Introduction to Neuro-Metabolic Health

Welcome, everyone, to today's episode of the Longevity Summit. I'm Doctor Rudy Mueller, and our guest today is Doctor Peter Khan, who truly is a visionary and functional medicine and a pioneer in the neuro metabolic health.

Doctor Khan and I met years ago, at a conference. We had a good, strong attraction. And one of the reasons that, we really got together and had conversations and were on summits together was because Doctor Khan really combines the best of eastern wisdom with the cutting edge Western medical practices to address chronic conditions at the root, and really has an experience and expertise in the gut, brain, immune axis and interactions along with detoxification.

He offers unique solutions to improve healthspan and longevity, and through his neuro metabolic integration program and a step by step process about how to address root cause conditions, Doctor Khan has helped countless individuals regain their vitality and take control of their health journeys.

So please join me in welcoming Doctor Peter Kahn to the episode. Thank you for being here today, doctor from Healthspan. So if you could just expand upon what is neuro metabolic health and how does it affect healthspan or aging?

Yeah. Thank you for letting me, kind of throwing my $0.02 here. So, you know, a lot of my focus as a chiropractic neurologist is, brain and, so when I first started in learning about helping people with brain issues and it was always about rehab, right?

As a chiropractic neurologist would do a lot of brain based rehab looking at concussions and different type of brain based injury, and we'll do different type of exercises to help people regain function and specific area of the brain.

And that was great. However, there was people that just didn't respond to the rehab. So you scratch your head like, why don't they respond with the same set of injuries, same anatomy, same person in the different person?

They will respond, but this person doesn't respond. And then what I learned is that there's also the metabolism piece. And when by metabolism I mean everything downstream from that.

So when we're talking about neural metabolic health, the big realization is that you cannot fix the brain without also fixing the metabolic aspect of it.

And you can't fix someone's metabolism without fixing the brain as well. It's kind of a two way street. So when we say neuro metabolic health and we talk about metabolism, typically metabolism sort of is how you break down food, right?

How you do to extract energy from food. In medicine we also use metabolism as, as in breaking down substances like how you metabolize drug. Right. How does a drug get metabolized and get get cleared in your body.

But when I say neuro metabolic health, this is actually a concept that's talking about how the brain impacts metabolism and metabolism in tapping back brain.

Brain, Metabolism, and Aging

And by metabolism is not just energy, it's also everything downstream which includes immune function in includes hormonal function includes even gut function.

So this is where this brain immune gut axis come into play. Because the brain, the immune system and the gut play

a very crucial role in this interconnection and communication that eventually leads to neuro metabolic health.

So no metabolic health really is the outcome that we're looking for. How can we have the best brain health? How can we have the best metabolism? And the way you do that is by improving all the different pieces.

So you know, in functional medicine, we kind of have a roadmap, right? There's kind of the first step, the second step, the third step. So if we do things in a step by step order, then we're going to get better outcomes instead of okay what's the magic pill for the brain.

You know, what's the magic pill for the gut? We want to kind of evaluate and find out what's the priority for that particular person. This way we can have more success.

Yeah, I completely understand. And so, you know, I think to the psycho neuroendocrine immunology, specialty and it really it's talking about the analogy I like to use is, you know, we open up the back of a watch, we see a lot of gears and dials and switches.

Right. It's all of these things are interacting with one another. And one little fracture of a tooth of a gear can affect the overall outcome of quote unquote, health or time with the watch example.

And so understanding this neuro metabolic, endocrine immune perspective can really help guide us in making decisions. Yeah. You brought up the timing piece with the watch.

That's an excellent example right. Because you know timekeeping is about right. And rhythm and accuracy and precision and your body is marvelous is infinitely more wonderful than the precision Swiss watch in that it does keep time well with our circadian clock.

So it does keep, you know, the timing of various interactions of chemicals and hormones. And in our nervous system, it's all timed. And so when you get thrown off, you get this cascading effect where everything downstream gets thrown out.

This is why there's so many multiple vicious cycles in our physiology where one thing goes, everything else goes as well, and we can dive into it. Yeah, yeah.

So why don't we expand a little bit about how the neuro metabolic health can, can impact aging or longevity. Right. So so start with the first concept people must understand is that your brains are hugely affected by metabolism.

What does that mean? Well, your brain the primary requirement for brain to even survive is fuel and activation. This is just neurology 101. First day I walk in and learn alone.

Learn neurology. It was fuel and activation for brain cells, and fuel for the brain comes in the form of oxygen and glucose. Right. So then how do we get the oxygen.

Well we get oxygen from breathing air and also through exercise. Right. By doing aerobic exercise we take in more oxygen. But then oxygen also has a, blood component which is anemia.

So if you have some type of anemic condition due to whatever reason, and not all anemia is iron deficiency, although that's the most common form of anemia.

You can have anemia due to various reasons due to B12 deficiency, due to autoimmunity, like pernicious anemia, due to, you know, problem with, inflammation, you know, anemia of chronic disease.

So if you're anemic, you can't deliver oxygen to your tissue, take your brain, and really, the rest of your body is going to suffer. And when they suffer, that means you decreased the ability of the mitochondria to produce energy.

And if you can't produce energy and ATP, your mitochondria, not only you feel bad, right, you can't carry out

function, but also you increase the rate of oxidative stress.

And oxidation really is the defining thing for aging, right? Because we are animals that are breathed into oxygen for energy. But at the same time, the fact that we take in oxygen for energy, we create oxidation and that is creates cellular damage over time.

And so it's always this fight against oxidation. That's really the defining point of of aging. So if you can improve mitochondrial function then you're going to reduce oxidation.

Because when mitochondria fail their ability to dampen oxidation decreases. And they also produce more oxidation. So kind of like you're burning more dirty fuel.

You create more pollution in fact through your mitochondria. So if you have oxygen problem that's going to lead to all this downstream fact of energy problems.

Neurons not working properly. Every single cell in your body cannot work properly without oxygen, therefore leading to oxidative stress and inflammation.

And that's going to lead to aging. On the other hand, the brain cell also require glucose. It grew close as a preferred source of fuel for the brain. Now people always said like what about ketone?

I thought ketone super fuel source. Yes, ketone is really important, but ketone is an alternative source of fuel that's meant for starvation. So if you're, you know, a well fed human being, right.

Well fed I don't mean like excessively fat, right? We have a caloric problem in this country. But if you're a normal, well-fed human being, you should be getting a balanced diet from protein, fats and carbs.

And so any at any given point, you're going to have access to carbohydrate and glucose as a source of fuel, which is a very fast, readily accessible source of fuel.

And you need that. And your brain prefers glucose. And so if you have blood sugar problem, either hypoglycemia or insulin resistance or a mixed pattern of low and high, which is just as bad, you're going to really compromise that fuel delivery into your brain.

And blood sugar dysfunction is probably one of the most damaging thing for the brain. The resultant insulin surges causes insulin resistance, which, you know, it's really the number one cause of oxidative stress.

And that creates energy crisis as well, which leads to downstream mitochondria issues. So you can't produce energy in neurons leads to neuronal failure.

And that leads to your neurodegeneration. So and then on top of that the blood sugar problem also lead to a lot of endocrine problem. Right. By having insulin resistance you're going to create problem with your sex hormones in men.

You're going to over convert the testosterone to estrogen due to aromatase activity. In female, you're going to convert the estrogen to testosterone to the 1720 layers activity, which creates PCOS and those downstream hormone effects.

So this is just one example of how blood sugar dysfunction not only impact brain function, impact energy impact your hormones. Right. So everything's connected that way.

So we must evaluate a person holistically rather than looking at brain, just as, you know, a single isolated organ. And what supplement do we take for the brain or I would say even aging for that matter.

We cannot look at aging is like, okay, what's the magic potion for aging? We have to look at aging as like, okay, it's

a holistic problem. Is it someone because they have blood sugar problem?

Is it because they're not getting enough sleep? Is it because they have sarcopenia? Like all these things we have to look at in order to help an individual to optimize for healthy aging?

Yeah, I really like that. I mean, it's the holistic approach to looking at your overall health.

Testing and Root-Cause Evaluation

And no matter what the diagnosis, no matter what the downstream organ that may be, just, developing signs or symptoms. We need to come back and look at the all of the different factors that come into play.

And so we talked about brain health with the energy. So sources being oxygenation and glucose. And then potentially as that alternative source when fasting ketones and its power and being able to activate some of the brain that's been shut down due to insulin resistance, really, I think what I'd like to know, and that I think would be really helpful, is what types of labs or testing are you doing in the office or, you know, performing outside the office to really help figure out what is the potential cause or contributing factor to an issue with the brain, whether it be oxygenation, glucose dysregulation, toxins, what are some of the things that you really like to to pull up and look at?

Yeah, and that's a great question because I think, right now we're at a point in medicine and functional medicine where there's so much that's available to us.

And I think that's actually good and bad. Right? It's good that we have a lot of options. We have some very advanced labs, and that can give us more data.

I think that the negative coin, side of that coin is that is, TMI too much data, too much information to act on. Right? Sometimes it's more important to sift through this, this, you know, mountainous data, data and, okay.

And focus on what's most important. This is why I talked about earlier. We need to use a road map to guide us to say, okay, what's the number one priority?

Let's say someone has blood sugar problem. They have insulin resistance. They also have anemia. The blood pressure is, you know, say they have low pressure, right?

Not even hypertension. What about they have hypertension or orthostatic hypotension. That's just as bad to have hypo tension as it is to have hypertension.

Because that's a perfusion problem. You cannot perfused your tissue. You cannot perfused your brain. You don't get blood to your brain. You're going to have problems.

So I see a lot of this actually in my practice where people have low blood pressure, they have reactive hypoglycemia. So they have low blood pressure, low blood sugar.

And then that reactive hypoglycemia with this, you know, insulin resistance with the insulin surges. So then blood sugar is not working. And then downstream effect of that is low energy.

And then they have inflammation resulting from that. And then you throw on top of that gut problem vagus nerve issues so they can digest food. So on and on and on.

And then they have, you know perhaps heavy metals, perhaps they have mold exposure. So that okay, what do you go after first right out of all these things.

Now obviously if they live in a, a water damage building where there's black mold sitting right in front of them, obviously that's going to be an acute emerging problem that they need to address right away, meaning get the heck

out right?

Right, right. Today you just drained a cup of mercury. Yeah. Go to an emergency room, pump your stomach. Well, what most people have, though, is a chronic exposure to environmental toxin, right?

Is that like today you got this BPA exposure, and today you had problems in that BPA for its years and years of BPA exposure or heavy metal exposure. So in that case, is that the most important thing we need to do today?

If this person is also anemic and diabetic and, you know, severely inflamed, I would say we leave the detox for later. Let's hit the priority. Because, sometimes these blood sugar problem and, you know, perfusion problem, they're low hanging fruit.

You improve those people feel better, like right away. It doesn't take long for them to stabilize the blood sugar and feel better from stabilizing blood sugar.

It doesn't take long for someone who has low blood pressure. And you give them a little, perhaps. Hey, just drink little sea salt with your water to bring that pressure up.

They feel like a snap to their system. You know those those balloons in a car dealership that goes like this without with a fan blowing on it instantly.

They go. They just go up. They feel better, right? That doesn't mean we solve the root cause of the problem, but improving neural metabolic can have a profound effect because now your brain's working.

That's going to drive all the downstream effect. So back to the labs. With that in mind, checking the blood pressure, I'm always asking people, what's your blood pressure?

That's a oh, my doctor says so good. It's low. It's so low that I'll never have high blood pressure. Oh yeah. It's like oh it's 80 over 40. Are you dizzy?

Yeah, I'm dizzy all the time. I feel fatigued all the time. Well that's not a good number. Right. So so medical doctors there's slant. The bias is always to a hypertension because obviously hypertension is a stroke risk.

It's something we really need to watch. Rightly so. But oftentimes they do that at the sacrifice looking at low blood pressure as a potential cost or someone having just chronic symptoms.

And that's something that I really so, so it's even just having a blood pressure cuff at home. Just monitor it. If you often experience lightheaded dizziness, just feeling like unstable with your blood pressure. And so your brain functions aren't good.

Just checking blood pressure could be really important. And then for labs, I think the, the comprehensive blood tests or with checking for all the blood sugar marker, you know, insulin, fasting glucose, HbA one c LDH to to screen for hypoglycemia.

Like these are things are really basic. But if you know really how to look at those labs and understand the lab and you combine it with a good clinical history, you can dig out a lot of nuggets about why someone will have blood sugar issue, why someone would be having low oxygenation due to anemia, or what?

What's the reason for the anemia? You can pick out a lot from a very standard, detailed medical panel that can tell you a lot about why they're not having good neuro metabolic to start with, and then after that, based on an individual's case, then we may go ahead and do some more advanced GI stool tests.

We may do more events, you know, test for, for autoimmunity. But I think that the basic of what I try to cover with people is always that fuel delivery piece.

Right? Are you getting oxygen? Are you getting blood flow? Are you digesting food? Maybe the next thing that we ask and that may or may not even lead to labs, that may be just what are your symptoms?

You know, like, hey, I, I can't digest protein very well, but everything else is fine. That may be more of a stomach acid problem. Maybe, if they say I can't digest fat very well, or that might be a gallbladder issue, maybe I can't digest protein, fats and carbs.

That might be a pancreatic insufficiency or a vagus nerve problem so that everything. Right, you can't break down any macronutrient. So by asking very detailed questions, a lot of time we can get a very good head start.

And then the lab is simply just supplementing that and confirming our suspicions. Yeah I like that. And I think that one of the things that is available to most people is that a simple blood pressure cuff that you can do at home, and then you don't have to worry about so much.

The white coats in your room or the stress that's involved for some people, and showing up to a doctor's office thing where they will get a falsely elevated blood pressure and if they are low, have hypertension, it might get back up into that normal range.

But being able to measure it and look at it throughout the day, depending on the symptoms, may be able to reveal a lot of information. And once that track data is able to be presented to a knowledgeable practitioner.

Well, you had mentioned before when I interviewed you for one of my masterclasses that, you know, checking for sleep apnea is so important. Yeah, right.

And that's not necessarily a blood test, but it is a test, right. You might have there's actually some apps you can measure. You know, that your sleep noises, how much noise you make when you're snoring.

There's at home test to to to you can do for sleep apnea that there's you know prescription needed. But then you can also go to a sleep center, to do a sleep study to see if you have obstructive sleep apnea. And if you do, that's going to compromise your breathing when you're sleeping.

And that could be a huge factor if you can get air in while you're sleeping. That could solve a lot of problem. Yeah. I think, you know, honestly, I believe that that is one of the most overlooked contributors or causes.

Sleep Apnea, Blood Pressure, and Exercise

The people's chronic condition is sleep apnea because it's not always that big overweight or obese individual that's having a sleep apnea. You know, we're working with cognitive patients and clients.

We see a lot with even, you know, the skinny, frail woman who's having some trouble with her thinking and her memory. We end up checking that and that ends up coming up.

So I appreciate you taking, you know, taking homage to that, because that is a huge issue that I think is often overlooked in our conventional medical, system.

I mean, if we're going to talk about fuel, you know, I think another thing that people must understand about neural metabolic health, like, what drives it, essence of that is really the downstream effect of blood sugar problem, lifestyle choices, poor sleep, you know, sedentary activity.

So then to so the lack of it is causing problem. So how can we optimize for it. Well, when we talk about neuro metabolic health, one of the best things for it is really physical activity.

I mean, we could talk about CoQ10 and you know, we could talk about all these supplements, but really, you can supplement your way out of not being active, right?

There's no substitute for it. So this is kind of something that I, I work a lot with our client population is to educate them on the different modalities, different energy systems, drive aerobic versus high intensity resistance training and so forth.

Because, I mean, I think everybody needs to be like an expert in exercise. And here are here we are. Everybody's like trying to figure out what diet and what food to cut out.

And we're just like going way too much into elimination. Some people need to do elimination diet. Well, what I'm saying some people are unnecessarily on a restrictive diet for way too long, and they end up costing them dietary diversity and nutrient density.

And they're focusing so much on cutting out food and, you know, taking supplements that we're not talking enough and shining a spotlight on exercise and and doing it to the way where everybody's doing all these functional medicine lab want to figure out all these different pathway.

What am I deficient in? Like why don't we get really detailed with measuring our physical activity and our physical capability to do exercise? Like that's where I think the opportunity is.

Yeah. And so what when you're recommending exercise to someone, whether it be hit aerobic resistance training, how are you tracking their or testing or looking at their current capabilities versus, you know, six, eight weeks down the line?

Is there any particular system that you have in place app or anything that you're really focused in on that's helping them integrate? First off, find where they are and then integrate this approach into their into their, daily practices.

Yeah. So for example, if you're doing strength training, that's pretty easy, right. And by the way, neural metabolic health like sarcopenia is a big deal.

Lack of muscle mass, age related sarcopenia, right. As you age, you lose muscle and if you're going into aging and going into your fifth or sixth decade of life not already having muscle, you can still build muscle, but it's just harder.

There's a thing called muscle memory, and that muscle memory means that if you have build up some muscle, even if you haven't worked out in like a few months, you can still you can get back to that original shape relatively quickly.

And, and so and that it's like magnitude of like 8 to 10 times faster than if you didn't have muscle to begin with. So it behooves everybody to just build muscle mass as much as they can going into aging, because it's going to be easier to keep the muscle than to have no muscle and decide one day when you're 75.

Okay, I'm I need to have some muscle, I guess, and start working out. You can still build muscle. It's just going to be a slower process. And by the way, because there's age related muscle loss, if you already 75 very atrophy and various orthopedic, you don't have a lot to work with.

Just like that person who has Alzheimer's. If you're stage five Alzheimer, you don't have a lot of brain cells to work with because it's already degenerated.

So it's all about prevention. It's all about as early as possible, right? So that's the call for everybody. Like start considering. And I just bring the conversation here to what a highlight on it.

So people start thinking about exercise. So you talk about how to measure it for for strength training is really easy right. You can go to a gym or you can something work with a trainer.

You can just do a one, you know, to find out what your maximal lift is. Or you don't even have to do a one rep max. You could just say, okay, what what's the resistance you can do for ten reps or 15 reps?

And what's the weight that you can live for that. Right. So that could be a starting point. And then you can just gradually over time as you get stronger and stronger you should be lifting heavy weight.

That's why weight training is so easy. Literally you just got to put in the time and you can see yourself lifting heavier and heavier weight. The key component to that is your commitment to really push as hard as you can, right?

Because muscle growth comes from doing something that you don't usually do well. Any kind of growth comes from doing something that you don't usually do.

So if you're accustomed to carry your 20 pound purse, and lifting a 20 pound dumbbell is really not an exercise for you because your purse is 20 pound.

It's like, you know, a spare tire and the phone and make up and everything in it. So a lot of women would say, well, you know, I lift a 5 pound dumbbell, like what does that doing?

The kid you're carrying on your lap weighs more than 5 pound. So how is that going to cause you to grow more muscle. So the key component is people have to like really like work hard at it.

Right. To stress that muscle for cardiovascular fitness, you know, you can go to a university lab and hooked up to measure VO2 max. Not everybody has that.

I don't get into too much of that type of assessment, because our goal is for them to just do aerobic exercise, and by aerobic there's a difference in cardiovascular, anaerobic, cardiovascular exercise.

Anything that raises your heart rate so you can lift weight and raise your heart rate. So there's a cardiovascular aspect to weightlifting. By aerobic we mean that you're using an energy system that's purely aerobic burning oxygen and fat for energy rather than the glycolytic pathway which is more like use in high intensity exercise.

Which is burning sugar. Exactly. You're burning glucose burning sugar because you're going because remember we said earlier, glucose is a very fast energy.

It's like burning newspaper versus fat is like burning a log at a campfire. You burn newspaper, it's gone. You burn a log. It just burns for a long time.

So the aerobic system is one where it's lower intensity but long duration. But that system needs to be engaged because that's really what helps you to make your mitochondria really strong.

And and also it's also very beneficial for elderly people because it's zone two aerobic. So everybody can do it okay. Because it's a lower intensity. It doesn't require to be a cross fitter or do some high intensity and spread it just nice and easy.

It's going to be a faster pace than just like walking your dog, but it's not really a full on jog, right? So most people can handle it. It's very restorative.

So what do you do to measure that is you just measure your heart rate. So recommend an Apple Watch or sit there something that can measure your heart rate.

You just measure your heart rate. Keep it in a specific zone that's aerobic. And there's different calculations for it. You know some people use a carbon in formula.

I like to use the math method by Doctor Phil math Stone, which is simply 180 man is your age. It's not perfect. It's an approximation. That's an estimation, but a good start.

And then you just work in that aerobic zone for the entire duration of your aerobic exercise, which might be walking, which might be biking or swimming, whatever you can keep in a steady state.

And ideally I like to do as long as they can do it right. So some people, they can't even go to the mailbox and back because they're so fragile. Okay?

They just do whatever you can do, right? If you had to start with just three minute walking, that's all you can do. You start there because exercise is non-negotiable.

If you can do three minutes, you do three minutes. Maybe you do three minutes three times a day or five times a day. That still counts, but the goal is for them to work up to doing 45 minutes if they can.

Even 30 minutes. It's not that oh, if it's 15 minutes or 20 minutes, it doesn't do them any good. It's doing them good. It's just a magnitude of the effect for anti-aging and decreasing all timer dementia. Diabetes rates.

It goes up exponentially when they hit like the 30 to 45 minute mark. So I encourage, you know, my clients to get up to that point and do it, you know, as as many days as they can.

And this type of exercise, you can do it every day. So. So then how do we measure progress? Well, if you're keeping the heart rate the same and you're always doing say 30 minutes every day, then over time the only thing that can change is your distance.

As you get faster and faster and stronger aerobically, you'll notice that in the same 30 minutes, instead of covering two miles, now you're covering two and a half miles, and after a few more weeks, you're going three miles.

After a few more days, you're going to three and a half miles. And what does that mean when you go in three and a half mile in the same 30 minutes versus two miles, that means you're going a heck of a lot faster.

But you're keeping halfway the same, which means that you're aerobically stronger. So these are things that are super measurable. You see the changes and you see how well, how much better you feel.

And it's tremendous. And then people are not taking advantage of that. It's so easy to do these exercises. Now some people, they have orthopedic problems.

Some people they do have, you know, chronic fatigue syndrome where they have to overcome something. Right. This is where it detail lab analysis supplements can just get them over the initial hump.

But for like 90% of the people they're not utilizing this modality enough. Focusing it does. It doesn't mean you don't focus on your diet or leaky. Got.

It just means that there's we need to balance that with just enough focus and fervor with the exercise part. As a nutrition part. Yeah, I think it's very practical what you're saying here.

And, you know, from monitoring, you know, blood pressure, sleep apnea at home issues and then just integrating exercise into your life in some capacity that fits your, you know, your personality.

Nutrition, Flexibility, and Longevity

You know, what type of exercise do you really enjoy? Do you like doing it alone? Do you like it doing it in a community or a group of people and then trying to hit this zone to which, you know, I really like when I describe zone two, I talk about you're can still have a conversation while you're doing it, but it's a little bit more difficult than if you were just taking or, you know, as you said, taking your dog for a walk. Right.

Is that would you agree with that? Absolutely. Yeah. If I, I recommend having a heart monitor because if you have an Apple Watch or a Fitbit it measures your distance, right?

Otherwise, how do you know how far you went versus the last time. So it gives you all these measurements, which actually is very motivating because you can see the progress.

If you don't have an Apple Watch or don't want to get some kind of fitness device that can measure your heart rate, then you can do the breath test, as you mentioned, which you should be able to carry on conversation.

But it should be difficult, right? It's just suck a little bit, but you shouldn't have to huff and puff. You can still carry out a conversation. And, that's a that's an alternative way to measure it.

It's just as good it gives you an idea, right? It's not perfect. Like a university lab. VO2 max measurement. But we're complicating things, right? Uncomplicated.

Just do it. Did I steal Nike's logo? Yeah, yeah, and we don't have to go to that biohacking lab down the street and get hooked up to, electronic, pulsing, you know, Russian stim type of machines.

We don't have to be trying to push a large object as hard as we can. It's we can keep it simple. Right. And that's start. I think the call to action is just get started.

Don't don't overthink yourself into not doing it. Don't think that you have to be doing this exercise perfect to get benefit. And therefore if you can't be perfect, then you shouldn't even start.

That's not how exercise works. Exercises meet you where you are. Start with whatever level you can do. Like I say, there's five minutes of exercise you can do.

You should be doing five minutes. And more important that you do it every day. Then to think about how perfect you can do it. Yeah. Don't let it get don't let over analysis paralyze you.

Right. Exactly. Yeah. Beautiful. Cool. So I think, I mean, we touched on nutrition a little bit earlier with the, you know, all these different elimination plans.

Is there a nutrition plan that you focus in on when you're getting people into the into longevity, or is there a breakdown of macronutrients, or is it a little bit more?

I am giving this recommendation precisely to this individual and becoming a little bit more specific in that. I think there's two, different choices, right?

There's two options for two different types of people. One is someone who's, like like if I were to give a general recommendation, okay, if 80, 20, okay, 80% of the population might benefit from this, right?

And then so then it's a general recommendation. And a general recommendation obviously is going to be more general is the recommendation is is cells going to be more general in general?

Is going to be I mean, I don't really tell people like, oh, you have to be keto, you have to be that. But in general it's really about glycemic control, right?

If you think about just, you know, people who are the healthiest or people who are, you know, and Aborigines and, you know, native tribes, like, what do they eat?

Right? And it's kind of like the paleo concept. But even, you know, in region Sardinia, like, what is it that they're doing? Well, it really just clean food to begin with.

Right. And then it's a lot of fiber in their diet. Right. So people say plant based I don't really know what plant based mean. You know, it's like in a very nondescript term.

You know, it's kind of like, you know, you're kind of pregnant, like, I don't know what that these are like, you're not eating meat or you're eating meat, but plant based just means that you eat a lot of plants, but it doesn't mean you're ignoring the proteins. Right.

And you could be getting protein from animal protein or whatnot. So like Mediterranean diet is a really good example. They're not really particularly keto.

They don't try to be like, you know, low carb or high carb. They just eat what they eat. But what they eat is a lot of fiber, a lot of plant matter. But then they're getting good, good protein and it's high quality source protein and whatever fat they have, you know, is olive oil.

So there's some nuts and seeds. It's pistachios. It's sprinkled in there. So it's really a high fiber diet that doesn't have a lot of processed carb. And along with the diet, it's also they exercise a lot, meaning they don't exercise because they don't have to.

When you walk six, eight hours a day, like you don't have to do no zone to exercise. Really, the only reason we have to do these exercise because Americans or people who are sedentary, you sit all day, then you got to do something to counter that.

But you don't have six, eight hours a day to exercise, because in America, where I live, you know, in my part of the suburb, it's like it's not walkable.

Like I have to drive everywhere to, to, to go to the market and whatnot. Versus in Europe, you walk to the store, you walk everywhere to get your daily necessities.

So because we don't have that opportunity and I don't have time to walk six hours a day, I got to squeeze it in in that 45 minute time. And if I don't do it in the zone two, if I just walk for 45 minutes, I could benefit.

But if I do it in zone two, I get even more benefit, right? I'm squeezing more exercise or more benefit out of that time I have. If I were to live in Europe and I just walk six hours a day, then heck, I don't need to do zone two.

I already got it in my daily activity, so that's what those people do. So I think you know what? The diet will be one where it's more balanced between all the macronutrients, but definitely more fiber based.

A good amount of protein. And, protein is important to as we talk about sarcopenia, you lose muscle mass as you age. And the key component to maintain muscle is protein intake and resistance training.

So you got to keep the protein intake up as well. So that would be the general recommendation. And then the second population will people who they need specifics right.

Maybe somebody who has insulin resistance diabetes. Then that person might need a more specific recommendation where we're doing more ketogenic diet, where we're doing something to reverse that insulin resistance for someone else who, perhaps they, you know, they have a lot of, you know, obesity.

They're already, you know, eating, you know, a lot of, a lot of animal protein, but they're just feeling like they don't digest too well. Maybe they'll benefit from going through a short period of just cutting out animal protein for, you know, several weeks or even a few months.

So I think it's more important to be flexible with the diet, because at any given point, someone might benefit from from doing keto for a few months, and then they'll switch to switch out of it some one month by benefit from doing the all carnivore diet.

And then I switch out of it. Someone might benefit from doing the vegetarian diet, and I may switch out of it because I don't think vegetarian or carnivore diet or a ketogenic diet is meant to be a long term lifestyle thing, although for some people maybe that's what they gotta do just to feel normal or feel better.

But I don't think that's a that's even a large and even high percentage. I think there's a very small percentage of people that will benefit from that type of extreme measure that that that's what they need for most people.

The general recommendation was that. So the goal will be to, you know, work yourself out of a very, restrictive elimination diet, IP or paleo or, you know, a low Fodmap diet.

The goal should be to have as much diversity in your diet rather than to be as restrictive. Longevity is not achieved through restriction. Longevity is achieved through, doing the right things and then having option and have your body be resilient enough to be able to take in whatever the environment throws at you.

That's the key to longevity. Yeah. And and in these retrospective studies looking at the centenarian population in these blue zones that you were referencing, throughout this, it really does show a wide variety of different foods, a lot of fiber.

And we're looking at the commonalities amongst all of these different communities. And then movement being such an important piece. And I would even add to that the social, the family, the community, that connection piece as being like if not the most important, close to the most important thing that these people have that allow them to thrive into their later years.

You know, I mean, that's often overlooked, right? I think the social piece is kind of like the psychosocial piece, right? That's also including stress. Right.

And then so people, in the Western world, oftentimes, especially in, you know, urban environments, it's all buildings. And people live kind of isolated.

They have the computers, they go to work. And a lot of time there's not a lot of there's not only lack of social interaction, there's also a lot more stress as well.

Where in the blue zones people not only have a social interaction, that the social interaction also helping to alleviate the stress because everybody's carrying the load.

You're distributing that the stress because everybody's sharing that with you.

AI in Healthcare and Closing Remarks

So I think it's a psycho social aspect of it. And I don't know if that can be replaced. You know, the social community, support can be replaced by social media.

Yeah, yeah, that's the same thing. You know, you might have like, oh, I have a lot of Facebook friend and I'm messaging everybody and I comment on the post.

I don't think that's the same as, like actually being with people and having that community. Yeah. No, I agree 100% for sure. Great. So I think that, you know, we've kind of reaching our time limit here.

Is there any additional points that you wanted to make around longevity or, you know, one question that's common that we're commonly asking our interviewees is, where do you see AI in healthcare, AI and the longevity space, functional medicine space being implemented and being helpful?

So I think I think get your thoughts on that. And then we can close out with, if people are interested in finding you, locating your practice or watching any of your summits where they should, should head.

Yeah. And, so my, my humble opinion is that I can be very useful. I don't think I is going to replace actors and, you know, people, being good doctors and listening and providing compassionate care.

I think AI is useful for, like, big data analysis. Right? So like I said earlier, we have all these wonderful functional medicine lab. I think some are better than others as far as giving us clinical relevance.

Sure. But they're all accurate in measuring what they're measuring. It's just that sometimes it's a snapshot in time.

Right? A lab marker could be just like, well, that's what it is that morning.

That doesn't mean that's what it is all day or that's what it is, you know, the past three months. But if you have enough AI power to take all these live findings and put it into the system, you might be able to see patterns that we don't normally see just by looking at ten different labs.

So I think that's where that can be really helpful. I don't think the technology's there yet. Like for example, even with, the genomic stool test. Okay, you're measuring all these, you know, microbiome, microbiome bacteria, nobody's know what.

Nobody knows what to do with it. Right. It's not like, oh, this one, bacteria number 395 that we measure is a little bit low. So you can eat a little extra asparagus.

And now one bacteria is going to grow more like nobody knows at this point. Maybe in the future we will. And I think I might provide us with, insights like that.

Hopefully again, as far as, you know, my final recommendation will be for people to really do do things are the most just going to have the biggest impact, rather than focusing on the super novel things that the maybe ten orders down the road, you want to focus on the most important thing.

And we touch on that today, which is focusing on the things as the impact of neuro metabolic health, specifically oxygen profusion. We talk about some of the things with, sleep apnea, with low blood pressure, with blood sugar, stability and exercise.

I think if people just focus on that, they're going to get much farther ahead with their efforts. And then if they still need more specifics, they can always consult with people like you and me and and, you know, give more specifics.

Yeah. Amen to that. Appreciate that summation. So if people are interested in working with you, or learning a little bit more from you, where can they where can they head?

Thanks for letting me share, Rudi. Yeah. So I have a lot of stuff on social media, so you can just look for Doctor Peter Kahn on YouTube, TikTok, Instagram.

I put a lot of free content just for people to, like, start hearing this message that there's something that you can do, and it doesn't have to be crazy.

It doesn't have to be super fancy. They can start where they are and they need more help. They can certainly reach out. And I can be reached at ask doctor con.com.

Awesome. Well, thank you again Doctor Khan for all of the information, keeping it practical and simple. And most importantly actionable. So thank you. Thank you so much.