Dr Mike T Nelson: Welcome back to the Flex Diet Podcast. I'm your host, Dr. Mike T. Nelson. And today on the program, we've got Sam Miller. We're talking all about in depth testing, blood work, and much more. So once you've got the basics down. What type of blood work should you look at? We discuss different types of testing also.

And if you enjoy more advanced topics related to being more resilient, more anti fragile. And you've got the basics down quite well. types of testing also.

And if you enjoy more advanced topics related to being more resilient, more anti fragile. And you've got the basics down quite well. You wanna check out the Physiologic Flexibility Certification, depending on when you're listening to this, it opens early September, 2022. So best way to find more information is to get onto the newsletter, the wait list, which is at physiologicflexibility.com.

There'll be a link in your favorite podcast, viewer or player. You can go down there, put your email in and you will get all the information about the upcoming release. And I normally have fast action of bonus items for you. Also, if you're listening to this sometime after early September. 2022, you can still go there and get placed on the wait list for the next time that it opens.

You'll also get lots of great information from the, on the newsletter there also. So go to physiologicflexibility.com. If you wanna learn everything about cold immersion, sauna, and heat. High intensity interval training, different types of breath, techniques, even keto diets and carbohydrate. It's all designed via the four pillars of the ability to regulate your system better.

Or these are sometimes called homeostatic adaptations. It's a homeostasis, your body's baseline. How can you stress your system a little bit to deviate away from baseline? And then how can you get back to baseline faster? We all know that different stressors are going to happen to you, and this in my biased opinion is the perfect way to add just a little bit more, a specific training each day to make your body more resilient.

So you can get back to baseline much faster. Go to physiologicflexibility.com. As I mentioned today in the program, Sam Miller talking all about testing, everything from looking at fasted insulin, C peptide, some poo tests, and much more. So check out this conversation with Sam Miller.

Dr Mike T Nelson: Hey, what's going on? Welcome back to the Flex Diet Podcast. I'm here today with Sam Miller. How's it going?

Sam Miller: It's going good. Thanks for having me, Dr. Mike.

Dr Mike T Nelson: Good. And where are you coming at from your north of me?

Sam Miller: Correct?

Yeah. So I'm in North Carolina.

Dr Mike T Nelson: Oh, North Carolina. So not so much. I just got that mixed up. I heard north and I was like, oh, it must be no

Sam Miller: yeah, I'm north. If I'm north, if you're in South Carolina, Georgia, or Florida. Other than that I'm technically in the Southeast. So I've been here for this particular area a little over 10 years, but I came down to this area for undergraduate studies at Elon university and then made my way to Raleigh for NC state.

So a combination of Carolina schools and, I do enjoy it here, but also a couple instances in my life, which would probably be too long of a life story for the podcast. Got stuck here. And, I've been here ever since stuck here in a good way because I do enjoy it. But a few random sort of instances where maybe I was supposed to have an internship somewhere else.

And. Super random stuff. Like my car would get totaled or something it was just like, oh, you're gonna stay, you're gonna stay in North Carolina this summer. I was like, okay, gotta get resourceful. We're gonna figure this out. So I am still in North Carolina. I enjoy it. But been here since college and trained here for a period of time, did a lot of nutrition, corporate wellness as well as, online coaching, which really geographically doesn't so much matter where you are.

But it's been home for me for a while now. So I'm south of you, I think, south and from, yeah, definitely south of Minnesota, north for some and just enjoying our, right now it's not super humid, which is nice. I can get outside, get some extra steps in and stuff. But yeah, so I've been I'm in Raleigh and really enjoy it here, but fortunately was able to move online several years ago and pretty much been there ever since.

So other than bouncing around for seminars, I'm pretty much just hanging out with the dogs at home.

Dr Mike T Nelson: Nice. And how far is Raleigh from the water? Do you get to escape to go play in the ocean for a while? Or this is like testing my geography and shows how bad it is.

Sam Miller: Yeah. Probably like an hour and a half to two and a half, depending on where you wanna go.

Oh, okay. We're smack in the middle between mountains and beach, which is nice. Oh, nice to, if you enjoy that mix of activities, you you're a little bit landlocked in a way, but it's a quick escape to go either direction. So you can head to Boone or Asheville. Western North Carolina or even Tennessee, we've obviously got some nice mountains and stuff with the Smokies, or, you could head east and go towards the water.

You've got outer banks, you go north, you've got Virginia Beach. And then we've got a lot of great Carolina beaches as well, or some people are brave and they will venture down to Myrtle. Oh geez. A lot of folks from Midwest and even the Carolinas will go to Myrtle, but it's not too far.

But if you do wanna go a little bit further out, it might be three hours or so, but we're fortunately we do have that advantage over the summer if you wanna do that. So we were over in Top K not too long ago. So it is a nice perk is being able to have the both the mountains, the foliage in the fall, but then you also got the perks of, you can escape a city and go more towards more towards the beach or outer banks or something.

If you're into that.

Dr Mike T Nelson: Yeah, I've been kite boarding there in the outer banks before, which is a very beautiful, fun area. I would recommend for sure.

Sam Miller: For sure. If you're outdoorsy, it's, there's a lot to do in the Carolinas. Nice.

Dr Mike T Nelson: And today's topic. We were gonna talk about just the broad area of metabolic testing, which I know can cover all sorts of things.

And yeah. So we'll get into the weeds on some of those, because it, I'm sure your social media is worse than mine. It just appears that I'm constantly being assaulted by every new test known to man. And there's some pretty cool stuff coming out. And then there's some stuff where, when I call the labs and I asked them like, Hey, you know, this sounds cool.

What is it based on? And then they don't really ever get back to me or it's, it has a cool story, but. You look at some of the published literature and you're like, oh that's not really useful, but there's obviously a very role for it there, testing's been around for a long time.

So you can't just be like I'm just not gonna do any of it. Cuz then you're just being an idiot too. So how do you navigate the road between what is a new test that may be useful? Or it's just a company that maybe trying to do the right thing, but they're just trying to cash in on something new and sexy.

Sam Miller: Yeah. So when it comes to testing, I think we have to think first. Okay. Why are we testing? What are we testing for? And what purpose is it going to serve? When we actually accumulate the data? Now there's a separate conversation around. Is that data actually accurate and how can this benefit maybe our programming or protocol design.

And I think that's an important question. So to start with the first portion, usually we look at testing when there's information in an intake form or something related to the client's goals, where we maybe perceive that there's an obstacle of some kind, and we wanna navigate that, or we're looking to get a little bit more strategic and precise as it pertains to maybe someone's total daily energy expenditure or something that we're actually going to be impacted by when it comes to coaching the client transformation.

On the other side, in terms of the actual accuracy of testing, that's a different conversation that we can move into. A little bit later on, but I think first and foremost, you need to be thinking, okay, why would we test? And what would the benefit be of having that testing information?

And so first, when you're starting that client journey, especially from a nutritional perspective, I think it's imperative to first look at some of the basics. So things like, keeping a food journal or basic food tracking and awareness around portion control looking at biofeedback, how does this person actually feel?

How's their performance? Are they engaging? Are they able to actually progressively overload their exercise or does their recovery suck? Looking at things like sleep and digestion and their stress levels because. Using those things we can begin to identify what tests might be valuable for that person.

And if testing is even necessary, because for a lot of folks, that testing is gonna be an additional sort of out of pocket expenditure and not something that's

typically covered in their primary care, physical or whatever they're getting from their doctor on a, six month or annual basis.

So first we need to consider what might be valuable to this person. And then what particular test fits the best based on, potential signs or symptoms that they may be dealing with related to their transformation or even over overall quality of life in health too.

Dr Mike T Nelson: So if you were to drill down into one of the components, you mentioned total daily energy expenditure, how would you start to wrap your arms around just that area?

Looking at, calories in calories out at a very simplistic.

Sam Miller: Yeah. So I think when it comes to looking at weight maintenance, cause really what we're trying to achieve when we're looking at both food tracking like a food journal, or if we were looking at someone through the lens of, whether you wanna use a Mifflin equation or different multipliers or various TDEE calculators, the reason we do that right.

Is to have an idea of, okay, where might this person fall in terms of maintenance calories. Now, there are certainly some flaws with all of those and accuracy of tracking could be the complaint with the food journal. Calculators obviously have their own flaws in a sense. And I don't think you can really fully you're not gonna be able to discern someone's diet history, health, history, past eating, styles and preferences as well as exercise modalities, right?

Whether you've been doing just cardio, do you resistance train? Do you do a combination? So I think there's some flaws with. And then on the testing side, Dr. Mike and I were talking about how our DMs have this onslaught of various things, whether it's, oh, breathe into this device or , pee on this card when we mail it to your house and we're gonna unlock all of these secrets about your metabolism.

And unfortunately, that's just not really the case right now. Technology's not really there to where we've vetted those particular approaches. So I think if you were going to move down the testing front, we essentially just wanna look at baseline function in terms of your, overall physiological status quo and endocrine system.

So things like, thyroid health I think a lot of people attribute when they think about metabolism, they think about, their body composition, how they feel.

They think a lot about reproductive hormones. When in reality, while reproductive hormones do significantly impact your quality of life, when it comes to actual metabolic function, I think really we need to be paying a little bit more attention to things like thyroid insulin overall insulin sensitivity, insulin resistance, things like that.

As well as some of our stress hormones in HP access function, things like cortisol because that sort of fasted state energy metabolism. Assuming you are on more of a conventional diet, you are probably going to be activating things like cortisol, glucagon catacholamines means at times to stabilize blood sugar.

So if I'm just looking at an individual that comes in and maybe you're looking at online coaching relationship, I think the most valuable place to start is a very thorough intake form food journal. I would recommend seven days, or if you're confined to three or four, definitely get a few weekday and a few weekends because people eat differently on the weekends than they do during the week.

From that food journal, ensure accuracy of tracking, have some conversations throughout that teaching around macro nutrition or at least calories and protein. And then from that conversation, we can look at overall quality of life metrics biofeedback, perceived stress, things that are impacting performance.

And then if something's really seems to be bothering that person, or there seems to be some aberrations or deviations from their normal. Then we could seek out, some additional values. And I think as of right now, when it comes to some of those markers, I mentioned. A lot of that is gonna bring us back to serum labs, which has the most sort of clinical evidence and research behind it.

Most time tested. And when we look at various, randomized control trials or systematic reviews that have been conducted a lot of times what they're using to assess markers and changes and progress and various deviations, that's gonna come back to serum labs. So as much as there, there are a lot of other tests out there, really the exception to that might be, you could argue for using like a salivary cortisol or urinary metabolites on a Dutch test can give you an adrenal profile.

But when it comes to things like thyroid, we're still using serum labs when it comes to things like insulin sensitivity, fasting, insulin, A1C, glycomark C peptide, fasting, glucose, all of those are gonna be blood based markers. So I think that's where both as coaches and consumers, we have to be savvy in terms of there might be a lot of different ads you're seeing or.

Stuff. You're getting in your DMs about oh, breathe into this device and we're gonna completely assess your metabolism. I don't really think that's super fair. And it doesn't really give you an appreciation for just how complex and amazing metabolism and human function actually is.

And so I think there needs to be a little bit of kind of respect or homage paid to that versus putting all your stock in one of these things that maybe you can grab off the internet.

Dr Mike T Nelson: Yeah. And even if you can I'm a weirdo, right? So I have a full metabolic cart at my house , that I can use to test people during exercise, or, RMR, basal metabolism rate, whatever word you wanna use.

And even then let's say you've got several thousand dollars piece of equipment and you can do highly accurate measurements me at best. I'm only getting part of the equation. I'm generally gonna measure somebody at rest. I could do a VO2 max test. I could measure them under max exercise, but that's not gonna give me their entire, total daily energy expenditure.

So even when you have the most fancy equipment, you have to, keep in mind, what is the context and what data are you actually grabbing? And like you said, a seven day average, which is what I went to for just dietary recall. I use Cronometer. I don't make any money for them, but shout out to Cronometer.

Sam Miller: I'm a fan of Cronometer for sure.

Especially compared to the other options that are out there. We actually have an episode airing soon, specifically all about some of the advantages and micronutrient insights and different data that you're getting from plus their food database seems to have a little bit more of a verification process to it.

Yes. Where it's just about. Anybody can add a food not. Hate on some of the other macro trackers out there. There are a few big ones, but everybody's favorite are the most prominent online, at least in the health coaching and macro tracking space, there tends to be significant amount of error when it comes to some of those food entries.

And so clients are P pulling that into their food journal and it can lead to substantial deviations in terms of macro content, but also a lot of, that's not gonna have your micronutrition in there either. So then it's like a double whammy in terms of inaccuracies that can really cause some problems,

especially if you're trying to be a little bit more strategic and high level with coaching.

Dr Mike T Nelson: Yeah. And that's what I ran into. Probably I had four or five years ago now I had a series of clients, like back to back, I was using another app and they're like, yeah, I don't know. I'm hitting all my protein. Everything's great. And I'm like pulling my hair out, going, why is like nothing working this isn't making sense.

And so one day I'm like, I'm just gonna go look at every entry they have for the past two weeks. And so I'm looking at each one and I come across. Two ounces of chicken breasts, two ounces that seems low. They were hitting their protein totals. And I look over on the thing. It says 50 grams of protein.

It's what? Wait a minute. This is even remotely close. And then you realize that someone had put an error in when they entered, because you could enter a lot of your own foods into the database. The poor client doesn't know this they're entering chicken breasts or getting whatever, shows up. So they think they're hitting all their protein totals and it turns out they were hitting at maybe at 30% of, where we wanted them to.

And that happened to me a couple times like that same week. And then, so I ended up just. Switching entirely and, having to benefit of getting micronutrient profile and a whole bunch of other stuff just made my life so much better.

Sam Miller: yeah, definitely having those extra insights as a coach and the accuracy, and that's where even with some of those other trackers, if you are getting the journal, not just the macronutrient totals but if you have clients who are maybe switching over, I highly recommend there's an export feature on some of the most popular ones where you get a PDF get that PDF export, have it either emailed to you or sent over to you in whatever software you use and then really parse through that.

Because you'll notice right away, if you're familiar with portion, sizes and tracking some things will stand out to you right away in terms of red flags. Plus I just think it's a good. Exercise, not just in terms of macro nutrition, but you can also look in terms of food, quality and choices that might be affecting appetite, satiety blood sugar management between meals.

Also getting a little bit more insight from the client in terms of how they space their food intake throughout the day. So that really gives you more context for behavior. So I love that you brought up the word context earlier, because I think

anytime we're talking about testing or macro trackers or any of these different tools that we use in transformation, if you don't understand the context for which you're applying these things, you really don't have as much value.

And that's why a lot of nutrition conversation becomes very nuanced, to the particular person. But I'm glad you mentioned Cronometer and definitely glad you mentioned some of the variances that we see related to nutrition and how that can potentially show up. I know. Potential variants too.

And the reason we can't solely use, those metabolic carts and different tools you mentioned is obviously non-exercise activity. thermogenesis is such a big part of total daily energy expenditure as well as, potential exercise activity as well. And then, like you said, if they're eating, if they're tracking two ounces of protein, I think that's 50 grams of protein and we're comparing that relative to their total daily energy expenditure.

If you are actually eating 50 grams of protein from that chicken breast, your thermic effective food is gonna be significantly different than the two ounce as well. So lots of variables there to pay attention to.

Dr Mike T Nelson: Yeah. And I feel like every time I mentioned a newer app, like chronometer, I tried to refrain from doing the, back in my day, they just submitted it by handwriting.

And I had books. I had to look through to look stuff up, or I remember the first software I got was on a CD rom that was like $600 or something to do nutrient analysis of stuff. And you still had to type everything into it because I was the only person who had the license to it. And yeah, now it's quite a bit easier, but I used, I just gave my whole little old man lecture

Sam Miller: yeah.

My old man lecture when I talked to clients is so before, before we had all these trackers on your phone you could either use like nutrition data, the website and pull it and then put it in a spreadsheet. Or back in the day fit APC did have its heyday. So you would go into this online internet browser and you could pull certain foods and put 'em in there for your calorie and macro tracking.

Yeah.

Dr Mike T Nelson: Do you use daily weight at all? And look at weight fluctuations over the seven days. So what I've done is I'll use the equations to

get a rough idea, but maybe it's because a lot of the clients I have are just legitimate outliers and then I'll compare that to a daily weight, get up, use the bathroom, get on a scale, just write it down.

So I'll have their total calories for seven days and I'll have their daily weight for seven days. And then look at that along with some of the equations to get, I think, a little bit more accurate idea cuz as the equations all have a certain percentage of air and it's a compilation of this sort of fictitious average person and yeah, it's gonna get you in the ballpark, but on.

And of one, have you noticed some just kinda weird outline variations?

Sam Miller: Oh, for sure. Yeah. I think you have to look at the food log relative to weight maintenance. And first of all, that also involves some client conversation around folks who maybe either have, or have not been using the scale and people who have maybe a healthier or unhealthy relationship with the scale.

Yep. But assuming somewhat we're gonna go. Kind of the avatar that, that is able to easily sort of transition into some of this metric based stuff. The seven day food journal with an average of their weight across the week allows us to compare, okay, did we achieve weight maintenance at this calorie intake?

Assuming, we had a conversation around accuracy of tracking. And then from that conversation, we might look at predicted TDEE. And usually, the more that, that person's gonna have a chronic dieting history, the more that, that TDEE is gonna be off depending on their past behaviors. I talk about and this is something that.

I reference in my book coming out later this year is depth, duration and frequency of past diets. So the deeper or steeper that you cut the calories, the longer duration that you follow, that particular program and the greater frequency at which you're maybe pursuing some of these fad diets or making significant cuts off of your nutritional intake, that's gonna impact you when it comes to that current calculation that we're looking at.

Cause a lot of people on paper think, oh, this is my calorie burn. They don't account for the fact that their diet history and their past choices, lifestyle factors, sleep and health history really plays into that current energy expenditure as well as making sure that we're keeping.

Exercise fairly consistent. So when they are tracking that first seven days in terms of food during the intake period, usually I'm not trying to make significant changes to program design, cuz obviously that's gonna impact energy expenditures. Usually we try to keep that the same and then transition towards, okay, here's the new program and intervention based on all of that track data.

But I certainly agree that comparing food journal plus scale weight plus potential calculations can be very helpful. And then if they have anything that they can bring to me, any additional reports, any serum labs, things like that, I can begin to compare the two or three things and see what might be working and why it's working or why something's not working as a result of that based on their current sort of physiological function and how everything present.

Dr Mike T Nelson: So on. So serum labs for people who are listening, that would just be like getting blood work, right?

Sam Miller: Yeah. Super easy blood work. Or if you go to like quest or Lab Corp and they basically just do classic lab draw that's what you're getting reported for you with serum and what would be a baseline that people should get.

Dr Mike T Nelson: I'm sure you have this conversation more than I do, but unfortunately not to pigeonhole dudes, but most of the time I'm like, Hey man, like when's the last time you had any blood work? And they're like, I don't know. I'm like, do you even have a doctor? Do you know his or her name? No. I'm like, if you can't remember, then you're definitely overdue.

right.

Sam Miller: Yeah. I think especially guys tend to avoid seeing the doctor. They tend to avoid getting some of that extra testing done. And it's either it's either one of two things. It's either a no news is good news or kind of. This state of blissful ignorance or something is going on and they don't really feel right, but they're may be either shy or embarrassed to have that conversation around things that maybe aren't as good.

And either of those three scenarios are problematic because they basically lead to a lack of support, a lack of data and tracking. And I would encourage you, even if you do feel good right now, go get a baseline because five years from now, if you don't feel good, you're gonna wanna know what your markers looked like when you actually felt your best.

So regardless of whether you're in a place where we need to be doing some health monitoring for current interventions, or if we're just doing the testing to have a baseline, so that five or 10 years from now, or 20 years from now, we know, Hey, this was something that evolved over time. And here's how we get back to you feeling your best.

I think either way testing's important. So if there are guys that are potentially not getting that done would definitely encourage you to at least have some testing. Now in

Dr Mike T Nelson: terms of what testing would be a baseline. Yeah,

Sam Miller: Yeah. Even just to have a baseline and this applies to whether you're 25, 30, 35 40, whether you're a young adult or you're currently a little bit more focused on anti-aging regardless of kind of your state throughout the lifespan.

I still am a huge proponent of testing for a number of reasons, whether it's preventive or even if you are in a state where now it's become more reactive. I still think it's super important to have that testing done. And then in terms of the markers, cuz I know that was something that we wanna talk about.

So when I think about just a base. Panel that a lot of people could benefit from. We definitely wanna start with just CBC and CMP is our initial profile. So that stands for a blood count and a metabolic panel. So now your metabolic panel, contrary to how it sounds while it does give you some baselines, it's not giving you the deeper data.

So we do need to go beyond the CBC and CMP. Now when it comes to the other tests we might wanna consider, we talked a little bit about insulin sensitivity earlier. That would be things like in your CMP. You're gonna have fast blood glucose. We might wanna go beyond that and get something like an A1C.

We might also wanna get fasting insulin. Those are gonna be good markers for assessing, okay, how are we doing both in terms of our energy intake and overall energy availability, if energy intake or calories are in excess and This could vary from person to person in terms of their intake.

But if we're living sedentary, lifestyle standard American diet, we will move towards a place of insulin resistance, prediabetes, metabolic syndrome. And that's a huge problem that we have in the United States and Western world right

now really involves that sort of disease progression towards metabolic syndrome.

Now, other markers we might wanna consider would be things like our thyroid hormone. Most of the time, if you go to your primary care physician, they're only gonna draw TSH. I really like to see TSH as well as free T3. If you can get TSH free T4 and free T3, that's great because we see the communication between the brain and the thyroid itself, but also what's going on downstream from the thyroid gland production of thyroxine, and then the conversion into free T3, which is actually what's acting.

The receptors and basically just think of that as your metabolically active thyroid hormone. In addition to thyroid, we probably wanna look at things like vitamin D just because it is so important. It has so many different functions in the body. And so usually that's gonna be a 25 hydroxy vitamin D if have a site or you're essentially pulling.

You'll see, usually see it as like vitamin D 25 H D or something like that. Most folks would benefit as much as I think there's an additional layer of data that we can pursue. A lipid panel is gonna be a good choice. Getting triglycerides, HDL, total cholesterol, maybe some ratios in there.

Now I think having the fasted insulin with a lipid panel really to complete this picture of cardio metabolic health, it would be really nice to have something like C-reactive protein or some additional more specific lipoprotein markers. But if affordability is one of the biggest concerns, take that fasting insulin and lipid panel pair it with a C-reactive protein that'll really help out in terms of giving us more context because creactive protein is a marker for inflammation and can be used in combination with some of that other data around your metabolic health to assess long term disease risk.

And we'll see, some changes there. So autoimmune clients and people who also have maybe other things going on C-reactive protein can be off depending on the person's dietary preferences. So like for a vegan or vegetarian, I'm probably also gonna wanna look at more iron markers things like ferritin, total iron binding capacity serum iron.

Those would give us a nice picture of what's going on from that particular micronutrients. So we can talk a little bit about dietary styles and deficiencies more but I do think, ferritin can be a good marker for people to pull and then last but not least, we have our reproductive hormones.

Both men and women should be pulling testosterone and free testosterone estradiol. Also for men, yes, you need to check your estradiol because that can play a role in terms of sexual function and your overall mood in how you feel. And then S H P G, which is a binding protein also tends to move with insulin resistance markers, interestingly enough.

This can be valuable for both men. And also explain some low T symptoms. Even if your total testosterone is normal. If your free testosterone is low you may have elevated S H P G and then for women, sometimes if we have low S H P G, this can influence P C O S symptoms and symptoms of high androgens.

So very important for women as well. It can also be elevated with things like oral contraceptives, which then brings down our testosterone and impact our overall quality of life, sex drive performance, things like that. So we certainly wanna pay attention there. And then progesterone is how I would round out this triumvirate of reproductive hormones.

Progesterone is very important for women from a fertility perspective, you'd measure it in the luteal phase of your menstrual cycle. And this is really more of an indicator of menstrual health than anything specific to our conversation earlier around like a lot of. Metabolic factors is certainly very important for overall health and making sure that someone's cycling regularly.

But once again, I think a lot of people sometimes put a ton of stock in the reproductive hormones, and then they're not paying attention to things like free T3, fasting insulin, C-reactive protein or other important blood markers. They just get very caught up on reproductive hormones. For whatever reason, I think just cuz they're in a lot of mainstream conversations.

So super, super important for quality of life. And obviously testosterone can connect that performance conversation and overall quality of life and how you feel about actually going to train. But we still need to look at these other markers as well.

Dr Mike T Nelson: I think you could argue based on the dietary info, which you would have that even for guys who eat a fair amount of red meat and in an iron panel is still good because I've seen quite a few that have been very high, not just eh, a little high, like crazy high, where you may consider donating blood

Sam Miller: Yeah, I think we'd probably look at that in combination. If we had iron ferratin, total iron binding capacity, and then you also had your CBC with

hematocrit and yeah. Differential, your red blood cell count. I think if you combine all of that. So if you were able to pull, the hematocrit value, the iron value, ferritin, total iron inviting capacity, and everything looks off, then maybe we approach that conversation.

But I think sometimes people only pull like maybe a single value yeah. In that conversation. And then that can be hard because sometimes with therapeutic phlebotomy or blood donation, people do donate blood to bring down that hematocrit or red blood cell count. And then they have issues actually bringing the iron up believe it or not.

So some people will actually do the blood donation to try to manage what's going on in their CBC and subsequently have a very hard time achieving balance with that too. I think it's important to look within the context of other markers. And there are certain medications that can influence that as well.

Like testosterone replacement therapy. So for folks who are maybe concerned about that obviously if you've got controlled substances going on, you probably wanna have a conversation with whoever's prescribing that for you because they can also be involved in the therapeutic phlebotomy process too.

Dr Mike T Nelson: Yeah. Especially if you look at your HDL and it's Ooh, that's pretty damn low .

Sam Miller: Yeah. I think when you have low HDL I would definitely just because that can happen with testosterone replacement therapy it would make sense to get some additional values, right? So CAC a protein. Yeah. I would look at a POB and LP little a because those are some, the change that you're seeing in the shift in the lipid parameters.

If you have, good insulin sensitivity, good cardiometabolic health infl inflammatory markers are controlled. You might wanna just also be looking at things like someone who has a little bit lower HDL, if their trig triglycerides are super low, their CRP is super low. Fasting. Insulin is well managed and they don't have high risk from a POB and LP a perspective that's very different than someone who has low HDL, high triglycerides, high fasting, insulin, high C reactive protein, and those other markers are off.

So we really need to make sure that once again, this is the big C word of context related to clients and their overall health, because just because one particular marker goes one direction. If you don't have the context of understanding everything within their entire environment, as well as their nutritional intake

and, any medications that could be influencing things you're really missing the full picture.

So definitely, I would still look at the HDL marker for sure. And understand there are certain things that may drive that up or down, but I would just make sure we're pulling that into a conversation related to some of the other considerations too.

Dr Mike T Nelson: Yeah, cause I'm sure you get this question all the time where I had this literally the other day, Hey, my LDL is 211.

Is that bad? I'm like like who are you? What are you doing? What are some of your other markers? Like it's I think almost human nature that we wanna throw out one number in the oh, is that good or bad? It's rarely can you tell from one number, unless it's just astronomically high or astronomically low, like you said, you have to look at the context of the data where it comes from.

And then I'm glad you mentioned metabolic health because some of the parameters are based on general population and general population. A lot of times is not the most metabolically healthy population either. So you have to account for that context also.

Sam Miller: Yeah. Unfortunately there's some pretty generous reference ranges.

And as you mentioned unhealthy population as the basis for our Western. Lab values. And so whether it is, common testing that you would get done at a quest or Lab Corps, what we see is what might be low or what might be high or what might be deemed as normal is not necessarily what's best for you or where that particular person feels their best.

Now, lab readings are still super important and play an overall role in terms of looking at your sort of complete picture of your health and getting a really nice indication of your physiological status quo. And that's why, looking at labs can be a really helpful. Sort of data set and helpful tool when it comes to your transformation.

But a lot of people do put too much stock in maybe one particular value without the context of other values or they're looking at, oh, this is high, or this is low. Or in like the cholesterol conversation come up. It's a lot of somewhat antiquated information without the context of the new information that we have.

There's been systematic reviews on dietary cholesterol and the actual marker of LDL as recently as 2021, where there was a significant change and the actual comorbidity data and longevity data was actually higher than some of the reference range markers that you would. On a standard panel.

And so the standard panels are this aggregate and averages of information from a Western population over time. Versus we have this new information and new research that comes out, and that's why it's important to keep up with journals and nutritional publications and the different information we have if you are a coach or health practitioner, cause that's how you're best able to serve individuals.

And we know that, I think any generation beyond sort of our bracket of coaches and clients that we work with, we definitely see where people saw in the mainstream media. Things like cholesterol or dietary fat being demonized for such a long period of time. Now I'm not going out and saying, Hey, go, change your macros in Cronometer to go have 90% of your calories come from dietary fat.

That's not what I'm saying, but I do think we went from kind of one, we go from extreme to extreme rather than having a intelligent conversation around maybe a slight change in dietary intake and the values that we're actually looking for. And I think LDL is a great example of that. And we just have better tools.

Now we have things like LPA, a P B, C R P, which sounds like alphabet soup. But essentially if you guys are interested in that, I actually did post specific podcast more related to cardiovascular health and cholesterol. But really once again, we're thinking about inflammation. We're thinking about insulin re.

We're thinking about the lipid profile, which is what these little cholesterol markers are essentially what we're looking at. And then we can just get more specific in terms of those cholesterol markers. And places like quest have NMR is basically a Lippo profile and then the LPA and a POB.

So that's lipoprotein a is what they would be measuring there in terms of overall risk. So if it's something you're concerned about, it's in your family history, I would just encourage you to get more specific testing. And then also, working with someone who actually understands those ranges, as opposed to just being fearful of one particular marker being higher or low and even.

What you've eaten recently, fasting exercise. I've seen people who train the day before they go get labs and then they think their liver is failing. When in reality,

my kidney are bad. Yeah. Yeah. It's like liver and kidney markers are way off and I'm like, did you train really intensely?

And are you dehydrated? And they're like, I did have a pretty tough workout I trained legs yesterday and actually set three PRs went to failure on four exercises. I'm like, okay let's actually retest a few of these because that's gonna significantly skew some of those values.

Dr Mike T Nelson: And you mentioned in insulin, which I a hundred percent agree with.

I did a study years ago. And unfortunately never got published, which is a whole nother story. But we were like in a borderline type two diabetics during exercise, they were coming to the lab, they were doing exercise. We had live blood draws on fasting glucose and insulin send all this stuff out. So the data got back first was just on insulin and you're or I'm sorry, I just got back glucose.

So you're looking at 'em you're like, Ooh, that person's high. That person's low. I'm like, okay. Yeah. Yeah. About a week later you get the insulin data. And it was fascinating to see both of 'em again, in a population who's, borderline diabetic, the insulin was sky high in some people whose blood glucose was high, but not as crazy high as some of the other people.

And then it was just fascinating to see that if you only looked at the blood glucose, you'd be like, eh, yeah, you're high, but yeah. You're not as bad as Bob over here at 1 55, but that person's insulin was just sky high. So their body was compensating for it by just, whacking out a shit ton of insulin and you can easily argue then once you look at both those numbers that, oh yeah, that person is headed down the poor metabolic health pathway right away.

And then you had also mentioned C peptide. Any thoughts on when you would use fasting insulin versus C peptide, which is more like a 24 hour-ish marker of insulin?

Sam Miller: Yeah, I think right now, so in. Sort of the Western approach, right? You're most likely to see fasted glucose in A1C. I think if you get lucky, you might be able to have fasted glucose, A1C and fasting insulin.

And from an affordability perspective, that's a really nice three Musketeers of insulin sensitivity. If you will, beyond that, there are some more novel markers, things like glyco, C peptide, et cetera. But a lot of those do tend to be a little bit more expensive and we try to be cognizant of cost when it comes to testing.

And also what do we have the most data on in terms of an accuracy perspective in really creating that full picture. And so when we have faster blood glucose, we're able to see what's going on in terms of blood sugar, in the actual serum. And we have fasting insulin, we can assess, okay, what is the pancreas actually pumping out to resolve or manage that particular glucose value and then A1C, we have.

Somewhat long term. Look at that in, in the full sort of acronym or label, there would be HBA1C. And so with those three, you're really able to get a nice picture. I would say you see C peptide a lot less frequently on panel, same thing glyco mark a lot less frequently. I know Dr. Serano really likes glyco mark.

And he uses the old adage. Like I, you eat a banana, I eat a banana. It's not the same thing. And so we have to think about that a you have to do in the Sera. What I said, you have to do another accent. I don't really have a good Serano accent. I don't know, need to put on a Hawaiian accent, but I knew it wouldn't be my accent that's for sure.

So just had a little change in tone, but overall, what we need to understand is, we may eat particular foods and have differing glucose responses. Also even in a fasted state, we may have completely different readings and profiles from an insulin sensitivity perspective in terms of glucose. Then you have a Dawn response consideration that would be worth paying attention to with particular folks.

But just to keep it simple for a lot of people, I think glucose and fasting insulin are your cornerstone metrics. But in Western medicine, you're far more likely to see fasting and glucose and A1C especially if your PCP, your primary care physician has a little bit more concern around prediabetes or maybe a family history.

Where there's some cardiometabolic health concerns, but I personally, I really like fasting insulin, but I think it's important to not look at it in a vacuum. Ideally you would have multiple data points plotted over time, versus just looking at one particular reading on one particular day.

Dr Mike T Nelson: What are your thoughts on the lower end of quote, unquote acceptable for testosterone levels, especially for males. It, to me, it appears like blood levels of testosterone now are becoming like the bench press number for all labs. That there's this assumption that if I take my testosterone from 500 to 800, that's just gonna be amazing.

I'm gonna feel completely different, but not all physiology is quite that simple and linear.

Sam Miller: Yeah. So there's a lot of other considerations besides total testosterone. I think the example provided was okay, total testosterone went from 500 to 800. We have to also think what is the percent of remediation of testosterone and estradiol?

So estradiol or E two is also an important marker on a men's health panel. And then in addition to testosterone, estradiol, we have to look at free testosterone and sex hormone, binding globulin. So free testosterone can significantly impact your biofeedback quality of life, energy levels, libido cognition, a lot of really important stuff there.

So even if you took your total testosterone up by a few hundred points, if we didn't really see a huge movement in the free testosterone or your, aromatizing a disproportionate amount of that total testosterone or your sex hormone binding globulin climb significantly, or other markers in your lab panel are off, that's gonna impact whether you feel better.

Now, certainly we would like to see a little bit of a percentage increase there, or ED a lot of guys do want more. Total and free testosterone, but it's not as simple as just, okay. I ratcheted this up by a hundred points or 200 points, and now I'm golden from a health perspective, there's just a lot more that we need to take into account both in terms of biofeedback and quality of life symptoms, as well as other helpful markers in the context of looking at that particular reproductive hormone indicator.

Dr Mike T Nelson: So more advanced testings they've gone in, they've got some of the basic stuff. What other testing would you use both from blood testing and are there any other, I guess more lack of a better word, functional tests you would do? Do you do any surrogate assessment of aerobic based VO2 max or what are some other things you look for?

Sam Miller: Yeah, so I don't have a ton of access to certain, a little bit more advanced on the exercise physiology lab side, and a lot of the folks that are. Presenting in terms of the population that we work with, tend to either have some abnormalities in terms of endocrine function or there's some GI distress and digestive health issues.

And so that sometimes leads us down a rabbit hole of other testing considerations. I would say my preference, in order, if we were looking at a

population is ideally we just start with some really good coaching conversation, intake forms, biofeedback food journal, and looking at your exercise program.

Now the layer beyond that maybe we're doing some more advanced biofeedback or more of a health appraisal more significant in depth in intake form from. Then beyond that conversation, we're probably looking at serum labs because that gives us a really great picture of health. And beyond some of the markers that we talked about in our baseline panel, maybe based on their situation we're pulling a couple extra markers there.

Someone who's maybe really interested in performance or longevity and other considerations really just depends on what their goals are. Or maybe they have more physique and aesthetic related goals, that's gonna influence it. But I think then we reach a fork in the road and depending on their state in life it might answer for testing might vary between maybe a menopausal female or someone who's a younger individual.

Who's 27 years old, but having pretty significant GI issues, I think that's gonna bring you down a different path, but the issue with some of those is what's become commercially available versus where the research is. We don't necessarily have a research and evidence based to support. Every single one of these new tests and some of them what's being used in the research or what might be available in a lab is slightly different than what's commercially available.

So maybe, there's researchers in Norway who are using 18 PCR for GI testing, and maybe what's commercially available is a 16 PCR. So it's like it's close, but it's not quite the same. And then there's other considerations on the hormone side, a lot of people have gotten very interested in the actual metabolites of hormones.

So instead of serum labs, they might be looking at something like a Dutch test because they wanna look at enzymatic activity. Now that could be helpful. If someone has very specific symptoms or you're dealing with a case that's maybe female with P C O S or the perimenopausal situation that I mentioned earlier, But those kind of bring us down very different rabbit holes.

I think if you're working more with athletes or someone who's trying to achieve next level sort of performance, and they're a relatively healthy population then sure. Probably coming back to more of that, maybe it's VO2, or maybe you're looking at other metrics of output or other testing that you can deploy, but in terms of a lot of the populations that I've been dealt, I guess you could say, or

come into contact with over the years, usually it's that progression of client conversation data, documentation, and then moving into from there, maybe some other testing of which like serum labs is definitely more that paramount sort of gold standard in terms of what research and evidence we have.

And then depending on the goal, you might branch off in a bunch of different directions for more specific or nuanced testing methods for the client.

Dr Mike T Nelson: Yeah. I remember conversation. I had, I was next to years ago at Paleo FX. My buddy, Dr. Ben house was presenting there and someone grabbed him after his talk and was asking him, they're like, Hey, I heard there's this new Dutch test.

I need to do this. And he's okay what's your training? It's I don't train. It's like, how many hours of sleep do you get a night? He's oh, maybe six. He's do you log your food? He's no, he's just start there, save your $600. He's no, but I really want this test.

He's sure, you can get a test, but it's not gonna be the most helpful thing. He's just take that money and hire a trainer for a couple days to show you how to exercise. Like you're gonna get way more bang for your buck, so it's not to say the testing isn't valuable, but I like what you're talking about in terms of context we have to situa we're situationally protesting.

Sam Miller: So let's say someone is, so I think where the conversation is different is instead of that beginner client, a lot of us encounter clients where we're not their first coach. And then because we're not their first coach. It's probably not their first diet and it's also not their first exercise program.

And they've also got maybe a history of lifestyle stress, and maybe they are trying to sleep as best they can, but there's some other factors or variables, maybe it's they have younger children in the household or maybe there's night shift work and because of their occupation, they can't necessarily change.

That, that schedule entirely. So they're doing the best they can with what they have, where they are. And now for that client, it can be valuable to deploy testing, to make the most of their situation. If their circumstances can't necessarily immediately change, we have to look at what toggles can we deploy from a nutrition and supplement perspective in a training perspective, to get that person the best possible results or quality of life improvements with where they're at.

So let's say. A female who's working night shift, maybe she's followed a number of diets over the years, maybe slightly higher training intensity for a period of time. And maybe she's noticing some less than favorable symptoms in terms of maybe higher androgens or unwanted hair growth potentially acne irregular cycles.

Maybe she's trying to get her fertility in line. That's where I think some of these additional testing things can come into play, or just maybe discomfort from a later L phase perspective and overall health maybe struggling with fat loss goals and performance. I think the testing can be paired with an intelligent conversation around biofeedback, around your food journal, around your exercise habits.

And there's definitely some clients who are deserving of advanced protocols. Like I've definitely heard there's a lot of folks where it's earn, earn your advanced protocols. And I think that's true to an extent but there's also people who are putting forth deliberate effort, who I think.

The word deserve is really a loaded term, but I think there are folks who are really giving like a commendable effort in their transformation. They're trying with their nutrition, they're tracking their food. They're implementing practices that have been recommended to them by the health and fitness industry.

And unfortunately, if they end up in the wrong bubble of the internet and they're maybe following some sort of fad diet of some kind or very calorie restricted program, that's not best for them, no seasonality or periodization to their programming. They can end up down this really unfavorable hole of issues very quickly from a hormonal and metabolic perspective.

And that's where I think testing can be deployed to help someone who doesn't really have an effort problem, or doesn't really have a basic foundational like health hygiene issue versus the guy at paleo FX. It's yeah, get more sleep. And maybe you need to increase your protein. Maybe he's eating like 80 grams of protein per day.

And he weighs 175 pounds. Cool. Let's bring that up to point eight to one gram per pound of body weight. Let's get you moving. Let's get you sleeping a little bit better, maybe some stress management practices. We're never gonna skip over. I talk about foundational five of like sleep, sunlight and steps, strength, training, strategic nutrition and like a bonus one could be supplementation there, but there are clients who are really doing their due diligence in some of those

categories, or they've just been unfortunately misled by folks who maybe think that their program is the solution for their problems.

And unfortunately it puts them in the wrong direction or doesn't move them towards their goals. So I think what's, the sign of a a. Sort of powerful professional from a health perspective. And when it comes to health and fitness conversation is we're deploying the right tools at the right time for the right person.

And we're not like against using particular approaches and you can be somewhat nutritionally agnostic. You can be understand, Hey, maybe I use serum labs for this, or maybe I'm gonna go talk to Dr. Mike, and we're gonna go get like a BMR assessment or something for this. And understanding that these are all things that can fit in your tool belt and be used intelligently depending on the person, but it doesn't override the fact that you need to actually talk to them about their lifestyle and actually talk to them about some of those things like like Ben mentioned, which I think is really important.

So I'm glad you brought that up, but I think also we need to think about. Think about the client avatar or the actual person that's maybe deploying this because you'll know very quickly if it's going one way or the other, and I think it helps help give people a more clear answer. Cuz there are definitely a lot of people who are very frustrated who are I think they're following a plan and they're putting forth pretty significant effort.

At least a lot of the clients I've seen over the years, it's 60, 70% of them, their perceived effort is fairly high and they're training quite a bit. And they think they're doing the right thing from a nutrition perspective, but it's just not steering them in the right direction relative to their goals.

So I definitely have a lot of empathy for those people.

Dr Mike T Nelson: Yeah. No, and I agree a hundred percent, because you, you know that after just the first call. Cause like we talked about at the start, you're gonna go through all those questions of, so I think of it as physiology is almost a black box.

What was your input? What was your output? Oh, you're training hard five days a week. Oh, you're reading this much. Oh, and you're. Getting that result. That's weird that doesn't, that doesn't right. Yeah. So then you're like, oh how's your sleep? How's your recovery. And then it's like peeling that onion.

So in my case, I would look at what's your resting heart rate. What's your VO two max, what's your heart ratevariability is your stress

Sam Miller: become why you mention those other two cuz super high come up in our

Dr Mike T Nelson: conversation for yeah. For the effort you're putting in. And sometimes I've seen people go the reverse direction they're putting in all this effort and their HRV is actually paradoxically too good.

So they're, parasympathetically overreached and they're like, yeah, I just feel like shit all the time. So you're looking for those disparities between what's coming in and what's coming out on the other side.

Sam Miller: Yeah. I love that you brought up resting heart rate and HRV, both from a stress and nervous system balance perspective.

I think that's something that fits nicely with the conversation that we've had so far today and the black box is a great way to think about it and that. It's almost like this dissonance of inputs and outputs. And when a client's not getting the results that they're looking for. I think this kind of ties it back to the very beginning of our conversation, Dr.

Mike, where it was like, the problem solving component, we were talking about being in a gym and life as a trainer versus, on being online and content creation and the folks that maybe reach out to us and really that block black box and looking at the inputs and outputs, it comes back to problem solving.

And when things don't add up. I think that's where you're more intermediate to advanced coaching really comes into play is okay, cool. Let's sit down together. Let's have a conversation. Let's look at the inputs and outputs and let's figure it out. And then, yeah, maybe we pull some of this extra data, maybe Dr.

Mike has your resting heart rate and your HRV, or, maybe we also notice that something's a little bit skewed in the labs. And then we come together with all that information and we just try to advance and move the protocol forward with some incremental improvements. Based on tools we have.

That really tied it together nicely.

Dr Mike T Nelson: Yeah. And as we're wrapping up here two last questions, I'm glad you mentioned the GI testing because that's one area I see more and

more, very, I'll say interesting claims from some companies who shall remain nameless that, Hey, if you just do our test, oh, it tells you, oh, you need, 63 more milligrams of spinach and you need blueberries at 43 milligrams more per day.

It's like this highly. Specific outcome, which oof. I don't trust at all. But then again, that's not to say there's not good testing in that area. And even like what we were just talking about too, in my case, it's if someone has massive GI stuff, I've done all the basic stuff we can do and something's still going on.

Then, I'll refer 'em to someone like you or Dr. Rio or other people I know to be like, Hey, like get this figured out. And we'll work together at the same time, but I think it's hard for consumers because they're promised by just this one test, they're gonna magically get all these answers and then they do it and then it doesn't work.

And then they feel even more frustrated. And it's just this more of a they're on the downward spiral at that point.

Sam Miller: Yeah. So starting with the GI test consideration, I think we have to be able to look at the difference between maybe raw data that comes from a report depending on the type of test actually used.

And then moving beyond that raw data to recommendations or protocol printouts. So to say that are created by some of these testing companies. And I don't think we're at the point with the technology yet where you can reliably use those tests for specific nutrition and supplement recommendations. I think if you have a more accurate, better quality test or assay of your particular health metrics.

So when it comes to GI health, I think you do need someone who's able to look at raw data and then. From there make some assessments about pattern. I really think we're only at the point with those tests where you can look at patterns and trends and then make interventions that maybe address those patterns or trends, or try to move against maybe something that's moving in the wrong direction.

So if you're seeing dysbiosis and there's more opportunistic bacteria relative to Emal bacteria, it's okay we don't yet have the ability to go in and like sniper rifle one particular strain of bacteria that's not realistic. And I think that's very misleading, same thing with very particular dietary protocols and supplement protocols based off of that testing.

I think we still need to look at the person's individual end of one response. And also what food log did they have coming in? And we remember with these GI tests, your environment, what you ate the day before and the week before, and the supplements that you're taking. You literally change any of those particular things.

You're gonna change your GI test results. At least if it's a good test and it's fairly specific and accurate, you change your behaviors, you change your food, you change your supplementation, that's gonna influence your test results. So I'm not a huge fan. Like you said, if there's anything that's telling you Hey, eat 53 milligrams of spinach, or you need to increase your blueberry consumption by two thirds of the cup.

We're not at the point where we have those precise capabilities yet. I'm a much I'm much more of a proponent of looking for trends and patterns and going back. And even most of the time, I do think it's like the savvy practitioner can use a com a combination of the food log, potentially looking at common irritants and doing some basic food removal, rotation, or replacement.

See how someone responds to that with some very basic supplementation. Maybe try that out for two to four weeks and the person might make some great progress. We also need to look at attentive eating practices, chewing maybe doing a post-prandial walk, which is great, not only for digestion, but actually really great for glycemic control, which we were talking about earlier in the podcast.

Now, if I've deployed some now, the key is that someone with a little bit more intermediate to advance knowledge of GI health, digestion, nutrition, they know the right foods to substitute, remove, replace, and rotate. There are a lot of folks who are just gonna take a stab at it in a shot in dark, and that can be lead to more problematic symptoms.

Or you don't really have a strategy. You're just randomly guessing, and that's not very good for the person who's following the protocol that you've designed. So I would encourage you to have some additional education around how certain foods impact someone's specific GI symptoms from the foods and supplementation.

We make some, you deploy some certain strategies from a lifestyle perspective, maybe reduce training, intensity leave some more reps in reserve. From there, if things begin to improve and clear up over two to four weeks, we can ride it out for a little bit. I think if you want an additional layer of data, and we're not

really worried about the discretionary spend, that would be going towards some of these GI testing.

I think you can do it for some additional information, but it doesn't have to be the sole thing that you do. And one of the things that I've seen both with practitioners and with clients is the data is helpful from an adherence perspective. So someone sees that they're improving. From a, like a trend analysis.

So for those of you who can't see us on video, like if I'm making these somewhat linear improvements or a little bit up and down in terms of, dysbiosis or permeability or whatever they're claiming to measure on the test, the gamification of that does help with client adherence and looking at the protocol as being somewhat efficacious and they get more buy in into why they're actually doing what they're doing.

Cuz one of the biggest challenges with the GI protocol is, oh, wait, I gotta remove these foods for how long and I'm not supposed to have alcohol or do this, or I need to remember to take this supplement. So having that sort of quantifiable information on paper sometimes just helps from a client.

Sort of mental approach mindset and perception of what they're participating in. And then over time you can follow up and track it. But that, that is one of the UN mentioned tools that I don't really see people talking about is what happens from like the client's actual psyche. But I do think we have a lot of great tools to leverage that are at our disposal that we could use before you have to go spend two, three, $400 on a test.

And I would say just completely outright, do not, if someone's doing something like a stool culture and giving you recommendations of food and supplementation just runaway the other direction you'd be much better off with there's other more novel testing methods that will probably change by the time.

Some folks listen to this podcast like six months or a year from now. So I'll just say generally at this point, We've moved beyond that culture towards more either PCR or other analysis sort of methods. And I'm sure we'll have more in the years to come because the microbiome is such a hot topic right now.

But generally steer clear those specific recommendations, look more at the trends and definitely still don't ditch your food journal and, still look at things like a Bristol stool chart and symptom tracking as well as like stress plays a huge role in digestion sleep as well. And then little things like leveraging some

post meal walks, chew your food, maybe turn off the TV, go sit down, have your meal.

All of those things can go a really long way to improving your digestive health.

Dr Mike T Nelson: Yeah, a buddy of mine who will remain nameless did one of these tests. And he's wow, what do you think of the accuracy of this is? And so I pinged like Ruscio, another friend of mine Dr. Sarah, who's been on here that do a lot of gut health stuff and they kinda had the same general agreement.

I, I texted him back. I'm like, you can probably crap on a piece of paper and read it like a Roshak test. And you're probably gonna be more accurate than what this thing is gonna tell you. And then I wrote PS, I hope it says you should be a vegan cause he like loves eating red meat all the time. He's oh, If it says that I'm definitely not gonna do it.

Yeah. Which I

Sam Miller: thought the grand scheme of things, what I have seen Dr. Ruscio probably use maybe one or two or three of the main ones that are out there. So I'm not, I do wanna make it clear for the audience. I'm not totally anti but there's probably, oh no. To put it in perspective. I think what Dr.

Mike is getting at, just to, cuz my audience might be a little bit different than Dr. Mike's is let's say there's 17 or 18 different companies out there marketing and there's probably more, only maybe five to 10%, definitely less than 20. So less than a quarter of the brands that are pushing these tests, commercially are actually using the appropriate methodology.

And. Nonspecific in their recommendations, meaning they do give you data, but they don't say, Hey, eat this way, supplement this way. They allow a practitioner to work with you to figure out what's best for you. I do generally see that moving in a positive direction and I'm okay with that. I think that's the future of where things are going.

I think where Dr. Mike and I agree are using a less novel, less tested, less accurate method. Maybe they're like only using stool culture or something like the pooping on a piece of paper, like he said, and then. From there. They're trying to give you these hyper precise recommendations of, eat two slices of watermelon on Tuesday.

Yeah. And then come back and do another test. I think that's really what we're getting at for the audience. Who's less familiar with that industry and without naming particular brands, cuz we're not really trying to pick on anyone per se, but this is where it's important to have someone who maybe knows knows the differences between the tasks when to use them when not to use them and then also how to use them, which I think has been a key focal point in our conversation today.

Dr Mike T Nelson: Yeah. And the reiterate, the last part you had too, is that. I do some blood spot testing for omega threes, EPA, DHA, lipids, and I'll tell clients outright them like, Hey I'll pay for your other test. We're gonna rerun it in eight weeks. And I'm basically doing that. So they take their fish oil. So I'm telling them ahead of time, Hey, here's this thing, here's your baseline. Here's a recommendation of a general direction you should go in. Oh. And then by the way, within, this period of time, we're gonna retest you and see how you're doing. Because if you want to try to ensure compliance, like you were talking about, especially with more difficult dietary restrictions or things they can do.

I think part of, especially one on one or online or in person is the accountability factor. And yeah, I'm probably primarily just doing that more for accountability than anything else. And if it gets 'em to do it, then, eh, I'm okay with that.

Sam Miller: Yeah. And in, in some instances, maybe we're following that up with other more specific markers too.

But I do think the convenience of some of the at home stuff is promising. And, you can get clients to buy into that a little bit more, and really this just becomes a conversation around client enrollment and seeing what your client is willing to do. And depending on the significance of the problem that they have, they're probably willing to take additional measures to solve that problem because, that's important to them and what's top of mind.

So I do definitely like the tool of using it as a little bit of tracking and accountability, but also future pacing. Hey, our goal is to be consistent with this so we can improve your result next time. And it does create or maybe bring us back to a little bit less amorphous world that I think we can end up in sometimes, especially with more advanced health concepts, things that move beyond, adding a rep or two to your bench press or a push.

We're actually looking at some of these other elements. It can be hard for people to have actual quantitative stuff to look at versus just the subjective feelings of wellbeing. And I think if we can combine those conversations with some of the

testing, we can really end up in a little bit more harmonious place with those clients and hopefully help them on their way to, getting better results in their transformation.

Dr Mike T Nelson: Awesome. And last question for more advanced testing or new things that are coming out that look like they're promising, but may not have the best data yet, or there anything in particular that's new on the horizon that you're excited about.

Sam Miller: So I've heard a couple podcasts in regard to the whole like 16, 18 PCR shift.

There's couple new car. I get into the cardiovascular stuff sometimes because of my family. Family history. My dad actually recently had some follow up procedures based on some complications he's had for a number of years. So I've been down those CBD rabbit holes and so different things going beyond like Boston, heart, Cleveland, heart.

And there's a new one that the name is escaping me right now. That I think is pretty interesting on the GI side. I think commercially, we might be a few years out from like another intervention or excuse me, another testing method or tool that we'll have beyond some of the PCR tests that are out right now.

So that might be a little bit so I don't necessarily have one that's top of mind and I've been more down a little bit of a cardiovascular rabbit hole lately, just because my dad recently had a follow up stent. Little bit free time going in that direction. He's all good, but it's been, oh, good little bit of a process for him.

So I, I just try to watch it both for myself and my other family members, so that we're getting the appropriate testing to look at it, preventatively over the horizon. But on the GI side, I think there's I dunno if it a GA or I see the problem is like the names in research can be very particular relative to what's actually coming out commercially.

I believe there's two researchers in Norway who are working on making sort of an incremental improvement to the commercially available 16 PCR that is currently out for GI. That seems intriguing the Boston heart and Cleveland profiles. I do believe so. Dr. Twyman would be a good person to talk to you on the CBD front.

We just had 'em in for an interview for some of our students in F and M S he talked about some additional markers going beyond sort of NMR. LPA and a

POB and going beyond that calcium score, looking at more soft plaque and some other things that we can pay attention to. So I've had my nose down that rabbit hole for a little bit.

And haven't heard too much as far as advances going beyond like Dutch test and then periodically we will get some new serum lab tools. But as of right now I'm just playing around with different inflammatory markers that we've had, but seeing what they might mean for different autoimmune cases and things like that.

And potential sort of relationships or correlations there. And I'd say probably, I guess one that's still newer within the last 10 years or so is gly a mark, but just from a cost perspective, sometimes it's just better for clients to get fasting insulin and some other things. So I don't have anything that's got me super, super excited, but I.

I've got your, we've been emailing even about a few studies. Oh yeah. College and conversation recently. So I can always ping you if I see something that looks extra good.

Dr Mike T Nelson: Yeah. And super quick follow up on that. Do you do any measurements with flowing dilation as maybe a surrogate marker for vessel health in terms of the ability of the vessel to dilate when it should for cardiovascular?

Sam Miller: I haven't yet. I would definitely be interested in that for sure. I haven't personally had that done, but a lot of these testing methods that we talked about, usually my go-to is if I hear about it, I'll either test on myself or, do some self experiment. Or I have maybe some former clients who are always super interested in this type of stuff where they're planning on doing something like that.

And then we'll look at it and see, okay, how does this compare to some of the stuff we looked at before? Does this make sense relative to the other lifestyle and nutrition factors, but no, the blood vessel components seem super interesting, cuz I think that would give some helpful insights as well.

I recently for the first time, so I'm 33, just had calcium score done and did some more advanced like lipid profile metrics and some other things this year. So that was my quote unquote like self experimentation adventure for Q2 and would probably do some follow ups next year and just continue to accumulate data over time.

But that's all, that's been on the horizon for me right now. I've been between business owner and full-time dog dad keeping me.

Dr Mike T Nelson: Yeah. And last blog, obviously VO two max and cardiovascular health is a huge component in there too, for people listening, obviously.

Sam Miller: Yeah, definitely.

Dr Mike T Nelson: Definitely checking that up.

Cool. And thank you so much for all your time today. I really appreciate it. And I know you've got a podcast, a newsletter, you've got a bunch of courses. Tell us a little bit more about what you got going on.

Sam Miller: Yeah, of course. So on social media and website, everything's just gonna be Sam Miller science for the most part.

So the podcast is Sam Miller Science. I'm on Instagram as Sam Miller Science sometimes I will occasionally throw up a TikTok video, but it's not really where I hang out the most. You're dancing on TikTok, anything cool there you're dancing or dancing right now? I will sometimes find some funny sounds and try to connect it back to nutrition and training.

But as of right now, mostly I, I live in the educational content realm, occasionally crack some jokes but tend to spend the most time with podcast Instagram, and then my newsletter which you can access through any, either social media channel or sammillerscience.com a number of different free resources.

So if you elect to grab any of the free resources workshops or different downloads, that'll basically bring you into the email ecosystem where I'll send out more kind of little nuggets and research and podcasts and things like that. And then outside of. That free content that we have in terms of the Sam Miller science platform, my main program for health professionals.

So fitness coaches, health coaches, people looking to get more into nutrition, advanced nutrition, the intersection between some of the things we talked about today, like the endocrine system, hormones, metabolism, gut health and actually doing it in a way that combines. A little bit of, the research and evidence with the common sense and the clinical practice and tying that all together versus just

going to one extreme or the other that's the functional nutrition and metabolism specialization.

I think, what we really pride ourselves on is taking, actual case studies and client experience. And then. Still sticking to we're not in this far fetched sort of woo, like incense world, where we think that supplements and magical thoughts are going to be, the solution to all your woes.

There's still a conversation around things like energy balance, your food log, your exercise, resistance training, walking, things that have substantial amounts of evidence. But then combining that with, some more novel things and maybe more advanced testing methods, protocol strategies, and integrating some of the serum lab stuff that we talked about today, and then really creating a little bit more value for the clients in the conversations we're having.

So that's FNMS the functional nutrition and metabolism specialization. And I think actually that's how we got linked up. Dr. Mike is through one of our students. And then, yeah, you can learn more about that at www.metabolismschool.com and yeah, you can just go like scroll and see if that's something you'd be interested in, but I always recommend people start with just the no cost content, cuz we've got close to.

Probably close to 400 podcasts by the time this comes out. So there's plenty to sink your teeth into and I'd always rather someone, get a feel for what we're about and benefit from some of that free content first, before even worrying about diving into a program. So that would be the best place to find me.

And I, that's where I hang out the most and more than happy to answer any questions or messages that that come through.

Dr Mike T Nelson: Cool. Awesome. Thank you so much for all your time and sharing all your advanced wisdom with us. We really appreciate it and I would encourage people to go check out your stuff.

Thanks again, really appreciate

Sam Miller: it. Thanks Dr. Mike.

Dr Mike T Nelson: Thank you very much. Just Sam for the great conversation today, make sure to go to his website, his Instagram and check out everything

he has to offer. He's got some great stuff on his podcast and his newsletter. We've got all the links below, so make sure you go give him some love. Tell him I said. Check him out.

If you're interested in being in the phys flex certification opens again early September, 2022. Go to physiologic, flexibility.com. If it's not quite open yet, you'll see a wait list form. Put your name and email in there, and you'll be notified of all the information when it's open that same link.

We'll take you to the sales page, where you can get all the information. If you have any questions on it, you can contact me. I will get back to you if you're looking for ways to go more in depth, but you're not really sure what direction to go. As we talked about in this podcast blood testing is a great way to go.

And for training, my bias is training. The four main pillars to regulate your homeostasis or your baseline. The main four are gonna be temperature pH. Fuel systems and then breathing. If you get really good at all of those, which doesn't take a whole lot of extra effort, you're gonna be much more resilient and harder to kill in addition to be able to recover in record time.

Also, my biased opinion is this is affording you more true longevity. We cover everything from different breathing technique. We talk a lot about keytones and when it may be appropriate to do a longer ketogenic St. And sometimes you want to run the backup system, which I believe is a ketogenic based diet.

But we also talk about the other end carbohydrates. How to use them for performance pH changes. I've got a whole lecture on lactate and maybe some supplement ideas you've never heard of before. And again, any questions hit me up, go to physiologic, flexibility.com for all the information. Huge.

Thanks again to Sam Miller for taking his time to come on the podcast and share all of his knowledge with us, encourage you to check all of his stuff. we love reviews of all kinds. So please post one up below. Or if you're cramped for time, leave us, whatever stars you think is appropriate. We enjoy any and all feedback.

Thank you so much for listening to the podcast as always, it is greatly appreciated and we will talk to you next week.