Welcome back to the Flex a Diet podcast. I'm your host, Dr. Mike T. Nelson. On this podcast, we talk about all things to increase muscle, improve performance, improve body composition, all without destroying your health in a flexible framework. I apologize the podcast is a day late. It's been pretty crazy. I was in Denver, Colorado briefly this past weekend, working with the fine folks at Tecton Ketone Esters.

Some really great stuff coming out from them in a few months. I can't say what it is but some really cool stuff. So stay tuned for that. And then we got day of snowboarding with good buddies Rick and his friend, Will. Awesome to see them again, got back, lost my voice, realized I had a bunch of errands and stuff to do.

So we are back here. Today on the podcast, I have a very special [00:01:00] lost episode with my buddy, Dr. Tommy Wood and Dr. Ben House. I thought I lost this podcast and as I was cleaning my hard drive out a couple weeks ago, I found it. And I asked him, I said, Hey, do you mind if we still release this? Cause we had a really good chat about research and everything that goes into that scientific method and a whole lot more.

And they said, yeah, just kick it out. So I think you'll really enjoy this podcast we'll put a link to both of their information and Instagram and everything below, but just an FYI, this was recorded about two years ago. So it might even be two and a half years ago now. Yeah. So it's from a while ago, but again, I wanted to release it because it had such a great info there.

We'll also link to the other episodes that they have been on here in the podcast. And for sponsors, if you're looking for Tecton Ketones, check out the link down [00:02:00] below and use the code DrMike to save some money on that. And like I said, I got to try a bunch of new stuff they've got coming out, which is super cool.

And then also Element, if you're looking for electrolytes, I use them a lot when traveling, especially on the flights. Colorado's at Elevation is also very dry, and definitely my favorite electrolyte supplement so far. It makes salty water actually taste really good. So check them out at the link down below.

And as always, if you're not on the podcast, or I should say not the podcast, but this is if you're not on the newsletter, my brain is still recovering from being in Denver. You can go to the link below, get onto the daily newsletter for all of the great stuff. Coming out to you. I have much more coming out this week.

I know last week was a little bit sparse due to travel and everything else. So thank you so much for listening to the podcast. We've got a ton of great guests coming [00:03:00] up. We've got Dr. James LaValle on here next week. We've got other episodes coming up about some great topics too. So you want to stay tuned for that and enjoy this episode here, my buddy.

Dr. Tommy Wood and Dr. Ben House.

Dr Mike T Nelson: Hey, welcome to the flex diet podcast today. I have a very fun discussion about science. Yes, this will be a fun discussion about science. So don't turn out right away.

I've got my buddies Dr. Doctor Tommy Wood, MD, PhD, and my good friend, Dr. Ben House, PhD. And we're going to talk about a little bit about the scientific process. And we're going to still frame it around some studies looking at changes in body composition. So even if you're listening and you're not going to be super excited about some of the esoteric science stuff we're going to get into, we're going to Hopefully you'll still learn some stuff about body composition and what are some of the limits of it and what measurements to maybe trust and maybe not trust.

[00:04:00] And Dr. Tommy has a very popular statement he wanted to start off with.

Dr Tommy Wood: Yeah. Thanks Mike. But for the invitation to be here and I've gone over the last year, but it's been a, probably an inexorable decline before then in terms of how I feel about other people talking about science. in the public domain.

And I've basically gotten to the point where, you know, particularly like during lockdown and all the things that have happened around that and don't really want to dig into those specific data, but I've basically gotten to the point where I feel like, unless you have the ability first to access the entire paper, rather than just the abstract or right, that's step one.

And then after that, you should be able to understand pretty much every word in that paper from the data, how it was collected, the limitations of that data, the statistical analysis that was performed, how that led to the results, how that then led to the discussion, what were the [00:05:00] pros and cons, downsides of that entire study.

Unless you basically understand that entire process, I feel like you're not really in a position to comment on social media or any other or a podcast or platform about science. And that probably constitutes 99 percent of people talking about science evidence base, quote unquote on the Internet.

But just because you see it going wrong and people being wrong so many times that I feel like, People, they just shouldn't do it. And it really annoys me. Is

Dr Ben House: that the end of the podcast? I

Dr Tommy Wood: want your thoughts on that. That's why you were here.

Dr Mike T Nelson: I'll start off and say that I think it's the next part of that would be, you have no faith in the journal process and the peer review process then at that point, because I think a lot of people as an outsider would look and go, [00:06:00] okay, I may not know a lot about science, but I know, nature. Ooh, top journal. My assumption going into this is that they probably did their due process. Like most papers are rejected from a journal like that. It's probably something of novelty. Hopefully the peer reviewers are a little bit higher up on the scale. And if it got through peer review at that level, then I'm going to intrinsically trust maybe some of these aspects of the study that maybe I don't understand or I just don't want to look up.

Dr Tommy Wood: Yeah. And that's a great point because actually the higher I've

Dr Mike T Nelson: done that, I will confess that I have done that. And

Dr Tommy Wood: of course, I, and of course I've done that too, right? I'm not completely blamed. At some point you trust, maybe, the author, their work, you believe it to be a good quality and then you skip some of the steps, right?

We've definitely all done it. But it's interesting actually the higher the impact factor of the journal, the more likely they are to have papers retracted. Because particularly it's like nature and science. There are some institutions, some countries where your salary, your Like [00:07:00] academic promotion is basically tied to the type of journal that you publish in So that makes it really rife for manufacturing data, right?

And so like we are not talking about a keto study in eight athletes Published in some like strength and conditioning journal that nobody's heard of like we're talking about the big players here but You know Those guys are much more

likely to get papers retracted like even now people are looking back at some of the careers of Essentially, guys who may go on to get Nobel prizes, and you're seeing inconsistencies in the data Hey, that Western blot that was supposed to be one thing in that paper, they used the same Western blot for something else in that paper, right?

Or we looked at, they supplied their data in an online repository. Normally, people don't look at that, but then you look at it, you're like, Hang on a second this is physically impossible. They've just copied and pasted numbers around here. So like that stuff happens. And so this is like right at the point, the edge of the sphere.

We're not saying that this is what is happening in most places, but like you can't necessarily trust all those processes because they, they set up to fail sometimes.

Dr Mike T Nelson: [00:08:00] Yeah.

Dr Ben House: Wow, you're in a bad mood, Tommy. You literally went to okay, to track down a paper, we have to be able to look at the data.

We have to know whether it's feasible or not.

Dr Mike T Nelson: And the data may be manufactured.

Dr Ben House: Yeah, but I'm thinking about like my friends, I'm thinking about myself. Like if I'm looking at papers, I think there are tools that you can use and heuristics that we can use to be less dangerous when we're looking at papers.

And that's Seeing like always taking the route of the null hypothesis, always taking that as your mainframe. And I think where we see people get in trouble as they're taking results out of context, generally in a direction. And then on top of that, they're, what I see most often, hashtag autophagy, you have to hashtag intermittent fasting is they're taking a clinically, like a clinically insignificant finding.

That may or may not be statistically significant. And then they're overselling it way past it's in. And so they're taking a mechanistic finding and then overselling it into the [00:09:00] applied literature. And so I think that's where this really goes wrong. And where you could be, potentially go less wrong, I think, is if you're erring on the side of the null and you're looking, so how I was taught to, when I download the actual paper, the full paper, the first thing I was taught to do is not read anything.

Don't read anything. Go right to the figures. Go right to the figures and then before you read the introduction, before you read the discussion, before you read any of the interpretation of the data, go right to the methods section. And so then, so that's how I would really, if I'm going to coach someone up on how to read a scientific paper.

Is look at the figures first. Are the error bars overlapping because then, and then you still have asterisks there because that's immediately like you and I've talked about that. One of my favorite things to do with Tommy is just show him graphs and papers that he's never seen before and then have him look at them on the

Dr Tommy Wood: spot.

Dr Ben House: And we'll probably do a little bit of that today. And would you agree that's probably a better way to look at [00:10:00] things and then, perhaps provide some people with tools so that they can know when they're being duped by the figures.

Dr Tommy Wood: Yeah, I'm a big fan of going to the figures first because I think that if you can't make a really clear figure, if you can't basically understand the main results of the paper by looking at the figures, then the authors didn't understand the data or they've had to do some kind of serious manipulation to get to the point of where they thought they could say something about it.

And like this gets harder. When you're talking about omics, the gut microbiota we can get into, we will get into that as well. But if you can't understand the data from the figure and then all I look at the figure and be like, hang on a second, that doesn't quite seem right. And then like line up with the methods.

If you can't do that, then like at that point, you're probably like, yeah, this is probably not a great paper to really hang my hat on.

Dr Mike T Nelson: Would you create your own hypothesis in your head then, Ben, both like maybe a hypothesis and a null hypothesis for people are just [00:11:00] starting out in this process after looking at the data before you go any further?

Dr Ben House: Yeah, I would the things that I'm looking at when I look at the figures as I'm looking at what are the standard deviations compared to the, what's the error? What's the variance in the data? And so that's like the first thing I'm looking at does this data even look, make sense?

And then the next thing I'm looking at is what is the clinical significance of this data? Cause a lot of times we'll see this, like with blood sugar control, diabetes, like fasting, blood sugar went down by one and then there's, yeah, there's a variance of the data of five and you're just this is statistically significant, but like in the real world, like this meant nothing.

And this is what with the glycemic index is you get a meta analysis of the glycemic index versus glycemic, like low glycemic versus high glycemic. And then you're not even controlling for fiber at that point. A lot of times in these meta analytic reviews. And then you see the glycated hemoglobin goes down 0.

15. Like Tommy, how excited are you about a glycated hemoglobin going down 0. 15?

Dr Tommy Wood: Super unexcited.

Dr Ben House: But then this gets taken by the [00:12:00] popular media. They're like glycemic index. Oh my God. And so that's, I think the, those are the main heuristics that I use is looking at the data, looking at the standard deviation compared to the numbers.

And then I better know if I'm looking at those data, at that data, I better know What is that thing that they're measuring? What are the values of that thing that, that they're seeing changes in? And a lot of times, like Tommy said, like when we get into omics data, I don't know what those things mean.

I don't know. I don't know what MRA, MRNA content I don't know what's normal. I don't know if, I don't know what changes are even significant when we're looking at these types of these, the data that we don't know as well.

Dr Tommy Wood: Yeah, that actually that reminds me. So that exact example, actually multiple examples you've made come together.

I remember like one paper, which was like made a big deal of by something, like fasting or autophagy guru. And there was like, it took some people and they had some before and after and they did some fasting. And then they said that fasting increases autophagy, right? That's what you expect.

Now, [00:13:00] you're like, fine. So what was the data that they actually measured? So they took blood samples. And from those blood samples, you have some cells, white blood cells that, have a cell nucleus, right? And then

make, they're making some mRNA to make some proteins, right? They're turning on some genes.

And what they saw was just like the mRNA. So the expression of a gene that leads to a protein that takes part in the autophagy process, Was increased, right? That is not the same thing as increasing autophagy, right? I

Dr Ben House: know that paper and they also broke it down. They collected blood in the AM and the PM and the significance was only in the AM, not the PM for the genes.

And I was just like,

Dr Mike T Nelson: And they were fasting the whole time.

Dr Ben House: Yeah, it was wild. It was like, so I, the other thing that I think we need to acknowledge with statistics and with study design is fishing with dynamite and be hacking. And so like you throw enough stuff in the hopper. And that's what happens with a lot of these population data sets [00:14:00] is you got to, you got a grad student who's just going to mine it.

And if you throw a thousand things into, if you throw a thousand independent variables in you'll get something that relates to your Dependent variable and then if you don't actually have to show your stats, you can you can fudge that so P hacking and then and data phishing are potentially big deals But when you know what those are you can see it in the paper, right?

Tom, you might like it's pretty evident when someone's doing that.

Dr Tommy Wood: Yeah, I think so and it's usually And so there's this big philosophical debate that's still going on. It's, it's been going on for decades and it's still going on, which is that should we be adjusting for the number of analyses we're doing?

Should we be like adjusting for multiple comparisons, we call it. And the reason why we do that is say, so if your P value is 0. 05, that's what you're going to say is statistically significant, what that means is that. If you're below 0. 05 is that this is the percentage likelihood that your null hypothesis is actually correct, right?

And so that's five percent and it can get much lower than that But what you're saying is if the five percent [00:15:00] level is what you say is significant then if

you do 20 tests one of those just by chance 20 times five is a hundred percent just by chance one of those could be significant even, and it's just by random chance, right?

It's not a meaningful effect. So you can adjust this, right? You adjust the P value down based by, based on how many comparisons you're making and some people say, and it depends on what you're trying to achieve. So if you're trying to say, yes, there's a real meaningful connection between these two things.

There's some causality here. Then it is really important to start doing that because. You're trying to make a meaningful statement that may affect, clinical treatment or something. If you're just looking for signals, people would say you shouldn't do it because you're trying to generate hypotheses that then inform future studies.

And that's fine too because you don't want to do what we call type 2 error, which is basically reject or, accept the null hypothesis when it isn't true, right? You may have been

Dr Mike T Nelson: throwing out data. By air, right? You may have thrown something out that was actually a thing you [00:16:00] wanted to know about.

Dr Tommy Wood: Yeah, exactly. There is something here, but because you did so many other tests, you like corrected for it. And then you actually eliminated what is actually a meaningful like connection. And so that's an important thing too. So it depends on the type of study, what are you trying to say?

So metabolomics often you're just like you're just like looking for something. And so I actually just published, it just came out this week a paper and it was metabolomics in a brain injury model and the statistician. And so we were trying to look for markers of brain injury. And the statistician I worked with was like, I'm gonna bump her only correct.

So that's corrected for multiple comparisons She like bumper only corrected like as much as she possibly could like 120 different comparisons. She made it almost impossible to find any meaningful things in there just because she like she set the bar super high and that's I think that's important some people might say maybe you lost some important connections there But if we're trying to say This marker tells you about brain injury.

You need to be really careful about what you go looking for. And so I think that's something that we really have to think about is, is that taking part in the

paper? [00:17:00] If they're measuring a hundred different things, have they taken that into account?

Dr Mike T Nelson: And I think your point about what paper are you trying to design and then what is your follow up, right?

So if you're not correcting for things, but you're just looking for quote unquote Associations as more of a pilot study Then by definition you would need a follow up paper to say hey, we found X Y Z Do X Y Z actually really end up being anything? But I think people take that paper that's maybe just looking for associations wasn't heavily corrected You And they're like, Oh, they found these three things.

So they, they have to be, Oh the paper said it's significant. So they must upregulate autophagy or brain injury or whatever. And I think that's where people make an error. Cause they forget the context and the limits of how the study was actually designed.

Dr Tommy Wood: And that's something right. That, and this is what I mean, like when you take in the context and the methods and the data and the analysis, if you don't know that, how do you know whether this [00:18:00] is something you should be Like making a big deal of or not

Dr Ben House: And I'll say Tommy and I have talked about another really fuzzy gray area is so so what I'm the, one of the data sets that I collected is we had a hundred freshmen in, at the university of Texas, thousands of dietary recalls to get this data set.

We had MRIs, we had NAFLD risk. We had microbiome, just a huge sampling of data. And that, that data set has had now, I think eight papers published on it. Every one of those papers. Has had Bonferroni adjustments or used MANOVAs. But, they have not used MANOVAs for the entire we're not talking They haven't used the MANOVAs for the entire data set of all those papers published.

Which is like It's just weird, fuzzy gray area, right? Yes, there's They're doing

Dr Mike T Nelson: subsets of it, correct?

Dr Ben House: They're all using the same data set, but different subsets of that data set. Got

Dr Tommy Wood: it. It's so you blow that up, you think about some of the NHANES dataset, right? National Health and [00:19:00] Nutrition Examination Survey.

Thousands of papers have come out of this one dataset and yeah, within a, within one paper, you may do some adjustment for multiple comparisons, but have you adjusted for the fact that You have now looked for 10, 000 things from one data set. Look, and nobody's, multiple adjusting for the fact that a thousand other people have made a paper out of this same data set.

And it's just this really weird philosophical question that I don't think anybody's really adequately answered. And so the vast majority of stuff we're finding in there could just be by random chance.

Dr Mike T Nelson: Yeah. Yeah. And I, you're, even your manufacturing data made me have a flashback to when I Doing my PhD.

I got farmed out to the epi department because I needed my third paper. I had done it, but the results was to the standard deviation was too high. So I couldn't publish it. I was doing looking at FMD. So flow me to dilation, doing ultrasound on the arm. And anyway, I couldn't, my advisor said I couldn't use the data.

So I had to find a third paper, [00:20:00] go to the epi department, helped him with all this data collection, looking at people exercising on a treadmill and standing versus seating, all this stuff. So I get all the data. I spend four months organizing the data, analyzing next, which just reams of data. I do the analysis and brought it to them.

I said, Hey, when we did the analysis, we split them into the two groups, We found something that was significant. And so the day before the meeting I have with my advisor to show him this, I started again, going through all the raw data to make sure I did everything correct. I'm like, yep, everything's right.

All the rod. I started looking at all of the data now, all at once, like back to back. I'm like, wait a minute. What the hell? Like this, how do you get this much of a jump in this guy to here, like between trial one and two, but not two and three, and I started looking at stuff. And I was like, I don't know if I trust this.

Something is weird. And so I went all the way back to my the guy I worked with and said, give me all of the raw data, like everything. Cause it was encoded

in folders. So you don't [00:21:00] know who the subjects are. And I started looking at the folder numbers, and they didn't put it by number, unfortunately.

They put it by initial, which you're not supposed to. There was four people in this study that had the same initials. So I had two SS's, I had two LL's, I had two and the data between those four subjects got transposed. And the funny part is after I got all the right data, got the raw data, redid everything for the next three months, initially with the quote data that had been transposed between a couple of people, it actually was significant.

The data, when I put the correct data in, which took almost like two months later to do was not significant. So I had to go back and tell them that, Hey, this data, I rechecked everything. It's actually not significant. And in my head, I'm like thinking, this is great. I corrected it. Ooh. Yay. Is me. And they're like we can't publish it now.

I'm like, what do you mean you can't publish it now? This is, I'm, I need to graduate in eight months or I get nothing. Like I need this paper. [00:22:00] I did the right thing. I went back. I redid all the analysis. It's novel. It's never been published before. We just didn't find an effect that we thought we would find.

They're like, no, that's not sexy enough. There's no journal that's going to publish it. And so I was like horrified twice, once by, I, I did the thing of correcting it. Cause I spent a night sleeping on it. Oh my God, I got to look at this again. It doesn't seem right. And I corrected all of it and in the process, it cost me a paper and almost my degree, which is just weird of how often.

That's a

Dr Ben House: major, huge, major problem of science. Yeah. That is one of, I would say the biggest problem with science is that, you're talking about most major researchers have drawer fulls of null findings.

Dr Mike T Nelson: Exactly. Yes. So how many people are going to redo this again? And to me, I was like I don't care is what we found is what we found.

Yeah. As you guys know, like how many, and I can't remember the stat, but if you look at all the studies that have been published, how many of them are basically no, no findings? [00:23:00] It's by far way less than statistically what you would expect. So that means exactly what happened. It goes in a drawer somewhere, doesn't get published.

And that's just like the end of the story. Move on to your next study.

Dr Tommy Wood: This happened multiple times during my PhD. And I, I did actually manage to get something out of it but we had, so we had an injury model that I studied mainly in my PhD and we'd always have a control if we're testing new therapies in this injury model, we'd always have a control injury group.

So an untreated group. And then we have a control therapy group. So we, so like we'll control both for the amount of injury and for a standardized well understood therapy. And then we'd have a third or fourth group, which was some other therapy or combination or something. And we did this, I did this experiment, this model every week for three years.

And, sometimes we would get back a result and. The either the injury was less than we'd expect or the treatment, the control treatment didn't work. And we were like, Oh, this experiment didn't work. We'll repeat it when that happens [00:24:00] 15 times. You're like maybe this is like a real thing.

Maybe this is part of it. And so maybe it's maybe sometimes a treatment that we think is really significant has this big effect. Maybe it just doesn't have an effect. Maybe that's an interesting thing we need to actually look at rather than just throwing this data out. So actually eventually I did what I call a meta analysis of all of our experiments.

So every time we did, we had the standardized injury standardized treatment. We just took those two groups and just look like how variable is the response? to this standard therapy in the same lab, people doing the same experiments, the same treatment, right? And it's super variable, right? And so we got to a point where if you want to, then I said this in the paper eventually, which was, if you want to understand the true effect size of a treatment in this model, you need 200 rats per group.

And most people are doing eight. I'm publishing it and saying that this is a meaningful result or not. And that's just not true. It's just

Dr Mike T Nelson: because like how often, even in like body comp and stuff, like we're looking at the same idea. Like how often do we hold up [00:25:00] some variable and we don't even know how variability it is.

We found this out years ago, looking at what your extreme responders, non responders to training and stuff, and think of how many studies, if they would

have just looked at actual published of the raw data, you're looking, Oh, six people here, like two bastards up here. And one guy who actually got weaker and smaller during the study.

But if you don't know stats and you don't know what you're looking at, and you don't have a chart of all the raw data, it's super easy to miss how variable exactly to your point, the intervention or whatever it is, the. thing that you're even doing.

Dr Tommy Wood: And this is where I remember there was a, I once had a t shirt which said friends, don't let friends make bar charts.

And for this exact reason, right? Because so say you're trying to, you're looking for people responding to a certain diet or a certain training protocol, right? If you just have a bar chart with a mean and standard error of the mean before and after either body comp, either some kind of lean mass or fat mass or [00:26:00] whatever it is you're looking at.

You can look at, you can find what's the average effects. But maybe nobody actually had that average effect. Maybe you had two groups of people, low responders and high responders, and somewhere in the middle is the mean, but actually nobody had that average effect. And it doesn't your end result doesn't mean anything to anybody.

So you need to have the individual data and say, like, how do individuals respond, and how do we figure out that's the interesting question, how do you figure out who's gonna respond in a certain way, rather than what's the average effect.

Dr Ben House: Mike, can you let me share my screen right now? Cause I, I can, I'm going to never,

Dr Mike T Nelson: I always push my limits of how I can do this, but I will try to figure it out here.

I can make you a host and that'll do it.

Dr Ben House: Yeah. Or you can simultaneously allow anyone to share screen.

Dr Mike T Nelson: Yeah. So you're the host now, so you should be able to,

Dr Ben House: all so I'm going to share my screen, see Facebook. This is but what about if your friend makes this bar graph?

This is a [00:27:00] waterfall plot from that really famous Gardner study.

Dr Tommy Wood: Oh, yeah. Yeah. Yeah. For those on audio, Ben, you're going to have give us the audio. So

Dr Ben House: You can go to the famous 2018, I think now Gardner study out of Stanford. And this is the most recent low fat versus low carb study.

This is the diet fit study. Okay. And so you can dig into that study, which is really fun. And they all, the raw data isn't online, but you can find these waterfall plots and these waterfall plots are weight loss by subject between the two groups. And so Tommy what do you take away from this?

Dr Tommy Wood: Yeah, so this is actually right. This is technically a bar chart, but each bar is an individual. So I'm okay with that. Cause you're giving each and each person's data. And what you basically see is that the pack, so on average, like the vast majority of people, 80 percent of people just looking at quickly lost weight.

In both the low fat and the low carb groups and then maybe 10 percent gained weight and the pattern it's huge [00:28:00] people like ranged from losing 30 percent of body weight to gaining 30 kilos, bro 30 Sorry okay. Yeah for me that would be the same but

So yeah, so losing 30 kilos to gaining 10 kilos so like losing close to 60 70 pounds to gaining 20 pounds, right? But most of them are in the loss, but like literally there are people everywhere along that line. So like each person lost a fraction of a kilo less or a pound more. And the pattern is basically identical in the low carb and the low fat group.

That was one of the best parts of the study is that literally like the response is identical and the variability response is identical to the two different dietary approaches.

Dr Mike T Nelson: So why do you think the variability is so high then

Dr Ben House: On the Garner study? They're free living.

Dr Mike T Nelson: Yeah. Yeah. That's my thought too.

Dr Ben House: Yeah, the Garner study, they're. Free living. This is diet. This is a dietary by study. This is, so my, I immediately see that those plots, I'm like, what is going on [00:29:00] in the mind of the people that lost 30 kilos on each side of those diets?

It's they got to think that this. Low fat or low carb, they gotta think it's absolutely magic, right? And then you think about that other and all of these people exist on social media that, that whole spectrum exists. And then what about the person who goes on Vegan or gains 20 pounds over this entire with a dietitian helping them?

It's crazy.

Dr Tommy Wood: You've seen those there are some people, particularly the anti low carb, People like I'm thinking of one in particular I don't know if they spend as much time on social media as they used to but basically they went low carb and gained weight and got super mad about it and then just like It turned into their life's mission to try and say that like that low carb is bs and we should nobody should do it or whatever and that's probably why they were that one person who went low carb gained weight and were like I just don't know what's going on anymore and they got super mad about it and that essentially crafted their entire social media platform

Dr Ben House: This is another problem with people looking [00:30:00] at bar graphs, right?

Is that you're looking at means. And I think a lot of people who are, maybe we would call them science adjacent they don't really understand what a mean means.

And that this is, That's why the VEUM trial out of AJCN in 2017 was so cool because they had all their individual graphs on what happened on a low carbon, low fat diet, and everyone lost weight in that study.

Everyone. But the cholesterol changes. We're crazy. Like you had, like on average, the low fat group had lower, they, their cholesterol dropped on average, but there was one dude who went on a low fat diet, clutch all went through the roof, like 60 percent increase. And then on average, the low carb group was a higher fat there.

Their cholesterol went up a little bit, but you still had folks who their cholesterol went down in that low fat group. So I think it's, And Tommy or

Mike speak to this is that this difference between means and individual responses is [00:31:00] a really big deal.

Dr Tommy Wood: Yeah. And that's where I think we get into trouble when we then say that something like the meta analysis is the gold standard.

Because the meta analysis looks at something called the SMD, the standardized mean difference, which is basically all it's looking for is over all of these studies, like weighted in different ways, like different populations, whatever. What's the average mean difference between the two groups?

And yeah, you can say Low low carb diet makes your LDL cholesterol go up on average a small amount. But, within that, within all of those studies, you had some people where it went up a huge amount, right? Probably giving your cardiologist a heart attack. And some people where it went down a load.

And you, when you say the meta analysis is the pinnacle of all research you lose all of that human variability, and that becomes a problem as well.

Dr Mike T Nelson: Yeah. I just think that when you're dealing with something as complicated as humans, the, I don't think we understand the amount of [00:32:00] variability very well at all, period.

And when you look and start looking at the individual data, it's just fascinating to me, right? It's how you'll see. Seven people go down here and two people up here, one person up there. And if you're assuming it's not a practice or how the data was, taken or anything that it's real actual data, I always just wonder, I'm like, huh what are the differences between there?

And then you think to how many sort of pretty significant scientific discoveries have been made of why is that person? Different to me. That's a more interesting question just for me personally of if everything is true, the data is accurate, it is what it is manufactured or collected in air.

You can replicate it. That one person who is significantly different than everything else, like what the heck is going on with that person? And again, but that's not a question. I think a lot of time that is rewarded in academia, when you want to publish a mean, and you want to have like this, I don't want to say standard your publication, but.[00:33:00]

I think sometimes those questions are harder to answer, but I don't think there is rewarded as well by the system either.

Dr Ben House: I think those are the questions that if you actually work with real humans, those are the questions that you care about most, right? Exactly. And

Dr Mike T Nelson: if you work on a one on one basis, that's what you care about.

Dr Ben House: You care about so I see a meta analysis that has no finding, and I'm like, awesome. Everyone else is they're angry about it. I'm like, awesome. Because now I know that on a one to one basis, I'm after just finding match fit. And so all I'm trying to do is I'm trying to find the match fit for this person, whether that's some types of intermittent fasting protocol, whether that's frequent eating doesn't really, whether it's low carb, high carb, I don't like, if you don't have nutrition and exercise, they get really cool.

When you don't have sacred cows and you're not putting everyone, like you have some potential pillars that you're standing on, but other than that you're really, you're surfing and trying to figure out, Oh, what, given my [00:34:00] experience, what could potentially be the potentially work for this individual who was in front of me,

Dr Tommy Wood: I think that another thing that's really important to remember, like whenever we're applying anything to an individual you're taking some information that was gotten from a group.

on aggregate, right? And so all you're doing ever is playing statistics literally ever, right? So say you have this disease, right? Let's talk about statins and heart disease. We don't want to talk about the actual numbers, right? But it's a common drug. People take it, to reduce the risk of heart disease.

Or, the class of drugs when you do a randomized controlled trial for statins, right? You treat some people with placebo, some people with the treatment with the treatment. And then you see the response and on average, like people who take statins, they're at risk, they reduce their risk of heart disease.

But you have something called a number needs to treat. How many people do you need to treat for one person to benefit? [00:35:00] And it is never one. It is sometimes 10 or sometimes 50 or a hundred. And the statin treatment is somewhere in the latter end of that, right? So you're playing

Dr Ben House: a bet. You're saying to save one heart attack, we'd have To save

Dr Tommy Wood: one heart attack, you're going to have to treat 50 people.

It's going to depend massively population to population, drug to drug, but it's in that ballpark. So just if you're trying to improve somebody's body composition or their strength or something, any kind of performance metric, you're going to have to apply the same thing to a group of people so that one of them sees that benefit.

All you're doing is playing. You're always playing statistics. You can never guarantee that one person is going to respond to one thing in a certain way.

Dr Mike T Nelson: You're just trying to, I call it, just stack the deck a little bit in your favor. Instead of taking the latest craziest harebrained thing that, buffed Bob posted on Facebook, you're [00:36:00] trying to actually read research and say, okay, this may not be directly applicable, but based on these studies, I'm probably better hedging my bet.

In this direction. And then like Ben was saying what is the response of that particular individual? And then getting further and more granular with that over time as you figure out what works best for them as an individual.

Dr Ben House: Yeah, I think protein intake and muscle hypertrophy is a great example of this, right?

So we, could you gain muscle eating 0. With a great training program? Possibly. Could you gain muscle eating 1. 6 grams per kilogram with no training program? Probably not. Probably not. So there's this hierarchy of needs. Like I would probably take suboptimal protein intake.

I don't know. I actually don't know. I don't know. I would take. And what is an optimal hypertrophy program, right? For that individual. So you get in this land of optimal good enough. And I think a lot of times in the nutrition sphere, we think that our thing [00:37:00] matters so much, but really it's most of the time nutrition is probably just like this checkpoint and then it's other variables that are going to be your major driver fat loss is the, is really the different one there where nutrition is probably your linchpin.

Being in a caloric deficit, but otherwise where I see it, I have a PhD in nutrition and I see like people they think that the nutrition thing is the one ring to rule them all. And it blows my mind that nutritionists think that you can maintain muscle mass in a diet. Just by eating protein when it's clear that has zero effect

without exercise Like it doesn't matter how much protein you eat if you're not fighting gravity You're going to lose 20 to 30 percent muscle on average

Dr Mike T Nelson: Yeah, but that also shows that responses are not linear either Right you're dealing with non linear systems that don't respond as predicted because we assume that If 0.

8 was good 1. 6, that's got to be like twice as good. It's no, you may have hit that part of the curve where it may not [00:38:00] even matter that much. And at some point it's going to flatten out. At some point it's going to go down, but that's harder because we humans want to think linearly and think in that fashion all the time and extrapolate linearly into the future too.

Dr Ben House: It's the protein. I don't think there's a better place to talk about this than protein, right? Because it seems like the people that would potentially need more protein are recap athletes. Because that makes sense mechanistically, right? You're tearing you're building up or people on anabolic steroids because you are using, you're building up a lot of protein machinery or myofibrillary protein synthesis.

And so those folks would probably need the most protein. And that's, we have four recomb studies. We have Han study. We have long lens study. We have Bill Campbell study and all of the studies that have found recombing are generally higher protein. gram per pound. So 2. 2 grams per kilogram. And we don't actually [00:39:00] know this is cool.

Cause we don't actually know 1. 6 to 2. 2 in that recomp scenario. So now I'm on the fence. If I'm going to use higher protein, it's going to be in that scenario. And where I'm actually not going to worry about it is an advanced trainee. Who's probably making mediocre gains if they're lucky that are immeasurable.

And so there I would be, I would probably be less concerned, especially if they're in a slight excess of calories. So it's really interesting that the people that care about this probably are the people that don't need to care about it as much.

Dr Tommy Wood: So talking about immeasurable gains let's talk about, let's talk about Paoli's paper.

Dr Ben House: First, first, I have to tell you that one of my favorite people in the world his sport is how big you can be, and he can't even be put on the Dex. He can't even be Can

Dr Mike T Nelson: we guess who this is?

Dr Ben House: No, we don't have to say his name. But he had to be, he had to be Dexed twice. He had, like a pretty,

Dr Tommy Wood: Did he put an arm in?

And then put another arm in and then one leg

Dr Ben House: half and half like they like the dexter printer. He had to be printed twice

Dr Mike T Nelson: I think that means he already won [00:40:00]

Dr Ben House: Like when you can't when you can't be measured for the thing that you're trying to get I think you might have won

Dr Tommy Wood: Yeah

Go

Dr Mike T Nelson: ahead

Dr Tommy Wood: Oh yeah, no, I was just gonna talk this is a recent paper that Ben should introduce, we've talked about it a lot, but it's basically if we're thinking about body composition, which obviously the three of us think about a lot how are you measuring that over time when you're then looking at some kind of intervention?

And again, this comes back to the idea of does what we're measuring mean what we think it does? And in this particular study, I don't think it does. Which basically makes the entire study Completely pointless.

Dr Ben House: I would say that the study's not completely used to stop me. I'm going to, I'm going to, I'm going to argue just a little bit.

And so this study recently came out. It's a keto gain study in, in nutrients. I have no idea how this thing got past peer review. I like Tommy and I have zero idea how this thing, I don't know how it got past review. I don't [00:41:00] know. And so this is, this study has been taken, I Think out of context by both camps.

And so this is a gain study. Let's just like the backdrop of this study, the positives of this study, Tommy, or an effort from my, probably if they didn't give me heights. So that's one of the problem I had to estimate enough of my based on like normal. people. So I put them at 510. And these dudes had an effort from my around 24.

So they're, from a study population, this is a very trained study population. The

Dr Tommy Wood: title says they're competitive natural bodybuilders. So they've got to be like reasonably jacked.

Dr Ben House: They're jacked. Like anyone who's a 24, like you, you get them down into 10 percent body fat. Like these dudes are jacked.

These dudes like they're filling out their the board shorts. And so like they're also pretty they're 86 and they're around 90 keys. So they're 118 probably 180 to 200 pounds somewhere in there. And so that's the main positive of the study. The other positive of the study is they ran, so It's essentially ad libitum from a dietary protocol.

They [00:42:00] gave, they wanted to, they assigned them at 45 K a cow's per kilogram of muscle mass based on the energy availability studies. And so these are all good points in the study. We're giving them some love here. And they're eating their self reported data. And again, was around 3, 500 calories for both groups.

Both groups have, they're eating they're eating a substantial amount of protein at 215 to 220 grams. So the, they equated protein between the two diet groups. So that's there's some other positives study, but that's about where the real positives end.

Dr Tommy Wood: And so they split them in two groups, right?

They have a Keith Janet diet group and a Western diet group, right? So they're looking at the effects of these diets on body composition over, was it two months, eight weeks?

Dr Ben House: Yeah. This is an eight week study. So the problem there is. I don't even know if you can see gains in this population in eight weeks.

That's like square one. If you have a 20, if you have a 24 F for my, I don't know that, I don't know that you can pick that up. Like with any, with MRI,

[00:43:00] I don't know if you can pick that up on eight weeks. Would you agree, Tommy and Mike?

Dr Mike T Nelson: Yeah, I really pushed it.

Dr Ben House: Yeah. I think you need 16 to 20 for sure.

I think unless it's some type of novel training program that they have never done before, but even then I would be worried about inflammation and edema.

Dr Mike T Nelson: Yeah. Water and edema.

Dr Ben House: Because if it's, I, they'll probably go away in eight weeks, but you'll see a lot of these like shorter ones that are four.

And if you put a novel training protocol on them, I don't know if you, I don't know if you're, I don't know if you're getting rid of those waters those water games. And so eight weeks, guess my guess, how much control they had over training link you, you would think a lot, right?

Dr Mike T Nelson: I'm judging by the tone of your voice.

Not much. I would hope it was controlled, but zero

Dr Ben House: control over training. Not only did they have zero control over their training, they did not even collect data on the training. They, we don't have, we don't have anything. So you can't even like

Dr Mike T Nelson: retrospectively report what they did. [00:44:00]

Dr Ben House: No, we don't have the difference in sets per week for the groups.

We don't hit, we don't even know what the hell these dudes were doing there. We just know they're natural competitive body lifters who are lifting. We don't know if they changed their program. Like they said not to change their program, but like we, again we just have no idea. So the main variable, I would say the main variable in making gains As a, an advanced trainee is your training protocol.

Not what the hell you're eating. Like it's not as long as you're

Dr Tommy Wood: eating enough and enough calories. I don't know. Yeah. You're somewhat sane. Yeah.

Dr Ben House: And so both of these diets check the boxes in theory for me, for body composition changes, they're eating enough protein and they're potentially eating enough calories.

I think there's, I don't know, like it depends. There's. It looks like they're depending. We don't have step counts on them either. I think they're 3, 500 calories sounds about right to be in a slight excess, but again, if someone's getting 12, 000 steps, 14, 000 steps, maybe not. And so I was really excited when I saw the study come out, came out, come out.

Cause I, this is a very interesting question, both Tommy and I is can you make gains on a [00:45:00] keto approach? And I would say, yes, I don't think there's any reason that you, if you can get an excess of calories, which is going to be difficult, right? Cause you're going to be drinking oil of some sort. If you can get an X, if you can get an access of calories and I'm not pro keto, I'm just like fucking pro science.

And so if you can get, if someone wants to do it, if you can get enough protein and you can get enough calories, I think you're going to replete glycogen in 24 to 48 hours. I don't think that's going to be too big of a deal. And so if you're doing it, if you manipulate your training protocol, I think you can, I think you can gain, I think you can make gains.

And so this is this paper is going to be taken out of context by people who are very pro carbohydrate. And so The body composition analysis on this paper was biome peanuts on eight weeks. It was research grade biome peanuts. Tommy, what do you like? You have any, let's talk about these markers for body composition.

Do you have any hope for what they found here? Just tell me a little bit.

Dr Tommy Wood: Yeah. So what they did found is that actually overall [00:46:00] body weight stayed the same. In both groups.

Dr Ben House: So they gain tained, if anything.

Dr Tommy Wood: Yeah. Gain tained. Gain tained. And things start to get a bit squirrely just when you like, look at the overall pattern.

So the keto guys Supposedly lost fat mass statistically significant. It was like a kilo or one and a half kilos or something.

Dr Ben House: Yeah. They lost almost four pounds, three and a half pounds of fat on, on a biome penis on a, whatever they were using,

Dr Tommy Wood: but they didn't change fat free mass and they didn't change overall body weight.

Dr Mike T Nelson: So where did it go?

Dr Ben House: Boggles my mind because , this is where we not like, this is where you need the individual data because the ketogenic group went like these standard deviations are so large, right? Like you can't even tell what's going on because you got a ketogenic group of people. of going from, what is it lean [00:47:00] mass went from 76.

5 kilos to 77 kilos, but the standard deviation on both those markers is 12 and 11. Like you have absolutely no idea what is happening.

Dr Tommy Wood: Yeah. And it's not that, that, that can't be normally distributed data because that would tell you that the smallest guy has 50 kilos of lean mass.

Go, if you believe the standard deviations of the data is normally, which it can't be, that can't be the case. Yeah. Immediately you're not presenting the data in a meaningful way.

Dr Ben House: And they did it Shapiro, we, they used it in over repeated measures.

Dr Tommy Wood: Yeah, but that's assuming the data is normally distributed.

Yeah, it's probably not normally distributed. It's probably not normally distributed. Probably not normally distributed. You probably got some outliers one way or the other. So they

Dr Ben House: had, they have to do tests right? To, they have to do that. I call it the clock off test, but it's not a clock off test.

Like I remember having to do all those tests, like where, if it's normally distributed or not.

Dr Mike T Nelson: Yeah. It should have done tests that said if it was normally distributed or not. And it should have been flagged in that Correct.

Dr Ben House: After testing, yeah, after testing for a normal distribution. So

Dr Tommy Wood: it says that they did it.

Whether that's true or [00:48:00] not, it would suggest that shouldn't be the case because like somewhere these guys are losing or gaining some mass that isn't accounted for by the lean in the two compartment.

Dr Mike T Nelson: So would that suggest the error in the body count method then because your error is just so wild there?

Dr Tommy Wood: So this is the main, this is the main point. There's some other things that they talk about, the statistically significant decrease in insulin from 2. 2 to 1. 8. Ooh. Come on. That doesn't, you're just like, within the range of that doesn't mean anything. But equally then that's in the keto group.

But equally, when, so there are other papers, where you compare, say, bioimpedance, to MRI or dexer and at a single point in time, they line up pretty well, right? But when you're looking at body comp changes over time, bio impedance does not track it well compared to MRI as the gold standard, right? Like the error [00:49:00] rate is 3 to 5 percent maybe and when you're looking for a 1 percent change in body comp, right?

A 1, 1 kilo gain.

Dr Ben House: Let's talk about this. Like what, like divide, somebody divide 1 by 77. It's got to be,

Dr Tommy Wood: like 1. 14 or something.

Dr Ben House: So even best case,

Dr Tommy Wood: it's 1. 3%.

Dr Ben House: So that would be, I think best case scenario in this, like talking about an advanced trainee gaining 2.2 pounds of 2.2 pounds of muscle in eight weeks, that seems pretty crazy to me.

Dr Tommy Wood: They must have been, like, they must have been a sig either dramatically changed their caloric intake or their training program.

Dr Ben House: The other thing that I get mad about all these gains programs is adipose issues two to 7% protein. Eventually, you gain enough fat, you're gonna, if you're using a dexa, if you're using any not MRI or ultrasound, it's gonna look like you're gaining muscle because you're [00:50:00] putting up more protein on the body because adipose tissue has some type of protein.

And so the problem, the ultimate problem with this study is that it's going to be taken out of context in that you cannot gain weight and go on a low carb diet,

Dr Tommy Wood: lean weight. You can't gain lean.

Dr Ben House: You can't gain muscle. You can't that's how this study is going to be taken is you can't gain muscle on keto.

I think it's probably pretty hard for an advanced trainee to gain muscle on keto. Do I think that someone can do it? Yes, I absolutely do think that it's possible. And And I'm not, like I said I'm not pro carb. I'm not anti carb. It's just this study cannot answer this question in how it's designed.

And that's the problem is like people who are anti keto are going to take this and say that, Oh, another nail in the coffin. You can't make gains.

Dr Tommy Wood: Because so the Western diet group technically statistically significantly gained some lean mass, whereas the keto guys didn't, we can also talk

Dr Ben House: about that.

Let's talk about that.

Dr Tommy Wood: Yeah. And this is the thing, right? So if you're doing right, there was no [00:51:00] information on or not, wasn't really standardized how, what was the setup before? The bio done. You said they were fasting. They were,

Dr Ben House: I would guess they had some type of control.

Like we don't have a specific gravity on 'em. We don't know how hydrated they were, but I would guess it was probably fasting early in the morning.

Dr Tommy Wood: And, but this is where and people have talked about this again, the literature of the fact that it didn't come up bothers me. Is that to make a direct comparison for impedance.

You're going to have to make sure that they are hydrated in the same way, which if you've been depleting carbohydrates for eight weeks has got to include some kind of carbohydrate refeed to read. I

Dr Ben House: think you need to stab them to be honest. Like I'm like, cause that's the problem with the Wilson study is they refeeded them and shit went wild.

I think you just account for glycogen. I think you have to have a

Dr Tommy Wood: biopsy.

Dr Ben House: I think you have to have biopsy data in these samples. I think you have to have biopsy data. With the, with, I think that's the only way to do it. I think you've got like a fiber size difference,

Dr Tommy Wood: son. But you're also going to have to account for liver glycogen [00:52:00] because that's going to be like.

Dr Mike T Nelson: If you're using body weight in total. Yes. Yeah,

Dr Tommy Wood: my because my guess is at this point, right? Yes, they probably gonna maintain most of the muscle glycogen They probably won't be super saturated like the Western diet guys could be to an extent But you're gonna like liver glycogen is gonna mean it's gonna be hugely variable between the two groups

Dr Ben House: So we got to stab him twice like you got to get stabbed in the liver, and which is way less fun than, so you got to get, like if we really want to answer, I'm like, if we really want to answer this question guys it's going to take some needles, it's going to, it's going to take, it's going to take a small needle into the vastus lateralis.

Maybe give me a delt or a bicep and it's going to take a big needle going after that liver biopsy. I think that's, if we want to answer it, I think that's what we got to do.

Dr Tommy Wood: Which is why, and so then which kind of comes back to the whole point, which is that what are we I, I appreciate your positivity, Ben, but what have we learned from this study?

Dr Ben House: We've learned, we have learned one thing. We have learned [00:53:00] one thing that's interesting to me, and that is that there were no strength differences. And so they both groups increased strength without any type of, without any type of knowledge of the program. And another one that was interesting, another finding to me that was interesting that was not talked about is the reps to failure of the keto group did not go down.

Dr Mike T Nelson: It did not go down.

Dr Ben House: It did not go down from time point to time point. So those are like, those are two interesting findings to me. Like their main finding is completely ludicrous. Don't care about that. Let's take out all your nonsensical data that you use that you weren't, that wasn't cool. And we can make a new paper.

If you put highly trained individuals on a ketogenic diet and you do not manipulate their training at all, and you test them later for strength and repetitions and failure on a bench press and a squat. They do all right, like that, that that's a publishable paper. I think that's a publishable paper.

And I think that adds something to the literature. This other part, I think that takes away [00:54:00] from the literature that we have. And I think it confuses people.

Dr Tommy Wood: And you did see some, like some, I'm now looking at their lipid profiles, like in the ketogenic group, like their cholesterol went down. A little bit.

Their triglycerides went down a good chunk, like 20, right? I if you're working with it's unlikely that you're gonna have somebody who trains that hard with that kind of body composition where you have to worry about their metabolic health, right? But if you did have to do that this is some way you could potentially manipulate some of that, right?

Okay, there's some potential benefit there.

Dr Mike T Nelson: I had a question. If we do stab them, right? So we stab them at the beginning of the study, let's say just the vastus and then we stab them at

the end. We could look at glycogen. We could also look at potentially fiber hypertrophy, but that still wouldn't, if we're still using the same methods they did for total body, that still wouldn't answer the question of how much total mass did they gain, right?

Unless there's a way of scaling fiber up to a full body level [00:55:00] that I'm unaware of.

Dr Tommy Wood: Yeah, it

Dr Mike T Nelson: would answer part of the question, but it would not like, so the average person on the street, they'd want to know, okay, so if I do this approach, am I going to gain one to two pounds of muscle or not? You know what I mean,

Dr Ben House: from a relative

Dr Mike T Nelson: specific question?

Dr Ben House: That gets into the really the nuts and bolts of body composition

Dr Mike T Nelson: and

Dr Ben House: it really gets into the actual term of muscle hypertrophy, which we cannot say someone is actually having muscle hypertrophy from a dexa. Yeah. We cannot actually say that we don't know if it's, we don't know if it's fiber volume.

Like we don't know that it could be sarcoplasmic. It could be these other chambers within muscle. And Cody Hahn wrote a great study on that of what are we actually calling this thing? And I love the kind of, there's a summary statement in that paper. And it's maybe we shouldn't be calling hypertrophy.

Maybe we should be calling it. Getting more bigger, right? You just got bigger. That's all we can say is you got bigger. Great. Good job. Carry on my son. And so I think that's what I would use those biopsies for [00:56:00] would just to be too like, cause the Volick paper in 2016 blew up and blew my mind.

It completely blew my mind in that these keto adapted endurance runners had, were not statistically different in their glycogen at resting state and their glycogen replenishment eating. They got a, they, when they gave them

strawberry cream shakes without strawberries like it was artificially flavored strawberry cream shakes.

No, no carbohydrates, like three grams of carbs versus a carbohydrate drink. They actually repeated glycogen similarly to the other group. So I would use it almost like as this check and balance of is glycogen even lower in that group? That's what I, that's what I would primarily be using that biopsy for.

Dr Tommy Wood: You you would just use it as a variable. As a co variant. Yeah, as a co variant. Yeah, exactly. That makes sense. And yeah, it was just then you can just, accounting for variability in glycogen, which we think there may be some variability in muscle glycogen because in the FASTA study, the VERDICT study you're talking about, right?

These guys have been eating [00:57:00] keto for like 12 to 18 months at least. Long time. So they've maybe had longer to adapt to this process. Whereas eight weeks may not be enough to do that necessarily. We don't really know the time course of that adaptation fully. Particularly for glycogen replenishment, say.

There may be some difference between the two. I think liver glycogen is going to be a bigger deal than muscle glycogen. But yeah, you would just say, if we're trying to see whether the diet affects lean tissue gain, You have to, and this is how you're measuring, this is how you're measuring lean tissue mass or size.

You, you have to adjust for glycogen content in some way, even if it's just a statistical curve area.

Dr Ben House: Yeah, I think you would want, if we, let's, I think if we design this with the statistical analysis that we would want, right? We would want a four compartment DEXA, a four compartment with a DEXA, probably a BODPOD and we'd also want ultras, I would want ultrasounds too.

And so that would be like you could this ideal study. And then with the glycogen stab, and then you could really start to say, okay. [00:58:00] And then looking at individual data would be the most, I think that would be the most important. Looking at individual data would be the most important because you really just care about how many people make gains at this point.

Because this is an efficacy trial. You're not worried about the mean making gains. You just care about if fucking somebody can't at this point. At this point, we just even if it's two dudes, like even if it's two out of 18, like somebody make gates somebody make gates.

So it's it's not impossible. It's not cause the, and this is the one thing that I love about social media is cause people take untenable positions. They take undefendable positions. And when people take undefendable positions, it's very easy to potentially get them off of that pedestal because all we have to do is All we have to do is show that it's possible.

And at this point, for Keto, all we have to do is show that it's possible in the published literature. And I don't even think, I don't even think it matters because I think the Wyss has shown this with Keto gains. Like he's showed it, [00:59:00] he's shown it definitively that it is possible. And I just feel bad for the guy because he's got to, he's got to deal with this fucking study.

Dr Tommy Wood: Poor bastard. To be honest he's just, you can't gain mass on, on keto. Luis's biceps really do disagree with that. There you go. Case in point. That's as good as a reputation as you need, really.

Dr Ben House: Yeah. Do I think it's going to, do I think it's going to be difficult?

Do I think it's going to, do I think it's going to be more difficult to make gains as an advanced trainee when you have a restrictive dietary approach? Absolutely. Because the limiter on the nutrition side is that like you talk to anyone in this camp, eating 3, 800 and 3, 800 calories isn't even that much eating 4, 000 calories on repeat per day.

It's terrible. Like it's, it sounds really fun, but it's not. But let me just tell you like your subjective reality changes and like your jaw hurts and you just you're just tired. Like it doesn't matter what it is. Like you're using every part of our built food [01:00:00] environment, which is like hyper palatable food.

You're just trying to like, to not hate food. That's we talk about this all the time. It's you're literally periodizing your appetite and you're like you're taking breaks from eating. Like you're taking, you're not taking refeeds. You're taking anti feeds, like you're taking like, you're taking like maintenance breaks.

Cause you're just so tired of eating.

Dr Mike T Nelson: Fasting sounds appealing again. Oh, thank God. I don't have to eat any food. I don't have to cook it. I don't have to do anything.

Dr Ben House: It's like we were having this talk with, we were having this talk with Eric Collins, and it is you're using the opposite of everything that you would use for weight loss maintenance.

Dr Tommy Wood: Yep.

Dr Ben House: And so weight loss maintenance, one of the keys is being active, right? And high step counts, high flux. And so you may want if you're really about your gains, you may, maybe, you, you may want to dysregulate your appetite by sitting on the couch and not having any movement snacks for a set period of time.

Do I think that is the best choice for your health? Absolutely not. But if your main goal is to make gains and break the dexaprinter

Dr Tommy Wood: Are you partially saying that's even harder on a restrictive diet just because you have fewer [01:01:00] tools? Less options.

Anything, any, like plant

Dr Ben House: based, let's think about that. Like plant based, you're going to show your pants.

Dr Mike T Nelson: You're never going to stop eating. You're going to be eating like 24 7.

Dr Tommy Wood: I'd argue the same for keto because it's going to be bulletproof coffee and chugging heavy cream. And that also has some pants based problems.

Dr Ben House: Did you just say pants

Dr Tommy Wood: based problems? Yeah.

Dr Ben House: I think both of them, you're going to run into GI disturbance. I think both of them, you take those, you try to make gains on those with those dietary restrictions, and you're just going to, you're going to get up into 80 to 100 grams of fiber, which most people don't do well.

And if you talk to people in the bodybuilding camp like I'm talking like real bodybuilding camp. You have some crazy shit going on. You have people, you have people taking rifaximin prophylactically. And people who know what that

is will that will blow their mind. In that they are legitimately thinking, they're knowing that because their calories are going to go up so high, they're acknowledging that they will likely have SIBO like symptoms.[01:02:00]

And it just comes with the territory.

Dr Tommy Wood: Joe, this reminds me the first time I ever really knew anything about competitive bodybuilding, I read an interview with Jay Cutler in some like random magazine in the UK, like I know 20 plus years ago, and he was talking about his dietary protocol, like leading up to a show.

And he was like, all I eat is tilapia. And all that comes out the other end is fish oil.

And like this to Ben's point, like at some point, this stuff is going to happen if you have to work that hard with how you're eating.

Dr Ben House: It just gives, and we've talked about this is done between all three of us is eventually if you take everything, anything out to his extremes, it's going to be, it's going to be probably necessarily unhealthy. And you take any goal, you take it far enough. And that's where you ought, you honestly have like the blog, you have the healthless fear in the health bloggers [01:03:00] who are like, I made that last statement.

And they're just like, Oh my God, I can't believe someone would actually do that to their body. Yeah. You don't understand how you don't understand extreme performance then because you just don't understand what it's like to chase something that hard. And I'm not saying that's healthy. I'm not saying that doesn't, Potentially lead to a ton of outcome, identity based issues, right?

But that's what somebody wants to do.

Dr Tommy Wood: Yeah, it's not good or bad. You just, I think the only thing that you need is an understanding of the risk and benefit, right? Yeah. You've got it. The upsides and downsides, then you've made a, you're an adult, you've made a decision and that's what you want to do.

They're great. All power to you. You should do whatever it takes together. If you're willing to do it.

Dr Ben House: And so Mike and Tommy, I have a question for y'all. So if someone is going to try to gain Tain or recomp, what. What would you, if you're

trying to collect objective data, what would be the objective data that you care about in that scenario?

Fairly trained individual, or maybe even untrained individual. What would be the data that you would want to [01:04:00] collect?

Dr Tommy Wood: I think you need you need an accurate measure of training volume. And I would also want either objective or subjective measures of performance and fatigue, right? Because if somebody has a huge amount of volume, you can definitely have a negative effect then if you over train in terms of your ability to gain, we think that, right?

Then you're going to have a very accurate measure, I think, of intake. total and individual micronutrients and then a very accurate body comp measure, including, so probably MRI, if not also biopsies and ultrasounds

Dr Ben House: My worry with MRI, like I have the same worry with MRI that I've had because I've, we've gotten, I got to run a hundred MRIs.

You'd have, I don't like, it's the marking. It's the same. It's the same.

Dr Tommy Wood: I

Dr Ben House: think you're going to run into the same problem. Cause you're going to have to [01:05:00] put some type of like. Some type of air bubble to mark the spot on the leg or the arm where you would want to cross sectional it. So I think you're going to run in the same problems that I see with ultrasound is how do you know you're in the same spot time point to time point and that's where like Brian and I have legit talked about tattoos.

Dr Mike T Nelson: That's what I thought. Just put a permanent mark on their leg or something like that. If, it's not going to show up on MRI, but if you're doing an ultrasound.

Dr Ben House: You could put something else there that would spot it on an MRI. Like that's not an issue. You just need the spot. And so I'm legit thinking like when we run our bro research hypertrophy studies for real, our longitudinals.

That might be, I'm gonna have a tattoo artist. I'm like, are you, how in are you? How in? You

Dr Tommy Wood: just go you think you're like mid thigh, just like a tattoo, a black line. Yeah.

Dr Ben House: Yeah, you gotta do a black light around around the whole thigh, though. Cause I don't just want I don't just want masses of analogs.

Cause the angle of the cross

Dr Tommy Wood: section is gonna matter as well, yeah but I think,

Dr Mike T Nelson: there has to be a [01:06:00] gauged RNR on an MRI for body comp, isn't there?

Dr Ben House: Yeah, I think it'd be alright.

Dr Mike T Nelson: I have to look now. I'm just trying to think of what the error percentage would be on MRI. I'd have to, I can't think of a

Dr Ben House: slice.

Like what's the, what is the millimeter of the slice?

Dr Mike T Nelson: No, just like you're bringing, like Tommy comes in every day, like Monday, Tuesday, Wednesday, Friday, same operator, a different operator. Let's say even the same MRI. And we just put him in the machine and say, figure out his body comp.

Dr Ben House: I don't even, I don't even know if we have that.

Dr Mike T Nelson: That's what I mean. I don't think that data,

Dr Ben House: I don't think that data exists, but I think there's going to be user error there as well. Exactly,

Dr Mike T Nelson: but it would give you an idea of what about, what percentage you're dealing with. They're

Dr Ben House: laying down. That's the other thing. If someone's laying down. So I think in an MRI, you're only getting, because you're going to get you'd have to flip them over.

Because you're going to get ham, you're going to get hamstring squishiness. On the backside. What about, [01:07:00]

Dr Tommy Wood: is there, I mean it must be but equally that's just gonna push out, right? That muscle doesn't go anywhere.

Dr Ben House: Yeah, you just need volume, you need a volume

Dr Tommy Wood: measurement. This is volume. Yeah, but don't, there's, isn't there software to do most of that already?

Yeah, you just,

Dr Ben House: yeah, you just mark the, you just mark the circles and then it calculates all your volume measurements. Yeah, we did that for NAFL and stuff. But there must be a point,

Dr Tommy Wood: we must be getting to a point now where, like basically software can identify, yeah, it can auto detect the border issue compartments automatically.

Dr Ben House: Yeah, you have to check them because sometimes it will like, yeah it'll get phantom stuff. That's what they use. That's what we use for NAFLD because you have to, you essentially have to section the whole liver and there's a lot of sections.

Dr Tommy Wood: So like this is, I don't so if you're doing like an n equals one, what does it take to see an increase?

Yeah, this is always going to be a problem, like what's the error in the measurement always? But you solve a lot of these problems by just running a decent study with enough people in it. If you have enough money. [01:08:00] Yeah. And so part of the reason why you should have big group sizes is to overcome some of this variability.

And yeah, it doesn't help you on an individual basis. But and you should have a measure that you can actually detect the size of the difference that you want which isn't bioimpedance for this. But yeah, that's the way to deal with your problem.

Dr Ben House: It gets into the point of the people that care about this are the N of 1, where it may not be fucking measurable.

Dr Tommy Wood: Yeah,

Dr Ben House: That's the craziest thing about is like the, I don't think that you can know, like at this point, if someone's fairly advanced, I don't think that you can, you gotta, yeah, if you gain a ton of muscle, you're going to know but gaining. Gaining a kilo on your whole body,

Dr Tommy Wood: you can't measure that.

Dr Ben House: That's going to be like, I don't know what, how you measure that. I just don't, and measuring your fat. So how most so if you think about an ultrasound or a caliper, measuring your fat and then using your body weight to essentially reverse compartmentalize it there's no way that's going to work.

Dr Tommy Wood: [01:09:00] But then equally, where does this really matter? If you're talking about like absolute mass, just in pure mass, we're talking just bodybuilding, right? Because for most other sports, it's going to be a performance component. But then in bodybuilding, there's a huge aesthetic and prep component, right?

Where actually you probably don't care whether you know whether you exactly gained a kilo and where it went, because that other stuff is going to make a much bigger difference in terms of how you place in your comp, in your competition.

Dr Ben House: So here would be my answer to the normal individual who doesn't have an MRI.

Here would be my answer is you track fat via an ultrasound or via a really good caliper system and you try to push the shit out of the scale. So you track fat, like you track fat at seven sites and if your fat isn't going up.

And you have everything else consistent, like your macros are consistent, your training volumes consistent because these, a lot of these people are robots and your scale weight is going up on a weekly average.

[01:10:00] I think you're making gains. I think it is. That is the best. I think that is the best way to do it. And so without having all these, without having all this tech and I think ultrasound fat measurements are pretty foolproof. Like I have, we have two of them at bro research and they're not pressure dependent.

Like you can push the fat. It doesn't change that much that you can. It's like the cross sectional area on an ultrasound is really sketched to me. Cause that's, that has a lot of, that has a huge pressure component and a huge water edema component too. So like you'd have to, you'd have to either do it the same time after training.

Or you'd have, if you're, or you'd have to make sure that your hydration status was the same, but the fat component of those, the sub Q fat now, then you run in I'm, I've thought, I think I've thought of most of the downsides of this. What if you gained visceral adiposity? Then you're fucked. Then I don't know you've just gained visceral fat and we can't measure it.

Yeah, I'm sorry. I'm sorry. I'm sorry if you got an apple because you're trying to make games.

Dr Tommy Wood: But wait, if you, you [01:11:00] can do waist circumference. So visceral fat. I would probably say you can measure reasonably well on a DEXA.

Dr Ben House: Damn, so we need a DEXA. Sub Q measurements.

Dr Tommy Wood: But then also waist circumference is a decent proxy.

It's not that for visceral fat. You're not going to be able to tell if it's going up by a quarter of an inch. And that could be postural and other stuff. So you'd probably have to gain a lot of visceral fat for waist circumference to really move.

Dr Mike T Nelson: It'd be a check at some point, though.

If you're up like an inch or two, then you're probably like, yeah, unless you just ate too much crazy food the night before.

Dr Tommy Wood: Yeah. But you could definitely do abdominal fat on a Dexa. And that's probably going to be pretty close. So

Dr Ben House: for pale, for this nutrients, pay all these paper, I actually would have liked to some of skin's holds more than a bio impedance.

Dr Tommy Wood: Yeah. And just so it's a body weight.

Dr Ben House: Cause some, if if there's some of the skin folds stayed somewhat similar and the, their body weight went down. We know they didn't you didn't [01:12:00] make games. You just, you didn't make gains. You didn't make gains. You haven't there's no way.

Dr Tommy Wood: But what, okay, so body weight goes down, sum of skin folds stays the same, but couldn't you then just make it up? Yeah, water and glycogen.

Dr Ben House: You still need the biopsy, Steph. You still need the biopsy. It's, so this is where people showing me their in body results is not in body results are somewhat impressive, right?

If you've lost 40 pounds. And you've gained 10 pounds of muscle.

Dr Mike T Nelson: Yeah, you have a big change.

Dr Ben House: We'd all agree that was real. But where I see people going crazy is they're trying to track like these minute gains over times where I don't think this technology can actually measure this stuff.

Especially in little people. Ugh, if you're a, if you're a hundred, if you're a hundred, if you're a hundred and thirty pound if you're a hundred and thirty pound female, like, all of a sudden you have to see you gotta, you have to see, I guess the, if you're [01:13:00] just doing it off percent here, but I think that it's also probably gonna work a little bit better if you are bigger.

But I could be wrong on that. How do you, how do y'all feel?

Dr Tommy Wood: At this point, yeah, I don't know on that, I don't know. And

Dr Mike T Nelson: I don't know how it scales. I would imagine that it. Yeah, I don't know. I would imagine a smaller person be harder to detect, but that's just a guess.

Dr Ben House: I think it's going to be really hard for us to get for me to be friends with the in body people and give myself a deal though.

I think that's going to be really hard at this point. After this entire podcast, I think that I've lost my sponsorship. Damn it.

Dr Mike T Nelson: Yeah. I can say, I looked at a lot of in bodies from another group I worked with and 40 percent of the time, cause we do serial testing at some gyms. And I would say maybe 40 percent of the time I spent more time talking to him off the ledge of about a 0.

5 percent change than anything else really, because of it, and it annoyed me to no end because a lot of times the gyms wouldn't set it up. People wouldn't get the instructions. So it's like at three in the [01:14:00] afternoon, people are just wandering in and you're just, Oh God, this is going to be a disaster.

Dr Ben House: Oh, yeah. If you don't control for hydration status and the amount of chicken breast, you throw that thing out. Like that's square one. If you're not controlling hydration, they have to be, they have to be fasted and not drink anything, or they had to be fasted and drink a set amount of water and the only way this, those tech, the only way they have a fighting chance in that particular scenario without big types of changes, without huge changes that are going to overwhelm the noise.

Would be that specific scenario. Managing all the electrolytes and they also, I would say they have to be really consistent on their body weight scale. Cause if someone's life is chaos and you're going in body to in body, good luck. Like just, I think I don't even know what you're going to see.

Cause I don't know how those bio impedance, I don't even know how those equations work. But I don't think it's going to be good.

Dr Mike T Nelson: Yeah. In practice, I use body weight a lot. I tell them just each morning, get up, get on the [01:15:00] scale just because I want, I used to do it only one day a week, but exactly for all the stuff you guys have mentioned, like they would go out Saturday night and they'd do their measurements Sunday morning and it would be skewy and then it's four pounds up.

And I don't know if that's a real difference or not a real difference. And then they're mad. And so I'm like, just get on every day. We can see a little bit of variability. We're just looking for trends over time. How's your performance? Transcribed Yeah. I haven't grabbed some circumference measurements it's rough, there's pros and cons of that.

And, if they're really competitive, send some pictures and yeah, probably about the best they can get without getting too fancy, I think.

Dr Ben House: Yeah. At a certain point it's do you look better?

Dr Mike T Nelson: Yeah.

Dr Tommy Wood: Yeah. I think that's right. The majority of people isn't that isn't that the metric? And then there's some subjectivity where like maybe they feel better because they're sleeping better and training better and then they may look the same, but to themselves, I think they look better.

And that's a win too.

Dr Ben House: Yeah. The only real thing that matters is perception. Like that, like this, it's all it's all that matters. And if [01:16:00] your sport is say completely aesthetics, you could just get better at flexing. And that could be the world of difference.

Like you could have the same amount of muscle mass that you have before, but you're better at showing it. You're better at the illusion. And yeah it's I think that it's a, it's the really cool question overall, but I think that it's a question that we are failing at in the research literature.

I think overall, I think that this is a question that I have I haven't seen a study that has had a good, in advanced trainees that has had really good body count measurements That I would, go to the bank on in males, and maybe I'm wrong about that. Maybe I haven't looked at enough that have an FFMI of 44, 24, 25 as males, probably females, that would be 21 to 22.

And they're long time points really solid body composition age analysis with hydration status. I think they're, I think they're going to come out. I think that they're just really hard studies to run. And Nobody wants to pay for them because the questions like this is it's a very nuanced [01:17:00] question So

Dr Tommy Wood: then you say you think they're going to come out like where is that going to come from?

Where is somebody going to invest in? the time and money and the population and find the people and get the right measurements and have somebody care enough to pay for all of that.

Dr Ben House: They'll be attached to supplement company. I think it's going to, it's going to come from a, it's going to come from some type of supplement research company.

I would guess that's how it'd be back ending though. That would be my hunch, or it's going to come from us three finding some people and doing some stuff or other groups like us. Like other groups that just want to, because of these questions are interesting to them, these questions, these studies aren't that expensive.

Dr Mike T Nelson: That's the equipment. Yeah. Yeah.

Dr Ben House: Like the only thing that's expensive is the measurements, right? The it's time it's an M it's having access to an MRI device. So you'd like. I've met, and Mike's met some of these people too I've met somebody that has MRI in their basement. I he's got a, he's got an MRI three, three, he's [01:18:00] got an MRI three floors deep.

I I meet that guy, and like, all of a sudden, maybe this is gonna happen. So there's, it's not unheard of.

Dr Mike T Nelson: It's possible.

Dr Ben House: It's possible. It's possible now. Is it is it a good use of funds and time? That's why I would probably argue

Dr Tommy Wood: To be fair the vast majority of federal and private funding in science in my mind is completely wasted on garbage science.

So this would be no worse.

Dr Ben House: This is maybe a great way to close this out, Tommy. Is that I am so tired. Of I guess you would call them two armed studies that compare different types of dietary advice or different types of dietary strategies. I'm so tired of them.

Like it doesn't, you're all we're going to see is like these isocaloric isoprotein studies. Like all we're going to see is we're going to see a positive finding and then we're just going to see just massive no findings [01:19:00] come after it. It's just I don't know What Mike talked about in earlier, like finding match fits for people is so much more interesting to me than does this work better than this thing?

I don't care

Dr Mike T Nelson: as a

Dr Tommy Wood: practitioner.

Dr Mike T Nelson: Yeah.

Dr Tommy Wood: Yeah. But now you're basically talking about Kevin Hall, who's probably spent a hundred million dollars of taxpayer money trying to figure out whether the insulin, the carbohydrate and insulin hypothesis of obesity is correct or not. And to be honest, which it isn't right.

And we knew that. But that doesn't mean that people can't lose weight on low carb diets. Like, why would you even care that much? What you care is the output in the individual, rather than wasting hundreds of millions of dollars. I think he has,

Dr Ben House: even though he's spent hundreds of millions of dollars, I think he's still found some interesting things with processed food.

And, but I'll give you his main outcome is completely unappealing to me. What? It doesn't matter. His main outcome doesn't matter, but the most recent one that just got all the press, like it's [01:20:00] an interesting finding that people still gained weight on an energy dense, low carb diet. That's very interesting to me that on an ad libitum, low carb diet, they still gained weight because of energy density.

Dr Tommy Wood: Yeah, exactly. So I'm going to tell you the setup, Ben, and you're going to tell me what we're going to find. We're going to put people on a low fat diet. A low carb diet, it's gonna be ad libitum. The low fat diet has an energy density of 1.1 calories per gram. The low carb diet has an energy density of 2.2 calories per gram.

Which group is gonna eat more and gain more weight?

Dr Ben House: The low, like anytime.

Dr Tommy Wood: Yeah. Anytime you have higher energy density, we knew that was gonna be the answer and it's got nothing to do with whether carbs in the diet or not. It's just yeah. That, so he, that is a waste of money.

Dr Ben House: A complete waste of money.

Yeah. That had to be controlled for. Yeah. Wow. Yeah, that's true.

Dr Tommy Wood: That's what makes me mad. That's that, that, that study probably, there's probably a, an NIH U01 cost 10 million,

Dr Mike T Nelson: but how does that even get if you go into [01:21:00] anyone, not anyone, but people and say, here's my setup, wouldn't that be like a monster red flag to someone looking at the study before you even start and be like, Hey, bro,

Dr Ben House: I'll take the stance that's real world.

Dr Mike T Nelson: Yeah, that's true. I'll

Dr Ben House: take the

Dr Mike T Nelson: stance that if you're arguing that,

Dr Ben House: like I'll take the stance that like, this is what people do when they find these diets. This is I'll take the stance like this is what happens when you watch game changers This is what happens when you read gary toms This is what this is.

This is what you do And this is because that in and of itself is interesting to me and that honestly like when you don't that's where you can make the argument that not controlling for these things in study designs May actually be more interesting than controlling for them.

If you're looking

Dr Mike T Nelson: for external versus internal depends on what you're looking at

Dr Ben House: Yeah. Like real world findings, like the intermittent fasting stuff, it'd be really interesting if you, if putting you in an eight hour window, if that just [01:22:00] spontaneously made you eat less calories. Eat

Dr Tommy Wood: less. Yeah.

Dr Ben House: Yeah. Like that's a much more interesting finding than, Oh, if I put you in an eight hour window, if I control for everything, is there going to be a difference in body composition? No, there's not like there's no, like we have hundreds of years of research that says that's not going to be a thing.

There's nothing magical. If we control for activity. And then you get into the studies that have controlled ISO protein, ISO calories, and then they didn't have step counts, or they didn't control for activity. And then you're like, Oh, wow, we didn't control for this other thing. So we don't know what it is.

It's really cool. It's just fun. I don't know.

Dr Tommy Wood: Yeah. The low carb thing you're right. This is, and this is the problem. It is more of a real world scenario. Because when people go Keto, they're like, Great, sausage patties and heavy cream, here we come. And then they wonder why they can't lose weight.

So yeah, there is a it's the sort of effectiveness versus efficacy and that is a better, it's a better idea of effectiveness because that's more of a real world scenario.

Dr Ben House: And you saw this too, like you, you just see it with every diet, is [01:23:00] eventually, it happened with paleo, eventually you just let, you just get rib eyes.

And then

Dr Tommy Wood: everything turns into cookies. It happens like

Dr Ben House: The vegan diets. Great. And like the vegan diet is I think is the hardest diet. Paleo is shitty. Paleo is really easy. It's hard to you can be micronutrient division and be paleo for sure.

Dr Tommy Wood: But

Dr Ben House: Vegan is just hard to do well, like the restrictive nature of vegan vegetarian is fairly easy to do well, but vegan is just pretty tough.

And to do it well now, can you do it? With supplementation? Yeah But when you go that's why I think we're seeing this big movement towards plant based or at least a year ago It's because if you go that restrictive your energy density of your food is going to go down

Dr Tommy Wood: Yeah,

Dr Ben House: And you're going like that the ad libitum So let's talk about because y'all what is the benefit of ad libitum low carb?

Dr Mike T Nelson: You're talking about a compliance standpoint

Dr Ben House: Yeah what's what's the benefit if I take a normal person and add a little bit of low carb what's the benefit? [01:24:00]

Dr Mike T Nelson: My advice is just usually you're assuming that your compliance would be better because you're eating things like high fiber, that type of thing.

Dr Ben House: On low carb?

Dr Mike T Nelson: Oh, are you saying low carb or high carb?

Dr Ben House: Low carb.

Dr Mike T Nelson: Repeat the question again, maybe I misunderstood it.

Dr Ben House: So on low carb, what would be your you're taking a western diet and you throw them on low carb, what would be your main benefit of doing that?

Dr Tommy Wood: So you've removed a lot, you've removed a lot of processed foods.

Yeah. A lot of processed carbohydrates. And so you're restricting, to start with, any restrictive diet results in caloric restriction on average because You just remove a number of food choices and you eat less because you have fewer options you can make up for it eventually right with your keto cookies.

But that's one but then low carb You're more like there was

Dr Ben House: a keto pizza. I went in the store yesterday. It was a keto pizza. Really? Yeah It was chicken and egg whites as the crust

Dr Tommy Wood: I stole your recipe tommy. That's

Dr Ben House: my recipe. I

Dr Tommy Wood: make that it's called smart pizza. So [01:25:00] 55

Dr Ben House: grams of fat.

Dr Tommy Wood: Oh, no, so so I so chicken breast Chop it up, like grind, cook it and grind it up, add a couple of eggs, a little bit of parmesan, and then you flatten that out and bake it, and it turns into crust, and then you can add some tomato sauce and some meat and a little bit of cheese.

It's basically 80 percent protein, it's magical, but it's like close enough to real pizza that it's fine. Hey, what were we talking about? Yeah. Pizza. A low carb pizza.

Dr Ben House: It's just amazing to me that all of these approaches just turned into pizza. Like all of

Dr Tommy Wood: them. I'll make you my chicken pizza. You'll be able to go down a storm in your house.

I'm in,

Dr Ben House: it'll be

Dr Tommy Wood: great. Yeah, sounds good to me. Yeah. Everybody else.

Dr Ben House: So Mike, you want to wrap this thing up? I'm giving Tommy and I've hijacked you. It's completely hijacked your podcast. No, this

Dr Mike T Nelson: is good. This is a, [01:26:00] this is what happens when scientists nerd out.

But no, I think it was a good discussion that if nothing else that people are still listening and their eyes and ears glazed over entirely. Just to realize that There's always more nuance. There's always another level you can go. And a lot of times in defense of people who do studies, if you email them, or you can have a discussion with them, a lot of times they are aware of some of the limitations, not all of the time, but especially when you get into methodology, differences of, Hey, you did a time trial versus the right time to exhaustion, or you have to pick one way versus the other.

And a lot of times it just comes down to resources sometimes. And that doesn't, that's not giving them an excuse to get off of the hook. There's probably better ways of doing things and do your time, do your research, try and get the full study if you can. And I think also it's, Probably used to just think about who is your filter because as much as we'd love to sit around and think we're hopefully [01:27:00] educating people to do better.

And hopefully some people will do that. Probably the sad reality at the end of the day is people are still going to go to whoever their quote unquote expert is, but maybe they'll have a little. better questions for their expert to answer now and some red flags that may show up to cause them to do some further inquiry.

So thank you guys so much for being here. Greatly appreciate it. And Dr. Tommy, if people want to find you, or if you prefer to stay hidden, what is your choice?

Dr Tommy Wood: Yeah, people can track me down on Instagram at Dr. Tommy Wood. And if they really want to listen to Ben and I go deep. Yeah,

Dr Mike T Nelson: plug your course.

Dr Tommy Wood: Yeah, the bro bro research currently the main one we have is advanced blood chemistry for athletes, which actually includes loads of other stuff, gut health, metabolic health, all these other things. And there'll be a longevity course at some point soon. We're gonna start putting that together but yeah, it's gonna be it's even more of this more graphs But if you want that course

Dr Mike T Nelson: based on real data, [01:28:00] you're saying

Dr Ben House: Be like you're gonna die We actually don't get to tell you these are the things that might matter.

You're probably not doing any of them, nor will you probably do them because of so that'll be fun. But yeah, this is what people

Dr Tommy Wood: tell you to do to make you live longer. This is why that's not true. There's going to be a bit of that as well. Yeah,

Dr Ben House: cool. I think there's a lot to be said for dismantling cognitive distortions that are on social media right now.

And so I think that shortage

Dr Tommy Wood: of them.

Dr Ben House: As researcher for sure. So as a researcher, I'm now thinking in my head before even talking about the study or the study, I'm thinking about that in the study design.

Dr Tommy Wood: Oh yeah.

Dr Ben House: So pay all these paper, I would have thought about in this It's not that big a deal in research.

That finding isn't probably no scientist is going to lose their mind over that study. We're all going to be like, ah, this is very questionable. We're not going to put much clout in it. But I'm already thinking of, I'm thinking of that as a research [01:29:00] is how is this going to get taken out of context if it's a no finding?

Or how is this thing going to get taken out of context? And so that's where I would be squeamish. That's where I think we need to be better on study design and statistical analysis. I think we have, because. We haven't talked about this, is that scientists have bias too. Oh yeah. If you've published 20 papers on a certain thing, and you don't that's a big deal.

Even though you're a scientist, you may still have inherent bias. And so I think that as scientists, we just have to be better in our study design. And then we also have to be, I think we have to get a lot better at selling null findings. And that's my,

Dr Tommy Wood: Made me think like we were supposed to be wrapping this up and now I had a thought based on what I think is quite important, which is that, you can do science and you could do good science and we can't really get to a point where we worry so much about how it's going to appear on social media or in the media that we don't do it.

And I think this is particularly personal and we're not going to get into the whole thing, but it's particularly important [01:30:00] for something like weight based or obesity based research. And there's basically this big push now that says we can't do obesity research because it will be used to fuel weight stigma in media and on social media.

And weight stigma on those things, obviously completely abhorrent. Everybody should feel happy and healthy and sexy regardless of anything to do with their body composition or their weight. But that doesn't mean that research isn't important. And so yes, it's we should think about, how is this study going to be portrayed on social media?

But I don't think a good scientist could just stop themselves doing it just because somebody is going to abuse that. It's a tricky line to balance.

Dr Ben House: Yeah. I think you have to, how is this going to be misconstrued and then being Proactive about it in, in how you design the study, but also in how you write about it, your discussion your, and unfortunately people aren't going to read your limitation section.

Generally, they're not going to read your discussion. And also like we have to honor that in peer [01:31:00] review like for one of my papers is like I got told like my limitation section was almost the biggest part of my discussion.

Dr Mike T Nelson: Yeah, I got in trouble for that too. Like

Dr Ben House: you, you can't have a limitation section that just literally says that you're really questioning your own findings in the paper.

And I was like, I am like I am this is a cross sectional study design. And I think that under reporting with. dietary recalls. I think that was our main finding in the study. And I said that in the limitation section. And so I, I think that we just have to, we have to acknowledge this, but I think the anti diet culture is really where this lives.

And Tommy's been, he's been dealing with a little bit of this in firsthand and the canceling of research is And so we're not canceling that paper. I think that paper could be retracted. I think how it's written. It could be retracted. But that's not canceling that idea.

I guess I would say Is that's, we're not canceling an entire body of research [01:32:00] based on like an objective data that shows that this is deleterious, like this is deleterious to your health and potentially deleterious to our entire economy. But that's that's a, probably a topic for another day.

Dr Mike T Nelson: Yeah. And where can find you people find you, Ben?

Dr Ben House: Yeah, at DR Ben house. I don't really post that much. Cause it's I like Mike and I've had these conversations. It's just you got your scroll on the gram and you got two seconds to try to figure shit out. It's not going to happen.

Every once in a while I'll post some stuff on there, but not a lot.

Dr Mike T Nelson: Cool. Awesome. Thank you guys both for being here. I really appreciate it. Always love chatting with you guys. And thanks again. Thanks everyone for listening. Appreciate it.

Dr Tommy Wood: Thank

Dr Mike T Nelson: you. Cool.

Speaker 3: Thank you so much for listening to the podcast. Really appreciate it. Huge thanks to Dr. Tommy and Dr. Ben for being on here again. Give me permission to release this lost episode from, I don't know, about two or three years ago. If you're looking [01:33:00] for some ketones that actually taste good, then check out my friends at Tecton Ketone Esters.

Full disclosure, I am a scientific advisor to them and an ambassador, so I do make a little bit of denaro from it. But they actually taste really good and they use an exclusive type of ketone ester. So it's a BHB molecule bonded via an ester bond to glycerol. The nice part about that is it is really a true bioidentical molecule.

Your body will cleave that bond and you have BHB, which can be used. For fuel, it can cross into the blood brain barrier into the brain, cardiac tissue, loves ketones, muscles love it. I find that the cognition boost from it is pretty nice, especially later in the day. If I've been doing a lot of work and I still have stuff I need to get done, I don't really want any more caffeine because that will obviously disrupt your sleep.

And then the glycerol, which is the [01:34:00] backbone of the triglycerides. It's converted off in the liver, so presumably all the other funky weird stuff your body has to metabolize that way. Also check out Element for tasty electrolytes. I usually put about one packet of Element in one liter of cold water, throw some ice cubes in there, and I'm good.

Typically I like to consume at least one of those in the morning before noon and one in the afternoon. Obviously if I'm training hard, I may bump that up even a little bit higher. So check them out. Big thanks, as always, for listening to the podcast. Really appreciate it. If you could help us out by getting the subscribe, and download, and like, and if you have time, even leave us a review.

That goes a really long way into getting this podcast into more ear holes. Stay tuned for a lot more episodes coming up. We've got a bunch. Next week on the podcast we'll have the great Dr. James LaValle. talking all about nutrition and supplements and much more, and then we've [01:35:00] got a bunch more podcasts after that.

So thank you so much as always for listening. Really appreciate it. Have a wonderful day.

Hey, what are you doing? I dropped my gum. Hey lady, would you toss my gum up?

You could have taken it out of the wig first.