day and all cause mortality. Like, if you increase your steps from two and a half 1000 to five or 7000 a day, like, the effect is the same as not smoking, not having high blood pressure, not having kidney disease, like all these things that we know are really bad for your health, right. And the improvement that you get, just by adding a few 1000 steps a day on your mortality risk is massive, right?

As a huge effect, whatever fancy supplement somebody is setting to take, or whatever you're supposed to do to increase your deep sleep by 3%. Like, there's just, it's just like a drop in the ocean compared to how really impactful these things that we know, a better a beneficial and helpful are. And so that's the thing, if you're focusing on on the supplement, because you don't want to go out and do another 4000 steps a day. Right? You just you're really playing at the wrong the wrong end of the effect size spectrum.

### **Dr. Mike T Nelson**

Yeah, and I think it's human nature to think linearly. And I mean, I'm biased. I did a master's in engineering where they try to beat thinking linearly out of view. But I know that I still have a bad habit of doing it. Just not sucking at some basic things, then going from really bad to just not so bad, has a massive amount of leverage, right? Because I think people assume that, oh, man, if I'm not doing my 10,000 steps a day, it's just all crap. Like this is kind of either all or nothing, or, oh, like on the other extreme in the fitness world, it's like that. I was doing 10,000 steps a day, bro, I gotta double that I gotta do 20,000 steps a day, I wouldn't be shredded in like seven days, it's like, you're, you're assuming that the goal from zero to 10,010 1000 20,000? Is the same response, which clearly isn't?

But then on the low end, is beneficial. Like you were saying, for people who maybe don't move a lot. It's like, No, you don't even have to hit 10,000. If you're getting 2000 steps a day, just getting to 4000 or 3000 is a massive improvement. Right? And that maybe five to 7000 for you is a more realistic number

for you know, this year. Right. And there's a huge benefit, like you said to that, which I think that makes it more for the average person listening more doable than to and hopefully tries to buffer some of the extremism we see in fitness also.

**Dr Tommy Wood**

Yeah, and I think we see similar stuff with muscle mass. And, and I mean, it's difficult for me to talk about it to a certain extent, because whenever I talk about the importance of muscle mass on longevity, or health or disease, various people like, bro, like, whatever, I don't want to have to look like, you know, I've literally had this is like, when I talk about muscle mass and, and longevity or disease risk. And so like, again, if you look at all the population data, I've done some of these analyses myself, you basically just don't want to be in the bottom 25% of the population. Right?

**Dr. Mike T Nelson**

So it was a pretty low bar. If you're going to general population.

**Dr Tommy Wood**

Are you doing something remotely resistance type, with your body to something maybe within a few reps of voluntary muscular failure, twice a week for maybe a total of 30 to 45 minutes. That's it? That's all you require to have enough muscle mass to see the benefits. And again, that bar is super, super low as it should be. But because a lot of people don't do even that, you know, we assume, and we've kind of, because as a society, we idolize athletes, right?

It's a big part of of who we are as a society. And so you assume that in order to be healthy through exercise, that's the ideal when actually they're doing stuff that's probably detrimental. Like on the other side, they've gone too far. And now that sort of like the benefits of being raised because of the amount that doing and that's fine, because it pays their bills and they should do it. But nobody needs to be running marathons to be aerobically fit, right? Just go and walk for 30 minutes. That's it. Like that's where you start to see the biggest bang for your buck.

And I think trying to get that message across is really tricky because again, you know if you want to embody the if you're going to make exercise a habit, you have to embody this idea that you internally are somebody exercises. I am somebody who does physical activity, who does movement. And we think that people, the people who do that are the people who go and run marathons and are ridiculous bodybuilders with an FMI of 30. Plus is so crazy. Yeah. And that's just not like, yeah, human movement is walking every day, and being able to just like lift some stuff that you need to be able to do just for your day to day activities. Right? That's it. And we just need to find a way to sort of get that into people's psyches. Because I don't think people have internalized that.

**Dr. Mike T Nelson**

Do you think part of that is probably made worse by videos we put out to you or at least myself of showing performance? Because it's just kind of the the thing? We do not necessarily as everyone else needs to do that, like we've talked with Ben a fair amount about this too of like, on the high end of the spectrum, if you take like a deadlift, like, Should you always be able to pull to 25 300 400 500 600, right, at some point, that curve goes boop, and then it's gonna start going the opposite direction at

some point to especially with, you know, risk reward and spinal health and everything else. And I don't know if we have much data on where that point is. But I would expect that it's probably lower than what most fitness people would think that it is.

### **Dr Tommy Wood**

Absolutely. And part of that is you have to like, I am the embodiment of hellfire. In the past you should this tip, you're like a flip fit fluence or if that's even a word. Yeah. So then you convince yourself that what you do is the thing that everybody else should be doing, when in reality, they're just like, as far from it like, yeah, gap is, is vast.

And I don't know, the wet right way to approach this, like some people are motivated by seeing people who are just much better than them be that from a body composition standpoint, from a strength standpoint, from a robot fitness standpoint, but some people enjoy seeing that. But for a lot of people like that comparison just isn't helpful. And so for like myself, like, I'll post videos, or like, pictures of stuff that I'm doing in the gym, but you're I'll never should never say never, but I won't, I won't post pictures of myself, like, without clothes on. And I won't, if I show you a bar with some weight on it, I won't tell you how many reps I did. Because I don't think that's useful for you to know. Right?

You may find it interesting the kind of training that I'm doing, and that's great, but the number of reps that I can do. And to be honest, I'm not that like in the grand scheme of things. I'm not that strong. I'm well above what I need to be for health, and I appreciate that. But like compared to people that I see, and I watch an Instagram, I'm pretty weak. And so that like I don't think you need to know what I'm lifting. You can see how like, the things that I'm lifting, like in terms of the events and stuff, I think that's interesting, but like the exact weight, or reps, or whatever, I don't think that's that that's that useful for other people to know. And there's a possibility that it could be detrimental, but like, not everybody thinks like that. So I didn't know the best way to approach it.

### **Dr. Mike T Nelson**

Yeah. And I realized lately, I haven't posted any videos, just because I don't want to be next to my phone when I'm lifting most of the time. Realize I've just avoided all together and the thought of just setting something up and also kind of goes back to it's like, I don't really think that many people care. You know, it's like, the stuff that I do is more for my own internal record than anything else. It's not, I don't think anything I do is impressive, really compared to other people.

But again, that's all goes back to being relative. Right? I think some people are motivated to see someone make progress. And other people are like, well, that's so you know, that should you know, watching any bolt and pull 1000 pounds to me is like, on one hand, I'm like that is so impressive to be, you know, the first or second human that's done that. And then it's also so far removed from anything I'll ever do in my lifetime that it might as well be like going to Mars, you know?

### **Dr Tommy Wood**

Yeah, that was actually the so I remember that. I remember that Andy Beltre lifts by I remember more clearly Eddie holes first 500 kilo deadlift. Yes. Yeah, I saw that to where I mean, almost died, where he literally almost died. Like literally, his vascular system is emptying down his face out of his noses, like

blood everywhere out of his nose, the number of drugs that he had to take to get that big. And so like he basically he pulled that debit that year he won World Strongest Man, he's like, I'm out.

Because like, he knew he was endangering his health to achieve that. So like, I love seeing humans do ridiculous things like seeing the the limits of human performance, I think is is great. I love it. But you know, I think it does require some you know, the person to understand and when which he did. And I think that that's, that's great. There's like, this is not good for your health, but you want to stick around and be around for your kids and his wife. And that's the stuff that he talks about is like, just can't keep doing it because I will kill myself doing it.

### **Dr. Mike T Nelson**

No, it was a good, good diversion there. If people listen to this podcast and expect no divergence are sorely disappointed already. So it's okay. Any other ways are things that, I would say, one, from an educator standpoint, this is my own selfish question of when you're putting out content as an educator or trainer or a coach that they should be aware of. And then to as more of a consumer, I know, we covered some of the topics to that haven't already.

### **Dr Tommy Wood**

Yeah, I think there's two things that the, I guess come up a lot, and they're probably probably important, both as an educator and as a consumer. And they are, like consistency. So like consistency in message, and again, finding new ways to say the same thing. So that you can reach a new group of people who will like internalize the message slightly differently. And uncertainty and nuance like, that's just so so, so, so critical. And so actually, I was talking to a friend of mine, he's a chief medical officer of a large digital health company.

And he doesn't put himself out there in the world, sort of, in this way, because he has a huge amount of doubt, in his own abilities, you know, some imposter syndrome. And I think that that's so important, like, those are the people that we need to hear more from because, right, if you understand the nuance, if you understand that, like, not everything is black and white, we need those people to be out in the world. And talking about health, because it is like, different for different people. And there is nuance and you know, different people understand things in different ways. And people work with different populations, like all this stuff is important. Whereas the alternative is like sort of either continuous novelty or rigid application of very complex procedures. Humans just don't he was just don't work like that.

And it's all very well and good saying, you know, this is in mice, but dude, if you spent most of your time working only with mice, and this is coming from someone who does animal research, that's what pays my bills. You know, like, you just if you've only done that, and you've never actually worked with a human struggling to improve their health, or body weight. And this is actually this. There's another there's another. We haven't touched on this arena yet.

But there's this big, like, sort of like spat in the world of weight loss, like, is it the carbs and the insulin? Or is it the calories right? And this is yeah, this is continually still going on, like, come on. It's like it's ridiculous. But this this continuous cycle of like, in the academic literature, like, they'll they'll write a

review paper, and then they'll slam the other one, this slide is continuous bickering. Like, literally helps nobody who is struggling to improve, who wants to improve their body composition, and not everybody wants to win, that's fine.

But people who want to, like these academics who understand this stuff, theoretically, or some of them don't understand it, theoretically, but like this, arguing, it literally helps nobody. And they've obviously never actually gone to a person struggling to improve their health or struggling to improve their body composition, and really understood what that process looks like. And this is what's happening, right? I've worked with all these mice, here's this thing that works in my mice. Here's how you should do it in humans, like that person has never worked with that individual tried it.

**Dr. Mike T Nelson**

And they never say like, make sure to do this with your own mice. It's always like a human.

**Dr Tommy Wood**

Yeah, exactly. Yeah. So like, did we cover some of that? Yeah. So hopefully, some of that kind of helps people navigate some of those things.

**Dr. Mike T Nelson**

Yeah, and I get some pushback on even like, I have, obviously two certifications. And I want people to take them and people are like, but I don't want to spend like 20 to 24 hours going through it. I'm like, great. I don't know what to tell you. You know, it's like I and I even think that I tried as hard as I could to distill it down right so distill protein down into a one hour lecture that's useful and accurate. Shit that took me freakin forever and even at the end, I'm like, still my call but I didn't I left out this and left out that, you know, but like, I can't make it an eight hour course and have the thing be 400 hours. You might as well go to college then you know what I mean? But it's not By now, I can't make the whole certification two hours to be to cover all these things. It's not possible.

And part of it is, maybe I get older and crankier that. If I gotta, I get all these crazy business stuff from people. So this guy sent me a video the other day, he's like, you know, on your Instagram, what you really need to do is you need to do like talking head like 32nd clips and make sure you give them something that's very deliverable. And I'm like, what if I just don't want to do that? You know, I'm like, What am I gonna say in 30 seconds? That's gonna be there are some basic things. But other than that, you know, it's like, I'm at the point now, where I'm like, if you only want like the 10 second blurb, like you're not gonna like any of my stuff, so why am I gonna put out a whole bunch of stuff? That's all super short condensed, and then try to sell you a 24 hour course? Yeah, right. It just doesn't make sense. I know, you guys have a blood course that's many hours long. It's really good.

**Dr Tommy Wood**

I mean, and it's, it's, like the vast majority of people will not be able to sit through it. Neither should they have to. But that's kind of right. But that's kind of the point. That's the point. Like, most people don't, don't need it. But if you if you want it, you should do it. But be prepared to sit through. I think it's like 45 hours at this point.

**Dr. Mike T Nelson**

I didn't realize it's that long. Oh, wait, I gotta get back in there.

**Dr Tommy Wood**

Because we did a bunch of case studies. I think I think the first one of the first videos or sections is on blood sugar. And I think the first one we did and metabolic health, and I think the first video we did is like an hour and a half. And then we turned around and we're like, we barely scratched the surface. We did like three follow up videos that it like probably the met all the metabolic health and glucose content, probably totals like eight to 10 hours at this point. So and that's just, it is what it is, if you like that kind of stuff, you should listen to it, but the vast majority of people shouldn't.

**Dr. Mike T Nelson**

But I think that's a benefit. Because you, you know who the target audience is. So for me, the people who contact me and like, I just don't understand, like, I need help with this. It's like, okay, great, then you need to hire a coach, or someone who can translate the data for you and has worked with actual humans, not just training mice, and just pay them for their opinion.

Yes, I know, it's an expert opinion, and all that kind of stuff. But the reality is, we do that all the time, like I just filed my taxes. So I pay the CPA, a lot of money to be like, hey, you know, I don't sit down and ask her to read the tax code to me, I trust that she's gonna do her job. And so far, it's been well, so I'm trying to, you know, same thing with you guys. It's you're targeting coaches and people who want to learn to do better, and then not necessarily the ultimate end user, per se. And if you try to do both, I think a lot of times, it just ends up being this disaster of short quips with no context and no background, and people feel like they have a little bit of knowledge, and they're just running around more dangerous than they were before. Yeah. I agree. Awesome. Any other last comments? We'll wrap up?

**Dr Tommy Wood**

No, I think so. As usual, we sort of zoomed around a bit, but I think there's three or four people still listening and hopefully, some useful stuff out of it.

**Dr. Mike T Nelson**

Yeah, no, I agree. My takeaways would be if you see someone that kind of swerves out of their lane a little bit, like, maybe pay a little bit more attention, right. And a lot of times, you may not know what their background is, some people have a bigger background in and you're just not aware of. Yeah. And then if it's always a new shiny thing all the time, that to me is always kind of a red flag to you know, that. Yes, there's new discoveries. Yes, there's new things.

But, you know, the standard principles have worked for, you know, 1000s upon 1000s of years, and if you're not doing those big rocks already, like the new sexy stuff is not really going to move the needle all that much, which I know isn't very exciting, either. But that's the way it goes. And the last part too, is that your science just moves slow. Like, that's just the reality of the process. And some studies are, quote, unquote, correct. Some will be disproven, some was shown to be completely wrong. Like I remember, like, one of my favorite Tim Noakes quotes was, he's like, Alright, all this stuff I'm going to

teach you today. 50% of this later will probably be shown to be wrong. The hard part is I don't know what 50%.

### **Dr Tommy Wood**

Maybe in there is another little nugget which is potentially useful when people publicly and openly tell you about the times they were wrong, or you know, as part of this process, they're like, oh, yeah, like two years ago, I thought this and, and I'm wrong now, and Noakes is a nice example of that, because I think that, so he, I mean, he's, he's very ardently low carb now.

So he wrote, like one of the Bible's on endurance performance and injury training. And, you know, at a conference, he like, took the fuel section of the book, like, it is all like, just 100% carbs all carbs all day all the time. And he ripped out his book. This is wrong. Right. And so whether or not you agree with him on that, at least he's willing to stand up and say, you know, what, I was not right about this, you know, and, and then be very public about it. And so that's another that's another sort of like factor that you should look for in people who you can trust because they're willing to, to acknowledge when they're wrong.

### **Dr. Mike T Nelson**

Yeah, yeah. I mean, the example I think of that is like Rob Wolf, I love like, but his really early stuff. I didn't like any of it. I was like, Who the hell is this guy? What is he talking about? But over time, I saw him change his opinions slightly based on new data. And he read the data and he helped people and he cared about and I was like, Oh, that's pretty cool. Because that is more rare than what people realize. And so then I was like, Oh, wow, that that is cool.

So I always like to see over time faced with new data, will people change their mind or at least consider it and not just dismiss it? Because it doesn't agree with their opinion, but they at least spend some time thinking about it. So yeah, yeah, super important. Yeah. And we're gonna be able find more about your courses, or if you want to be found when you're not in the lab working with animals.

### **Dr Tommy Wood**

Yeah. Instagram is usually where people should go some thoughts. Tell me word on Instagram. Yeah, you'll see occasional photos of things happening in the gym. Maybe a paper that I wrote that's come out pictures of pictures of dogs. If you like those things, sometimes as a sarcastic meme, I'll get like, I'll get inspired.

### **Dr. Mike T Nelson**

The coffee brain one was good. God showed me that one.

### **Dr Tommy Wood**

So and it's it's super intermittent, but if you enjoy things like that, that Instagram is the place to find me. I do. I do try. And I don't get many DMS, which is why I can say this. And I'm happy with that. But I do try and answer the DMS I get. So like, if you happen to really want to hunt me down and ask me a question. You can do that. And I'm I'm pretty good at getting back to people.

**Dr. Mike T Nelson**

Yeah, I would agree. And blood course, where can they find that?

**Dr Tommy Wood**

Yeah, Bro Research. It's the advanced blood chemistry for athletes course that I did with Ben House. Obviously, he's been a huge influence and a great colleague. And you should listen to everything he says. Because he's usually right. And he'll tell you when he's wrong.

**Dr. Mike T Nelson**

Awesome. Well, thank you so much for all your time today. Really appreciate it.

**Dr Tommy Wood**

Likewise, thank you so much. Thank you.

**Dr. Mike T Nelson**

Thank you so much for listening to the podcast, as always today. Huge thanks for Dr. Tommy coming back on the podcast. And once again, to discuss the nature of science and everything that goes into it. Again, I think this is an important topic for both people who are creating and putting things out into the world. And then also people who are consumers. So hopefully, we gave you some things to look for, and words of wisdom, I guess you could maybe say on the topic.

And if you're interested in more increasing your resilience, robustness, and potentially longevity, check out the [Physiologic Flexibility Certification](#), or this is the level two. So level one is the [Flex Diet Certification](#), which is primarily using the lens of metabolic flexibility. How can you get really good at using fats and carbohydrates? I walk through eight specific interventions of how to maximize that for body composition and performance. And they also increase your health at the same time.

In level two, which is the Physiologic Flexibility Certification, I stick to that same idea of flexibility, but expand it to you as an entire human. So what are some of the leverage points that we can do interventions on that allow you to recover faster, to be more robust and potentially more resilient? My bias is that this will also increase your longevity.

We know one of the leverage points is body temperature. Humans are homeotherms They want to stay around 98.6. It's actually closer to 97.7. But we can do things like cold water immersion, we can do things like sauna, hot exposure, even exercising in the heat will also do it. And that expands your ability to be more adaptable. And we're not looking for body temperature to necessarily change very much. If it does change a lot, you're going to be in a world of hurt, but we can increase the resilience and the adaptive performance of your body in the area of temperature. And there's three other areas.

Go to [physiologicflexibility.com](https://physiologicflexibility.com) for all the information there. Thanks again to Dr. Tommy would check out all of his stuff, his blood course, and his Instagram. Always great stuff really appreciate him taking time away from his research, to chat. And thanks again for listening. You can download this share the podcast, leave us a review, whatever stars you think are appropriate and any comments. It's all very much appreciated. Take care. Talk to you again soon.