

Dr Mike T Nelson: Welcome back to the flex diet podcast. I'm your host, Dr. Mike T. Nelson. And on this podcast, we talk about all things to increase muscle mass, which would be hypertrophy for you nerds.. Performance and better body comp all without destroying your health in the process.

And today on the program, we've got Dr. Rick Cohen, and we're talking about more on the health aspect related to advancements in longevity. And even as a global topic, I would say regenerative medicine what things should you be looking for in this area? How do you separate things that can be useful from all of the crazy hype.

That's out there, everything from use of other pharmaceuticals, supplements and different metabolic pathways. So Dr. Rick Cohen is a leader in the field of nutrition, sports, performance, and longevity medicine. He got his undergraduate degree in biomedical engineering from duke university. and his medical degree from Hanaman medical university in Philadelphia, Pennsylvania.

So over the past two decades Dr. Rick has used his knowledge to create innovative health and performance protocols and even formulate some nutritional products. And what's also interesting is his wife is a nationally ranked triathlete, and he owns the sports performance, I'd say more supplement company, pure clean performance.

So you can check out all their information there at pure clean performance and check out all of his links there. So big thanks to him for coming on the program and talking to us about everything from blood work to actual true advancements in longevity. And if you're looking for, in my biased opinion, other advancements in longevity that are more related on the performance side and recovery check out the Physiologic Flexibility Certification.

It opens again on Monday, September 5th, 2022. Go to physiologicflexibility.com so just the idea of metabolic flexibility allows you to alternate between the use of carbohydrates and fat back and forth. And you can upregulate both of those just covered in the Flex Diet Certification. That'll make you a more robust individual on the side of metabolism and reduce your risk of diseases and increased performance and health.

So this is a similar. But it's extended up to you as a physiologic organism. So what areas, once you have basic movement and basic nutrition down, what would be the next areas you would target? And in the physiologic flexibility

certification those areas are temperature pH. Carbon dioxide oxygen, and then also fuel systems.

So fuel systems, we extend that all the way to carbohydrate loading and then all the way back down to even using a ketogenic approach. If you can upregulate those four pillars and my biased opinion, you will increase your body's ability to recover in record time, become more antifragile. And I believe those will lead to also longevity changes.

So in the certification, there's everything from cold water, immersion protocols. What does the research say on that? There's a lot of good information out there on cold water immersion. And in my biased opinion, there's a lot that is. Just really utterly horrible. What about temperature? Should you do sauna?

Should you exercise in the heat? On the cardiovascular side, when we're looking at changes in pH, this can be done through true high intensity interval training or other directions via long slow distance training. How do you know when to do each one? As we mentioned everything from a ketogenic to a carbohydrate approach, and then we get into.

Let's say more of an advanced area looking at carbon dioxide and oxygen. How is this related to your breathing patterns? Should you be doing nasal breathing? Should you be doing mouth breathing? How do you know when to do each one? Should you be doing a Wim Hoff type practice in the morning? What type of breathing work is best for meditation?

Exercise, performance and recovery. So check out physiologic, flexibility.com for all the information. The Phys Flex Cert opens again, as I said Monday. September 5th, 2022. It'll be open for one week until September 12th, 2022. If you're listening to this outside of that time. You can still go to the same link physiologicflexibility.com.

There'll be a wait list there where you can get onto the wait list. So if you're listening to this before, it's open hop on there, get onto the wait list. That'll put you on the newsletter and you'll also get the opportunity to enroll and get some cool free bonus items too. Go to physiologicflexibility.com and enjoy this interview with Dr. Rick Cohen.

Welcome back to the Flex Diet Podcast. I'm here with Dr. Rick, how's it going, man?

Dr Rick Cohen: Good, good. Awesome. Yeah. You're from cloudy Western north. Yeah, go ahead.

Dr Mike T Nelson: Oh, you said where are you from?

Dr Rick Cohen: Oh, cloudy, Western North Carolina in the blue Ridge mountains.

Dr Mike T Nelson: Oh, nice. I just talked to a guy from Raleigh, North Carolina the other day, if Sam Miller. So he was just on here.

Dr Rick Cohen: Okay. Yeah. We're south small town south of Asheville. Oh, okay. Oh, very nice. Green. Yeah. What is it? Super green and rainy. Oh yeah. And you're up with about 25 feet. So it, it moderates the temperature as well.

That's a unique little area.

Dr Mike T Nelson: Nice. Very cool. Yeah. And today we're talking about, so we say real life, longevity and health, and this'll be tied into obviously on the fitness side. And then when we started, you said you had a philosophical aha. Do wanna go into a little bit more details on that?

Dr Rick Cohen: I think the first place to start for people philosophically is what if we could live healthfully and have a long health span to 150? Like how would that change your day to day, Mike? You're doing this? What would you do differently? What other opportunities might you endeavor?

Cuz we look at our lifespan and it's segregated into different phases of life. So we tend to think that these phases of life are just what you do you're young, you grew up, you got a little smarter you got married, you had kids, you raise your kids and then you did your own thing and then you get old and you die.

And hopefully you don't, get old too soon, that, that health span or get disease than in our country, that happens way sooner than later. Here's one paradigm. Aha. And I hope there's a couple aha moments from this podcast. our discussion is that phases of life are programmed.

Okay. They're programmed across the mammalian species. If you go from humans to whales, to other animals, the reproductive the puberty to reproduction to decrease and function is a clock that's set in and that's a new revelation in the world of longevity. There's a program mechanism that exists, which is different than amphibians and reptiles, which is whoa, it's like lobsters

really don't get old crocodiles become they're just as verile. Rockfish can live to 150.

So there's something about this thrifty gene. That over the years in millennia evolution said you mammals, since you can't fly very far, or since you can't swim across the world, you live in one particular location and it's gonna be more beneficial for you as a species to die individually, to save your gene because, genetics allow the survival of the fittest and we can, just some people might dispute that per se.

But in essence, the more you can pass that gene, the more people are turning over the greater the opportunity is for that species to be fitter and continue. And there's scientists doing everything. There's people who modeled this out. And they modeled out, what happens if X people die over a certain amount of time versus if they live longer.

And there was a competition between the two. And basically it makes sense with if you're not able to get away from threats, that it's better to knock off each individual person. So yeah, the second aha that comes with that. Do you hear me getting up? Nope. I didn't hear you just fine. Oh, okay. I'm getting us some feedback.

Okay. The second is if that is programmed. Okay. Then it can be hacked. So if nature is figured out and it's complicated, but they're starting to break away at that program, they're starting to begin to understand. We can reset and think of a computer, it's like we used to use the car and the wear and tear.

So the current. or the theory, and there's still, it's moving to this direction is we wear and tear and get old, right? It's that's the analogy. That's not really it because we know we can reset a cell. They've done that. And there's certain things called Yamanaka factors and they can actually go in and change these factors and reset, or partially reprogram the cell to become younger again.

And they're doing it in a whole variety of different ways. So if we're getting back to the computer, it's okay, you have a computer and it gets bugs and it gets malware and it gets viruses and it gets registered issues. And you can throw on your AVG and you're Norton and you could keep it going.

But eventually it's just never gonna be what it was when it's younger. So the only way to really get that hardware back is to wipe it out. But you don't wanna wipe the whole thing out. You don't wanna wipe out your program. You don't

wanna wipe out the operating systems, cuz you're not gonna know what to do with it.

So with the body. Can we figure out a way to re partially reprogram and reset the cells. And we know we can do that, which is like phenomenal. So it just changes the whole paradigm of we can reset a clock. We don't can't do it efficiently, but there's indications that, that may happen, which is really cool.

So that's a big aha. And it changes what you can, what you might be able to think of as possible.

Dr Mike T Nelson: So is part of that related to like the telomeres and the theoretical limit that it's 120 years, I think. But then, some of the other studies looking at tase and other factors show that.

The old analogy I used to hear is it was like the end of your shoelace, where it just degrades so much. And then what was it? The Hayk limit? Like you're limited to how much time that cell can reproduce, but then they realize that's not really true, that maybe you can reverse that process, even.

So maybe this theoretical limit from that isn't as much of a limit as we once suspected.

Dr Rick Cohen: Yeah. And it's like a way to, you, we could get 10 different sciences, talking about different concepts, and they're all gonna say what their researching is.

They're say what their research is and what their bias is and, for right or wrong. That's the case. But here's the key point is we're like we've been too stuck in the weeds, right? We're too stuck in the, all the particulars of that detail, how can we.

Fix a and B and C and D, but maybe we can, if you remember, this is just a very broad reach, but the, there was a show called the it crowd. And it was like when they had a computer pro programs did you turn it on and off? So maybe all we really need to do is reset.

And that's, so while OMES are a marker or sort of a surrogate marker of perhaps stem cell population which could be either there seem to be linked together, it may not be a direct cause of the degradation. It's a marker of the degradation and it's maybe a timeline of the degradation of that cell or the diminished function, but is it in and of itself?

And yeah. Can we make that longer, could we help certain immune esent cells? Could we improve things somewhat? That's not the cause, right? That's not what we're finding out to be. One of the pieces of the cost.

Dr Mike T Nelson: And so what would you hypothesize that is the cause

Dr Rick Cohen: or causes

gosh there's some clock and there's a sort of, there's a researcher called his, a scientist, Harold catcher, and I should have remembered his book and he has come across certain blood factors or he call, chronic kind and there are particular plasma, maybe proteins or peptides that seem to do signaling now how, when you're younger and that they seem to be in a high concentration where we're very young, what triggers these.

Is unknown, but what they've done, if they've actually isolate, added some of these factors and they've been doing some mouse studies, they've seen some very significant improvements. Like they have the strongest, significant improvement. They're still pending life lifespan studies. But so we know that there's some factors in the blood that are being controlled from somewhere and how many different levers need to be pulled to make this control?

So we know that, there's there's studies with parabiosis. You're familiar with that. Yep. I explained to listeners what it is. So para parabiosis is a term where they've actually taken two animals, typically rats and they've tied together their blood circulation. And within this process, the young rat get some of the old components of.

The older rat's blood, where the old rat gets the younger components of the young blood. And they see degeneration in the young blood, in the, with the young blood in I'm sorry, with the young mouse. And they see regeneration in the old mouse. Now it's not a perfect scenario. And there's a few studies that sort of have come up, questioning.

And then, there's debates on, is it young factors or is it just the diminishing of old factors or esent cells, are we removing certain things and probably a bit of both that's going on, but that's the parabiosis. So there are particular peptides. So there's a peptide called GDF 11, which is a very strong rejuvenating stem cell peptide.

And there's a company called ion, which is trying to. Use this natural peptide come up with a variation of their own and, use it as a disease treatment, for

post-stroke, which is a problem in the research. The general research is getting something approved, just for aging, our Western model, which is another thing we can spin off to here.

But our Western model of medicine is disease oriented. It's, what's your CP, what's your ICD 10 code, which then the insurance company will cover. It's crazy. There's been some good studies, just go off in tangents here every once in a while. But with rapamycin we can talk about that.

, they've actually shown rapamycin in mice. Can regenerate bone. For periodontal disease. Okay. So it's that's, nothing's really been able to show that. And there's, they're gonna further this concept that studies happening at university of Washington that went out to get funding for this.

And the venture capital says, insurance is not gonna cover this. They're not gonna cover for periodontal treatment, for an oral care. So we don't want to back it. So now we have this financial incentives which are influencing, science or which direction we go, which is silly.

Having said that with all the people of periodontal disease, I think if you come up with a fairly inexpensive treatment, I think people would pay for that. We, a thing worth thing's head, unfortunately. I'm sorry

Dr Mike T Nelson: where were we before that I think rapamycin

Dr Rick Cohen: really be patented

Dr Mike T Nelson: anymore either, unless you tweak the molecule enough to say that it's a new invention to file any IP on it.

So you've got, what's a financial incentive too, which is the issue with old drugs and even peptides and other things that aren't patentable. It's like they may have a lot of new applications and other uses granted they could be used off label, but for new indications, who's gonna fund that research then.

Dr Rick Cohen: Correct. And I unfortunately, with rapamycin and that's a whole, longer discussion. And I remember where we were before with disease orientation, but with rapamycin, there's enough interest in it. It is probably the number one molecule, if we look at all the different ways that we can help slow down the aging process or extend our health span.

Robin mycin is probably the most well studied across multiple organisms, 84 different touch points that have existed, it's, it addresses a mechanism that's been around, single cellular organisms. So this is something that crosses all species lines, from, bacteria, to multicellular organisms.

There is interest in it and there's crowdfunding, there's, gals that are being started and, they're so that's happening and there's even companies that are, self-funding, particular projects. So that's exciting, but it gets into, a second aha for me, Is studies, right?

And it's things that you read a study and even scientists, right? How many people can sit and read that whole study and then analyze the data sets and really figure exactly what's going on. It takes a good amount of time to do that. If you take a medication, so let's use rapamycin and there's some studies that are right now with I N D and there's one that I was going to partake in, but I'm like, I think is gonna have some issues.

If you take, cuz they're just taking people randomly and they're putting into subsets and they're saying group A gets a placebo group, B gets X milligrams, and group C gets double X milligrams. And what we've created a situation is we're not relying on each person's individual biochemistry.

Maybe I need just based on my absorptive capabilities, a higher dose, or maybe my dosing to optimize or reduce the potential adverse effects needs to be a little different. Cause it the effect of rapamycin relies on one, a peak of the concentration that you're absorbing it. And then how long you can stay in the trough.

So you can reset some of the things that are being suppressed and that's the way you avoid having any issues. But if we randomly just give it to people without knowing what their individual needs, some people were gonna get, right? Some people were gonna be less than optimal and some people might have some issues cuz we just got them completely wrong.

Cuz we had to put them in subgroups and we really couldn't individualize. What was best. For each person, so if you take any study and what they're gonna wash up, wind up doing is, okay, we have a 20% improvement maybe, but that doesn't say, a second point is maybe of that, of the group, you're studying 50%, if you pick a metric you could pick a fitness metric, right?

50% were able to lift 300 pounds and 50% couldn't do more than a hundred. And maybe they all started at a hundred and we average it together. And we

say, oh, it was a 50% improvement. So we've taken that metric where to the 50% it worked, it was amazing. But to the 50%, it didn't do squat, but without knowing the data and without knowing beforehand, are you as a coach or a professional gonna say the same thing for every person, but that's what we do with medications.

Like the study said, it's good enough to get approved and now everyone's gonna get it. Even though we know it's, even though the researchers know where the company knows, it's not gonna work for half the people at all, it worked really well. So that's a problem when you do larger studies and the other problem is relative benefit, right?

So when you look at studies, it's like, what's the relative benefit. And you'll hear things 200% improvement or 50% reduced risk of and this happened actually with my sister who had a very noninvasive breast cancer issue. And they were saying, Hey, you want to take this hormone? And it's gonna decrease your risk from 8% to 7% or 6%.

It's okay, that, it's go, oh, no, he initially said to her, this was it. Initially, it's gonna reduce your risk 30%. I'm like, okay what's your actual risk? It was 8% to 6%. And what's your side effects, right? So you're getting her a 2% chance that it may or may not come back, not even taking into account her age, not taking account.

She was gonna change her nutrition and all these other factors that would make a big difference. They were just throwing her into any age group and saying, this is the changes. That's not relevant to her. And you hear her studies where, Hey, that's a 300% increase of heart disease when you're eating this particular food.

Maybe your chance was one in a hundred before and now it's three in a hundred. Are you really gonna change your whole life based on an epidemiological study? That's 300%. Oh my God, that, that sounds really bad, but it's not it's meaningless. And yet people will do that. Maybe with a statin, it might increase your risk.

Decrease your risk, but what was your risk originally, based on all these factors. So getting back to my point, studies are good, but they're really confounding. And they, they can guide you, but ultimately if you're gonna work with someone, you need to figure out what that person's needs, from a functional point of view, what their weak links are, and that all fits into understanding how to address aging, which to me is like the third, big haha is Western.

We were talking about Western medicine, addresses disease. Most disease, especially the large preponderance is underneath the aging umbrella, right? So we play whackamole medicine. Maybe, this one, if I, we can magically get rid of cancer in this country, just, one of these, Medications completely work and cancer didn't exist.

What do we do the, to the lifespan in our population, how much does it change? Yeah, I'm not really sure on that. Yeah. Billions and billions of dollars are spent four years. Four years. That's we changed because you've stopped cancer, but now we'll catch you. It's heart disease, or it stroke, or it's Alzheimer's, or it's a pneumonia or it's immune senescence, or it's a hit fall or it's, sarcopenia or whatever. So it's a whackamole well, we're gonna give you medicine for this. I'm give you medicine for that would give you medicine for that. None of 'em really are stopping it. They may, you're just buying a longer disease span. Within it.

So oh my gosh. So all this really makes four years, so we need to address age. That's what we need to because all these problems, yeah, sure. You can get an issue. People can feel unhealthy or they may be sick with other chronic diseases, but autoimmune issues. But the things that kill us are all under that aging umbrella.

And, you hear died of old age, that really doesn't exist. It's just the person who dies of old age, it either wasn't diagnosed for the most part, or it was an underlying cause, but ultimately, one of those things get us and the more we can build a resilience for the body to fight off or to not allow those things to happen, the more time we can have until we figure out how to push that.

On off reset button and that's where Rappa micin comes in per se. And that's where a lot of the, lifestyle or dietary patterns also can play a big role. So those are three.

Dr Mike T Nelson: Yeah, no, that's good. Yeah. I always think of one of my favorite phrases in that. I don't know if I stole this from Sean Case here, who I stole it from is that kind of research points the way, but research gives you the answer, meaning you as an individual.

So I always think about that in terms of, coaching people. If coaches trainers can be up to date. On the research, they have the skillset to read it, or they're, taking information from people who do, if they don't have that skillset and they're working on it, then that's still good because that's gonna definitely limit you into, don't go this way, go more this way.

But as you said, research is always gonna be generally comprised of averages. And even within that, if you fit the

demographic of it, there's huge. Sometimes disparity heterogeneity in the actual data itself. So especially when I do peer reviews, like some journals have tried to do this, but forcing people to put in all of the raw data or at least put it in a supplemental file.

And then you can look at that and see even with training studies you'll see that sometimes think Stu Phillips did one with 12 week training study. Most of the people were in the middle. Two people were way up here and then one poor bastard, like actually lost muscle and got weaker.

You could argue that maybe for that person, maybe there was some other uncontrolled factor, like sleep has been proposed as one other things, but maybe it wasn't the right protocol for that particular person, either. It still moves the conversation forward, which is great. But I think sometimes people expect that one single study is gonna give them the answer as an individual.

And again, that's rarely ever gonna happen because usually you don't fit the demographic. You're always extrapolating and trying to figure out what is a consensus of the research and then translate that. Especially if you work one on one with people to, yeah. All the research kind of says this direction.

I think we're gonna go here. My experience shows me this. So like when I set up a program. I think, okay, let's go this direction. I think that'll work, but if it doesn't or it doesn't get the result that I want, I try to set it up in a way that it gives me information so that the next step I do is gonna be a little bit more accurate.

So you're still doing an iterative process, but you're trying to reduce the number of correct iterative steps that you can make because the person's, paying you for a result and they're, paying you to get that result hopefully safely and in less

time,

Dr Rick Cohen: correct it, way it's a roadmap you're starting off in a particular direction, you're heading east.

Maybe you don't know exactly every road you're gonna take, but you're going that direction. And you would never sort of start off on any journey, not knowing where you want to get to. Yeah.

And so if we scale up and look at. Different like a 50,000 foot view. What are some things people can do, obviously there's nutrition, exercise, sleep, things of that nature.

Dr Mike T Nelson: How do you think about that and how do you prioritize what would be closer to the top than the bottom? Because everywhere on the internet, now everybody seems to have one particular single factor that's gonna solve everything. And yeah. One thing we've learned from physiology is that it's, multifactorial, redundant anti subtropic, it's not linear.

And this is all based off of the research we have, which, maybe 30, 40, 50% of it maybe shown to be incorrect, later on . So we're dealing with a very fuzzy, incomplete picture at

best.

Dr Rick Cohen: Correct. So there's two. Two key points before, starting off with that one is you need to track and I don't, it's hard for people.

I don't know what it is, but it's just, it's just easier to take something it's easier. As you said, here's your magic solution, even though they've tried that magic solution 20 times before it never works, but it's still easier to take a magic solution. But if you're gonna go out on that journey and make a commitment, let's say in our case here and make our commitment to begin the process to invest in a healthy longer life, cuz that's what you're doing.

You're investing some time, some energy, hopefully with guidance. So you can have not be sick. So not be, you could be doing what you love to do, or Peter T sort of physician in New York as well known educators, like, how are you gonna do your, your Centennial decathlon, can you still be doing the things you love to do physically?

Mike how, how old you wanna be still doing kite surfing, right? Yeah. Be 90. Why not? What the, you have to be fearer of injury then, but maybe right. Maybe if you keep on balance and keep on strength. And so it's understanding what you need to get there and what are the tools, what are the markers that you need to monitor and, probably pass what we want to discuss now, but there, there are certain key inflammatory markers, glucose markers toxic markers that you wanna address because there's always a weak link.

And I see that a lot on some of the forums. And, you have guys who are doing one or two things, or, and then they may be taking 73 different supplements.

And I keep you that this happened last week, someone who was actually doing a consensus opinion on all these different supplements, all these different we'll call 'em molecules.

Cause so whether it's a pharmacological molecule such as rapamycin, which is really just a natural molecule and it's ultimately no different than, resveratrol, which is a natural molecule, just one is registered approved and has a

smaller, not safety, but it has a stronger effect per se than another one would. So 80 different supplements, literally it was taking a day maybe more like it was like 80 different, but pills, maybe over a hundred. He was questioning about whether he should take this particular new diabetic medication, to reduce average glucose because he was pre-diabetic or was get getting into a diabetic situation.

Like what? So here he was someone who was doing all these things and hadn't addressed, a core fundamentals get your metabolism, be metabolically flexible and understand that. And before you do anything else, make sure what you're eating, how you're moving, how you're sleeping, play a role into metabolism.

So it's a lot of times we put the cart before the horse, because it was a lot easier to take 80 pills for him then to actually make this core change. So having those metrics and finding your weak link, whether it's toxin or whether it's we see that, sleep or it's excessive stress, whatever it might be, each person has a weak link.

And, whether it's a familial genetic, slash epigenetic risk, if you overlook that because you don't want to pay attention to it, that may be the piece that gets you no matter how well you do on everything else. So I think that's the second, those two points are overlooked, within it.

And then you can say, okay what's important. And I would say physical activity, I would start with that. Being metabolically, physically strong. Strong, balanced, balanced strength endurance or having a broad range of fitness across the, is super powerful.

And, that's one of the things that you can begin to expand on and you could break that down too. You have people who just do one part of that. They don't pay attention or they're moving weights in the wrong way, and they're picking up poor, bad muscle patterns that they're gonna get injured.

And once you get injured really bad, then it's sometimes really hard to get over that. So expanding out that fitness model in a way and doing some tracking with that is, is, I was even thinking, but how cool it would be like, to have a life fitness gym, right? Where you actually come in and break down different modalities.

And, someone would look at your movement patterns and, you could evaluate what maybe your anaerobic aerobic threshold is, and maybe need to be doing more of this and less of that. Whether it's zone two or you're not doing anything high intensity. So those are pretty powerful tweaks that we can make to improve how we feel, is that gonna get us to live longer?

Eh, no, but is it gonna creep? It's our health span, but if you're not, if you're not doing that, it's really hard for anything else. You just sit on the couch and try and take wrap mycin you're not gonna get, your bang for your buck there. So I would say that's my number one.

could probably put it in with number two.

I don't know. I think the number two thing probably that affects us is sleep would be not getting adequate sleep, cuz that just affects stress levels metabolic. Again, it's feeding those two together, feeding into, the same pathways, making sure you're getting adequate deep sleep, and also REM sleep and there's tools that you can use.

It's another challenge is, if you do labs and use devices, it's. You always can't rely on them. Some of them are better than others. Some of them give you more information, to, to determine that. And I guess I would go third with some type of calorie restrictive eating pattern, even that would be my third.

So whether it's some in intermittent fasting, whether it's some periodic, fasting, mimicking, sort of calorie restriction doing done on a regular basis is just not obtainable, but the closer we can to resetting the body and you have to think of, this is where rapid mycin is sort of calorie restriction in a pill.

That's letting the body are not continually stimulating mTOR and let AMPK and aji take its place. And I don't know if you've discussed that before.

Dr Mike T Nelson: Yeah. Explain the difference for the listeners.

Dr Rick Cohen: Yeah. So we'll keep it really simple, but it's like mTOR is an enzyme that is a energy signaling molecule.

And when we have enough calories, it tells the body to grow. It's an anabolic signal. And the problem is if you continually keep that signal, it's almost let's go to analogy, it's your gas pedal. And you're just you're pushing your gas on your, on the car and AMPK balances that's when you're in a calorie deprivation.

And if we looked how man evolved, we didn't eat 24 hours a day. We probably ate four hours a day, four or five hours a day. So within that time of non calorie consumption AMPK was an energy conservation and it signals something called atophogy. gave the body time to clean up proteins or waste products and so forth.

If we're continually triggering mTOR, you get bigger people, look at baseball players, look at the size of people now, compared to 30 years ago, it they're way bigger. The problem is if the cells, once you get into your late twenties, the cells don't need to grow anymore. And that same trigger that causes something called hyper function in the cells.

And that hyper function leads to all of the age related diseases. And the cell can slip into a sort of ger senescence mode where it starts to use inflammatory cytokines and so forth. So there's therapies that exist now to try and remove these senescent cells and whether it's medication fasting Cetin, et cetera, but.

Better. We not let them develop to begin with, and by modulating food, not eating all day, periodic times off, you're going to reduce that mTOR trigger and, using some mTOR sort of synergistic rapamycin, that's where that can do that even more that's a really powerful way to think is this on, off switch for the body and it needs to be off and we're continually triggering it and you can see this, like I'm not, we don't spend time with that.

As much as we spend time more with the type of foods we eat and, it's oh, I eat vegan. I eat protein. I eat less. And yeah, and I can go down that road and I'm sure you can too. And I did cringe on your your. Cold cereal breakfast. I'm like, no, I could never do that. But but yeah, it's like, how much is that?

Really? I get what you're saying. If you're doing most things how much is that really playing a difference? No, there, there are some foods, crap foods and crap oils and, high seed oils is a big no-no, that sets up things metabolically, but some of the fine tuning, unless we have some personal GI needs is we're just, we're arguing over fine points because the big points are some of the ones we've already discussed, movement sleep.

Yeah. Turning off, AMPK Mtor and getting light. That's another one, overlook getting sun. We need sun. And if you're not getting sun, you're not creating, mitochondrial melatonin, you're not creating vitamin D and. Oral vitamin D is not the same as the sun, we, we always can't get it.

We can't be living, somewhere where it's, Southern California, 10 months where you're getting can get that all year long. So there's ways around that using light banks, red lights, and, UVB lights, which are better way than, just taking supplements. So the, some of these foundational things that we can do are really powerful.

They just take a commitment and someone to, educate you how to incorporate that into your lifestyle. And, is it willing, what are you willing to do? Is it a little bit extra time? And ultimately I think for people it's feeling better initially, unless you're like me and, a lot of other sort of very dedicated it's this is for me as a puzzle, it's a passion.

It's like, how can I do this? It's it's my background. I might as well, go in, down the rabbit hole with it, but. And I would say the other sort of simple inexpensive thing is how we breathe or how we handle stress. Using HR V right. Using HR V and some of the, maybe, coming biofeedback to understand how we can breathe in a particular way, whether it's resonance breathing or nasal breathing which are extremely powerful.

If people haven't read the book breathe, I'm sure you have by James nester. Yeah.

Dr Mike T Nelson: Nester's been on the podcast here so they can find that episode. Yeah. I liked that. I thought it was very good,

Dr Rick Cohen: Amazing book and that his sleep studies right. Were that was super impressive. So just he and a I don't remember the gentleman he went in with, but a breathing expert.

They did two. Sleep studies. First one was they clogged their nose. They actually put plugs in their nose and they lived in a sleep lab and they ate and they exercised. They did everything normally would do. And after this period of time, their sleep caved, their blood sugar went up, their aerobic capacity went down, so everything that you would see with getting ill, just by plugging their nose, and then they flipped it and they went back to nasal breathing and everything returned back to normal.

That's incredible, to be able to do so put tape over your mouth right at night, focused to how you're breathing while you're doing a workout huge stuff. It's, it's just, we're not educating people. And I think there's so much information out there. That these core I'll call them tenants, right?

And there's others, right? Passion and community and so forth. But these real core tenants of foundational health get lost, cuz they're not sexy. They're, I can't pay \$200 for this supplement that look at the look what might happen to me. And it's a shame, but those are some of the huge, and we're gone through a list like core Mesis is another like challenging the body, whether it's a fast or cold or heat, or I've been playing around with hypoxia hypoxic hypoxia, which is really cool.

Dr Mike T Nelson: Live O two system or different system.

Dr Rick Cohen: Yeah. The live O two. Yeah. So it's with hypoxia, hypoxia turns out is an mTOR trigger, right? it's another way to not mTOR trigger. So another way to suppress mTOR. So it's a challenge. It's a etic challenge on the body.

And the idea, if anyone's, not familiar with this, is there, there was by putting the body into a hypoxic situation, you create vasodilation, you get nitric oxide release and the body is craving oxygen. And then you flip the switch immediately and you get this big flush of 90% oxygen getting into tissues that would've never made it otherwise.

And that has a powerful sort of VEGF for capillary formation for cellular mitochondrial biogenesis there's even suggestion that stimulates histone demethylation. There's a genetic and his de methylation is a way to, To change epigenetic coding in the body. And there's a particular, I haven't gone down the full educational pathway on this, but there's something approach going J M J D three, which seems to control this histone de methylation across the board.

So you get these, histones that are wrapped up and they're able to change the particular methylation sites all at once. There's so many of them. So the body has a way to coordinate that change. So that's playing a role in that as well, which is pretty cool. You, I was running, it takes a little time.

I've only doing it in a couple weeks with P O two of 50 or so for five. It's a little hard first time I went up to 22,000 feet and I couldn't last for more than a couple minutes. So I dropped it down to 17, but when that oxygen hit you it's really, you just get this flood. And we'll see, I'm interested to see how it affects some

of our, fitness metrics and, you can use it as well in a slightly different way for performance training, so Jackie, which we tried to get her on the other day, but I didn't be careful with your wife when you're doing new neutral.

Dr Mike T Nelson: Yeah. My wife's used to all my wacky experiments

Dr Rick Cohen: yeah, it didn't completely explain to her that, how short of oxygen she might get with that. So she was fall uncomfortable with it, but, you can lower the oxygen, but if you wanna train, at high altitude and then you can just periodically pulse the oxygen through.

So that's a cool device to consider as well.

Yeah, I'd be interested in the performance increases on that because it, so my, not my theory, but the theory I had for a while was that. If you, so if you look at altitude training, right? So altitude training for athletes for performance is flip flop back and forth multiple times, right?

Dr Mike T Nelson: The old school thing was, Hey, go train at altitude because it's gonna be more difficult. You have less oxygen, you have a less partial pressure of O two and you'll get these metabolic benefits because of it. And there is some truth to that, right? So you do, if you deprive oxygen, you do see increases in red blood cell, mass and EPO and all these other factors.

And then later on, they said, oh no, that's not a good thing to do because. Do get some of those adaptations, but the quality and the amount of work you can do becomes severely impaired because you literally have less partial pressure of oxygen. So some of the newer studies have said that you should sleep at a higher altitude to try to get those kind of positive, biochemical adaptations.

And then you paradoxically should train at a lower altitude because you can get a higher quality of work. And a couple of years ago, probably a year ago, I looked at. Is there any really like placebo controlled randomized trials of that, because if you move altitude, people generally know. And the hard part is if you have a less partial pressure of oxygen, if you've ever done that, almost immediately what group you're in too.

And oh my

Dr Rick Cohen: God, you just see your heart research go

Dr Mike T Nelson: from flip, back and forth. And the number of like really good studies on it is actually, I was disappointed it was a lot less than I thought there was gonna be .

Dr Rick Cohen: Yeah my, my take and, that's a question for, there's some professionals and cyclists that are using this, with the particular unit, that I have, I would say if you could train your body, whether it's sleep or it's just do 15 or 20 minutes to get that effect.

Get the hypoxic signaling effect, and then go do your normal activity. Someone may differ, right? Cause now you've supercharged the cell. You've been oxygenated and you can go harder. Cause when you're using that, I have a pulse and it's it lags, you don't need a pulse.

So other than at a steady state to say, how low am I? But you're riding, let's say I'm just 80 Watts. I'm spinning at 70 or just 80 Watts. And my heart, rate's 110 within a minute and a half at 17,000 feet. I could just see the heart rate trend up to about 130, 4 and you start to feel it in your legs.

So there's no way you hide that. And then, and then you hold it out for four or five minutes and then you turn on the oxygen, take some deep breaths and then heart rate just drops right back down, within 30 seconds. It comes back down. So clearly that's having an effect in some way.

And if that, that in and of itself should create that same red cell EPO benefit in a shorter period of time. So now you can go out and do the work. Now, if you're training to be at altitude, that's a different story, right? If you're gonna go then it's simulation training, then it's simulation training.

Exactly. As opposed to powering, I would say you need to, somehow you need to do both. Does that street cuz you can't I'm toying around. I do. I'm doing a re-hit today and what is that benefit? Oh, I have a car bike. Oh, just, yeah, it's really, it's cool. I love the bike cuz just, for the re-hit are hard, but just the bike and just the precision of setting Watts and heart rate and it's nice.

For those from a car bike is a wind, is a, an AI driven wind gate principle. Where you warm, warm up for three minutes, go 20 seconds all out rest for three minutes and go 20 seconds all out recover. You're done. Your sucking ache, after 20 seconds brutal.

It's hard.

Dr Mike T Nelson: We used to do it in the lab and we'd take bets to see how many people would throw up

yeah. The cool thing is about the bike. Is it gauges your heart rate recovery between each cycle and it's figuring out your power and it's ramping up the resistance at the end to keep you pushing as hard as you can, so I can hit maybe a thousand Watts, for the first five, six seconds.

And can I hold it to six 50? I think that's the highest, over 20 seconds. And then we'll, it'll adjust that for the next activity and it gives you a score based on. Your recovery and wattage and your total wattage that you put out. So the question I was my son and I were chatting yesterday.

It's should I do a EWA adaptive EWA before? Do I do that? And then do the re-hit or maybe do I just do three minutes of like oxygen breathing, do the car bike just as, primed. And then just do you know, the 15 minute adaptive just for its longer training effect.

I'm I don't know. I'm guessing that I'll do, I'll get a better score if I do the rekit first. Cause it is some fatiguing afterwards, per se, so don't know. Yeah.

Yeah. My, my model I use for the Flex Diet Cert and the Phys Flex Cert. The model of eustress and distress. So distress is stress that takes you much longer to recover from eustress is stress you you can generally recover from a little bit faster. So if I was doing a lifting protocol and I was doing a eustress model, eh, go to the gym Monday, do some stuff, maybe take Tuesday off, do cardio, and then come back to the gym again on Wednesday from a lifting model, a distress session would be if you have a competition, right?

So then it's performance is the only thing that really matters. And if I have to take, a week off after it, it doesn't matter. So same thing with endurance. Can you see general performance increases with each endurance session? But if you have an Ironman, you've got a big race who cares if it takes you five days to recover, unless you're doing some crazy multiple type, race type thing.

And then within that. I would subdivide like a eustress would be like an in season model.

Your goal is performance is the number one thing, because if you're working with professional team like NHL, hockey, baseball, they have so many games, they have to perform high, but then they have to come back and do it again.

And then the off season, you could play with a distress model for two to six weeks. So if you look at some of the stuff on, say, carbohydrate depletion before higher intensity exercise, your performance is obviously not gonna be as good, cuz you're purposely withholding the main substrate you're using, but there's some super interesting studies showing that the molecular adaptations from that may actually be, or they are greater than the normal training you would've done.

So if you've hit a maximal point. Maybe you need some of those higher molecular, adaptations, even though acutely your performance is going to be a little bit worse. Correct? And then when you flip back to a eustress model, hopefully in theory, and the studies right now, these carbohydrate stuff are like almost split 50 50, that you may see a better increase now, because now you've got the higher molecular changes. And then you're going back to more of a performance based model,

Dr Rick Cohen: where the, sapiens and their CGM sort of guidance is you definitely can perform at a higher level with the higher glucose, then you can perform if you're going in ketosis or you're going in low car, I suppose if you go really long that's okay.

But if someone's gonna cycle hard for a couple hours not gonna happen, they're just not gonna perform as well. So what you're saying is if someone's in season, adjust accordingly so they can fuel themselves, but then off season cut back, and cycle off and really train the body, stress the body in some ways.

So that makes sense.

Dr Mike T Nelson: Yeah. And I think in theory, you can apply the same thing to oxygen. So my guess would be doing a hypoxic type session on its own, or maybe a block of it for a week, knowing that your performance may actually degrade a little bit, because it's obviously gonna be much harder. You're not providing oxygen, but then when you go back to a eustress type session, do those molecular adaptations that you've got are they then offset by a higher level of performance?

So like the keto people have often argued this, that if you're doing long endurance training, that you need this super long period of keto adaptation and then ketosis would be superior. The hard part is most research doesn't

Dr Rick Cohen: match

Dr Mike T Nelson: that.

And that the time that you would need to do that, they argue is maybe six months, 12 months, 16 months, it's this very long protracted period of time. The downside with that is that you may be performing lower for, a year and a half, where to me, it's man, that better be one hell of an annotation at the end. But if you've got some like oxygen or carbohydrates where you've got more of an acute change where performance does drop, but it's very acute, you don't have to, give up six months then I think it allows you a little bit more flexibility to play around with different things.

Dr Rick Cohen: Yeah. As you're speaking, I think with oxygen, especially and there's some protocols using. Altitude sort of cylinders that, actually block oxygen uptake. It doesn't have the hyperoxic oxygen flood, which is a, a big benefit. But what they found is your adaptations are even a three weeks, like five, five days a week for three weeks, and then you can start to cut back and then just periodically just maintain that.

So it could be if someone's looking for, okay, do I push my hemoglobin and hematocrit up? Do I get EPO and maybe even dropping iron, which is a good benefit. I haven't really, I saw a couple studies on that. I was like, wow. So if we could increase red cells without increasing iron. So now we're actually, it's a way to deplete extra iron, which is one of the, one of the simple longevity or health things that people can do is to keep an a low ferratin

Dr Mike T Nelson: and that's because iron is a prooxidant. Is that the theory? Correct?

Dr Rick Cohen: Iron is oh, iron is a prooxidant and it binds in too high. It affects mitochondrial function as well. So making sure you don't have, and that's a, it's a guy thing, so if you're in the one hundreds, it's give blood every couple months it's a good thing to do.

And reducing iron stores as a prooxidant and even epidemiologically people who given iron over their lives or given blood over their lives do have less risk of cancer or heart disease, and may even potentially a longer longevity, although reducing heart disease and cancer, themselves, as we said, maybe only buy you five or six, seven years, but that's in and of itself, but it's a simple thing to do.

It's extra. And iron, you have to be like the tweak with iron is you wanna look at. Not just serum iron. You wanna look at the serum to ferratin ratio cause

ferritin is a pro it's a reactive molecule, so it'll increase with inflammation in the body. So if I've done this, we've talked about guys with racing, we've done blood tests, looking at inflammatory markers, CRPS rate FibroGen homocysteine ferritin.

And if you check the blood of someone a week or so after they've done some heavy physical activity or in the middle of a lot of times, it's awful. So they're creating these inflammatory molecules. And now too, we've seen people who have had just called immune stimulating therapies or, injections of immune stimulating therapies.

And you look at these inflammatory markers, they're sometimes very high. And a lot of it's this happened a couple times over the past month, it was like, I've seen people like healthy and I guess, okay, have you done some particular racing? Are you gonna cycle? Or, have you had, some injection and it's one of the other 90% of the time that's triggered those inflammatory markers.

And if you don't look for them, you can't see them. So it's, looking at the white count can help like a neutro neutrophil lymphocyte ratio could be a sign of a viral versus a bacterial infection. So following these, going off just following particular markers, are really helpful, cuz that helps you get back to your finding your weak link or things that could be causing problems for people.

So if you see bacterial or someone has risks, like looking at oral bacteria, Something, these are things that just are missed, but there's a strong link between imbalance and bacteria and the mouth and disease. And I was having a chat with my dentist, dental hygienist. And I go every, I go sooner.

I go like every two months, two and a half months now just to really keep him clean and we were talking about it and it was like, she goes, I've always seen that the people who are in who are old and healthy all have good teeth. So I don't know which, which came first chicken or egg, but there's definitely lots of research.

Now that coming out is bacterial imbalances causing Al disease also affect the body. And that for some people is a weak link. And if you have bad gums, for whatever reason, you gotta fix it. Cause that's gonna wear you down. Yeah, it's just so many interesting little points. And it's like, how do you, the challenge is how to present this to someone.

So you don't overwhelm them and to do it in a step by step, over time fashion. So for me it's, if I get someone who wants to live a healthier, longer lifespan,

they generally are already coming in, generally healthy. So it's I'm a doc, maybe a true doctor and trying to not prevent, but instead of treating a particular, we'll call it imbalance.

That's creating a symptom, that someone wants to get better with quicker. You feel like crap or, or in your case, Hey, I want to get fit for this particular event. So there's a time they've set. Yeah, for me, it's really okay, you want to be healthy, but you want to be able, what do you wanna do?

And that's another question it's like, what do you want to do? What are your goals? Do you want to keep doing kiteboarding for the next 20 years? Do you want to be able to continue riding where we are in Brava? There are a lot of people who retired up to the mountains and these guys just ride the bikes every day.

, just, they love it. 50 miles a day. It's okay there's benefits to that. And there's risk to that, but you love it. So how wouldn't you love to do this for the next 25 years? It's yeah, like it's their passion. It's their addiction. It's just what they love doing, getting out into nature.

So how can you achieve that? But you don't have to achieve that next month. It's take a year, take two years. That's okay. And just one step at a time, to continue through and. And that's require requires a commitment, to sticking through not everyone's willing or able to do that.

Dr Mike T Nelson: Yeah, definitely.

Dr Rick Cohen: And if we back up real quick, as we get close to wrapping up here on talking about fasting and mTOR, how do you think about waiting that versus the risk of sarcopenia and muscle loss, which we know is a risk factor for longevity? I don't think, I think with calorie re full-time calorie restriction, you look at people who are living on 30% calories, oof.

They have sarcopenia, they look pretty horrible, if you even look at some of the Victor longer Longo studies if you just do five days. And then you come back, there's such this hormonal recovery period, and I've done a couple sort of fasting mimic diets where you go down to five or 600 calories for five days.

And actually twice after that, like the second day of refeeding I set like lifting records. I was like, how is that possible? Cuz you just get this massive hormonal surge. So if you're feeding regularly people can maintain muscle on 16, eight,

right? A 16, eight intermediate fast. So doing a five day periodically really is no, no major effect.

And one could argue it's even beneficial. And then wrap ayin part of sarcopenia is a cellular dysfunction. So there are studies that are actually showing that using rapamycin actually preserves muscle. Those. The key is you want mTOR stimulation. You don't wanna shut it off completely. You just need to just hit the gas for a shorter period of time.

And that's what you do with rapamycin. You're not keeping it on all the time. You're pulsing it. And some of the indications are higher dose taken less frequently. So 10 or 20 milligrams, some people are taking just take it out to two, two and a half weeks. So you hit a trough cause there's two mTOR receptors.

There's mTOR one and mTOR two, two, and mTOR two is the one that they need to shut down for immune suppression. So you're actually trying to shut down innate immunity, which can be a good thing at times, but not for a longer period of time. So if you take the wrong dose and you haven't timed that you might have some susceptibility to some immune issues.

More likely to get an infection, but other than that shouldn't happen if you're dosing correctly. And the thing about Endor two is you're actually, you need it, you're suppressed it briefly. And then it just regenerates. So it's an enzyme that needs to recover. If you don't give it that time to recover, you're never gonna get that enzymatic complex that's needed.

Yeah, so I'm,

I'm waiting to see we're working with a lot more people, but, in, in sort of the forums and people I've talked to, and then there's a tele it's starting to catch on. There's a, there's a national wide telehealth group now that's offering rapamycin therapy, to people, through physicians all over the country and the models still need to be refined.

Just like anything. Okay. Wrap. Myin good. Take this. I'm just gonna take six milligrams a week. Cause that's what they said to do. You're probably okay with that, just like the studies, we just don't know, what your optimal dose is. And truly you're probably wanna do some tracking, body, weight, muscle mass, look for some key markers of health.

And then at least ideally, check a blood level, 24 hours afterwards and then maybe another time do a half life. Cuz there's the half life of rapamycin is 60 to 80 hours. So you can start to break that down. It's okay, hello. Can I get it under a particular point where I know I'm troughed out and that's gonna be different for each person depending on how much they absorbed and how well they're they detoxify just through their own nutritional status or their genetic status.

And. You could, you can't really figure that out other than checking a level. And once you know that you say, okay, I could take X amount every eight days and that's gonna keep me in a good balance and that's not regularly done again. It just requires the physician, to be educated enough.

Cuz a lot of times it's just, a doc is saying, Ooh, I can help people with this. And it's just another piece to my practice. And they haven't really deep dive into this one particular area or a lot of people just are purchasing it, internationally, just reading it on themselves and some are really bright and some are just like, I'll just start like the guy taking 80 supplements.

It's I just want to take, there was a study on this and the study and they just start taking stuff and that has its challenges.

Dr Mike T Nelson: Oh yeah. And I've often wondered with. The longer, fast for let's say, general populations that I wonder how much of that is pushing their body to upregulate fat more as a fuel source, because generally it's very low calorie.

Generally, you're trying to get insulin levels relatively low. We know that's going to push your body to use more fat as the fuel. They just study years ago, they compared overweight people to lean people. And in the overweight group, it took about 48 hours for them to have low enough insulin to see a big upregulation in fat use lean people was like 12 to 24 hours.

So I've often wondered if maybe that's another side benefit to doing some of these longer, fast, where you're giving the body this huge stimulus now to try to use fat more as a fuel. So at the end of it, you might be more metabolically flexible at that point too.

Dr Rick Cohen: Yep, totally. And. You say metabolic flexibility can go both ways and that's where you can get to the point where you can handle, fats or you need carbohydrates all the time, and then you get people who are can't handle carbohydrates very well.

Sure. It's one of the, one of the things after it's interesting, you mentioned that it's and I haven't worn a CGM doing one of these. I haven't done one in a while and I'm gonna plan to do that next time. So I'll be really curious to see what my glucose does during a five day fast, but people who have come off of those five day fast, so this is through one of the, providers of, there are a few right now, so talking to one of their educators, it's like, they've looked at people coming off of the five day fast and they may start to eat too soon.

And this person who was running like 70 for five days, with their glucose level was at 180. For the next three, four days they went, they shut down insulin so much that it couldn't handle any carbohydrates at all. So you really need to be careful for some people as to how you're refeeding as well.

So just coming off and then just flooding the body with more carbohydrates, is that a problem? Probably not for a few days, but it's certainly an indication of loss of metabolic flexibility to handle carbohydrates as well. So just to be aware of that. Yeah.

Dr Mike T Nelson: And last question. So one of my little theories is that for longevity, once we've got a lot of, good nutrition doing exercise, doing sleep that. If we can target these homeostatic regulators within the body and build up capacity with them, that you'll be more functional as a human organism. And that hopefully that would translate to better longevity. So things like temperature, hot and cold exposure, pH changes. Like we talked about fuel usage, blood glucose, and then oxygen and carbon dioxide.

What are your thoughts about that as what systems would you from a functional standpoint, try to target in terms of increasing longevity?

Dr Rick Cohen: It is hard to not go with the, the food metabolic flexibility for the mass population. Sure. Cause that's such a that's such a big issue.

But I'd say the other pieces to it is the parasympathetic sympathetic so someone you really can't. Have that adaptation, to be able to handle physiological or psychological stressors in a positive way. And we've lost that ability to modulate that. And that's huge cause that's another sort of key longevity pathway as well.

So I'd say that's a really important one to address and how do you use HR V to, to monitor that and to provide that feedback? Like I said, I'm curious to see where ha health is gonna come in, with regard to, using the polar strap and

taking the elite HRV model and throwing in breathing and feedback periods to, to see what resonance breathing does.

So that'll be interesting. They're using the right, I'm glad they're not using, plethysmography obviously, you just can't track. Live with that, where you can do that with, a polar more or the leaf was good. You could, I, I don't know if you ever worn one of those.

It was EKG patch. Yeah. It was EKG patch, but it was a little bit awkward. And the app is the app associated to, that was very limited. It really, it was set at a target where it would, you set your HRV target. And if it went too low, it kicked you into a resident breathing pattern.

See the, which was cool. It's actually, they use it for panic and anxiety disorders and depressive disorders. It's actually approved for insurance reimbursement for that purpose. But the handle I supposedly is gonna have a much more broader, widely use for just, developing that adaptation, which is something that I don't think exists in an easy way right now, to do.

And that's really powerful. So the other thing to mention the thought pattern with that,

Dr Mike T Nelson: that you're trying to trigger you to do different breathing patterns during the day to increase parasympathetic tone. Is that kind of the overall theory

Dr Rick Cohen: That's the overall theory, it's a trigger it's a trigger to, to in essence, Hey you're below a threshold.

It's are you not breathing while you're emailing? It's an awareness component. It's an awareness component. And and perhaps it develops a behavioral, classical conditioning. If you then developed this mind body, it's oh, okay. I need to stop. I need to get up.

Or maybe just take a walk and take some deep breaths. And now you've stopped that cycle from happening, before it ever occurs. And it's a lot harder to get out of that issue. So that's real, that's a cool potential feature. And then there's one, one other thing to mention is. Going back to one of the first things I said is tracking and have to be careful.

There's a lot of, as I said, there's a lot of supplements out there that may or may not be, worth their weight. And it's like how can you track? And, you can track

objectively subjectively, CGM, HRV, inflammatory markers. There are also chronological and biological age clocks that have, making the market epigenetic clocks as well.

And, they there's. Challenges with them as well, does that clock directly correlate to diseases and how you're doing? But I think the best one right now is when there's a lab called true diagnostic and they've highlighted out it's called a deed pace. There was a study in New Zealand that is still going.

It's been like 40 years now. Started people when they were young and they're tracking all these biological factors, reaction time, blood levels cognitive testing, and they're then doing programming, they're training the genetic clocks based on these people sort of responses. So they can not only see changes in function and how that relates to age, but also to what's happening.

And the methylation sites on this clock. What's cool about this. It's not. And here's the difference. Like you can get a biological age and what, I don't know what that means. It means theoretically it's, theoretically, this is where your body's aging. There'll be organ clocks that actually can look at different systems as well.

Those are, will be coming online, like your brain and your kidneys and your liver. But what the Janan pace does that nothing else is doing is it gives you a three win three month snapshot. So it's really more of a pace. So let's say you did everything wrong for 30 years, but now you're making changes.

It'll actually showing that rate of aging. So if you're aging one year to one year, you're chronologically based on, the statistics and the groups. And it could vary a bit based on demographics and they're working to improve that. But if it says 0.7, And you can keep it there.

Then theoretically you're aging 40% or 30% slower and you've made a change. So now you've made a change and you can recheck it. And if you're keeping there, then you're doing the right thing. The slowest they've ever seen is like 0.6, six or 0.6, five. Aging per year. And the most they've seen is about 1.4, 1.5.

So if you take someone 50 years old and let's say, theoretically they're gonna make it, let's say 80, 85. So if you're aging 0.7 per year, then that would've by you instead of 85, that'll get you to a hundred right at that same health span. Versus if you're 1.4, that's only another 24 years, that's gonna get you 74.

So the difference between that aging for that person is 25 years. It's a quarter of your lifespan just by monitoring and making changes. This is like the fourth generation of these. So it's gotten to the point where now it could be used as a cool tool to, how am I doing? Not just, oh, I'm, I'm 62 right.

And my biological age is 49. It's okay whatever. More important was I did the pace and it was like, it was 0.71. So that's pretty dang good. If I look age rate and I was like 98 or 99 percentile, so for my eight, that's a good thing. So whatever I'm doing, I'm still losing yeah. We're still losing, but at least we're buying ourself time and maybe that's a final thought is there's so much technology in this realm and there's more and more money being put into this, billions and billions of dollars. There's a group in Saudi Arabia.

Actually not a group Saudi Arabia themselves just committed 10 billion, billion a year. Yeah. Two aging longevity research. And right huge amounts of funds to this cuz they see the potential where we're gonna be in the next 10 or 15 years. What's the singularity where we can say, for every year of age, now we can start to move things the other way it's coming.

So if we can, we don't know how much we'll be able to regenerate. So the more we can take care of ourselves, we can one be around, but two being a better place where some of these things can make a bigger difference for ourselves. So interesting. Yeah.

Dr Mike T Nelson: And is that test from New Zealand? Is that commercially available yet or not?

Dr Rick Cohen: Yeah, it's through, yeah.

It's it's licensed from actually Duke University by true diagnostics throughout Kentucky. Yeah. Oh very I, anyone has questions. I don't, if you put in the show notes or yeah,

Dr Mike T Nelson: I was gonna ask how can people get a hold of you? What give us a spiel where they can find you, what other stuff you've got available?

Dr Rick Cohen: Yeah. So my I've, my day job is a nutrition brand, right? My day job, which I'm trying to move away from. I had a functional medicine practice for a bunch of years and about 15 years ago, got into testosterone. Help in men and developed a nutritional product based on that, it was actually a pro hormone product that, you know at the time, and that did really well.

So I got focused. It was fun to formulate. So the past, 10 to 15 years, I've had a few different brands. And it was fun. The whole supplement industry has changed so dramatically. Over the past, even few years, just social media and influencers and the ability to truly educate in a core, meaningful way and to try and provide products that are not overly, like our markups, maybe three to one, majority is like eight to one.

It's ridiculous. So it's, but it's hard to get that across. It's not my passion. My passion is longevity. I'm moving more into this space, as what I do for myself, starting to share, I work with a small group of people as well. So the company is Pure Clean Performance.

You can email me at Rick, a pure clean performance. I don't have any longevity access setup we do through the website, offer labs and services, but, be happy to chat with people, about their interests in health and longevity and, they need coaching or guidance.

And at some point in the next probably six months to year either I'll be doing some consulting with one or two firms that has interest in my unique knowledge from functional to health and medicine, or just hang up a small shingle, work with a, maybe.

20-30 people who are really motivated and, cuz we can all learn from one another. I do this, you do that. And you say, Hey I did this and it just speeds up our learning curve. And I wish that happened more cuz you just have still so many diverse interests in the field, trying to monetize something and while there's certainly sharing in the community, it's small, but it's growing and that's good and bad in all aspects of business and life.

Dr Mike T Nelson: And I, my bias is I think, especially in the near future and even starting now, there's gonna be a. Bigger market for some people who are looking to do whatever they can to increase their life or health span. And I think there'll be a good market for people like yourselves and others who can look at the data and try to interpret what is the best and most useful for that particular person based on research and experience and everything else.

As a holistic type model. I know some people are doing this more for the fitness area too. And I think in longevity, I think that's the next big area, right? So can you look at that individual as a whole person? What are they able to do? What is their time constraints and figure out okay.

Based on blood work testing, functional analysis, whatever you want to do, here's like your top 10 things, and then provide the coaching on the back end of how to get them to do those things.

Dr Rick Cohen: Oh, yeah, it's coming Peter D DMAs and Anthony Robin, they've started this fountain. Do you know how many people they have signed up on their wait list? 25,000? Yeah. Okay. I believe it. What, when a guest per year, just as a starting, just enter the door, what your cost is probably at least a hundred thousand. They're only 25,000. So they have a half, a million dollars of like people waiting, Peter Atilla charges \$120,000 a year.

Yeah. I believe that. it doesn't have to be that, and there's another one health nucleus out of San Diego as well as 30, 30 to 35 grand a year. So I don't know if you get that. You'll get some, maybe, some fancier care of it. I, it doesn't need to be that expensive.

Dr Mike T Nelson: Yeah. And I think they're generally dealing with people who, not all of 'em, but people who want of the best. And I would imagine a lot of 'em spend a bunch of time sacrificing their health for financial gain. And now as they're older have realized uhoh how do I try to reverse this? I have the money, so I'll just spend it , you know what I mean?

Dr Rick Cohen: Rights kinda population. So I'm gonna make it, I'm gonna make right. So somewhere in between there's something it does cost time and labs and and money, but there's something a little bit more affordable, yeah. Till we get some magic E five or don't know.

We'll see. We'll see. They're, they're doing gene therapies now as well. They just did a. One for cholesterol, that's a very particular enzyme for cholesterol, so one gene therapy shot and it'll take care of it for life. So for hypercholesterolemia, for a particular type of hypercholesterolemia, and there's a group called bio Aviva, that's doing injections for Clotho and, tele race and myostatin so that they have three and they just did a study, small study, like 10 people for, cognitive and pre-Alzheimer's and mild Alzheimer's and the results were pretty impressive, so that's coming a as well.

So it's quite it's exciting, it's all, from a bit of a science, nutrition, geek sort. It's, what's the toy for the month of the new protocol, but the challenge is how to weed that out. Yeah. And, it's I can't keep up and it's what I do, yeah. I have the experience. So how does, someone who has another life that actually does other things, it's impossible.

Dr Mike T Nelson: Yeah. And they're gonna be, like we said, bamboozled with all sorts of marketing, pushing one particular thing, which again, may be effective may not, but it, the one thing probably isn't gonna solve all of your issues.

And so trying to figure out when to use particular things and in what order, and, where's the weak links and where's the leverage, that's where I think, coachings physicians, that one on one relationship becomes super useful.

Dr Rick Cohen: True. I can envision almost like a hybrid where there's some, cuz there's base education, there's foundational education.

That people can do, but then there's how you start to tweak those based on each people, each person's needs. Yeah.

Dr Mike T Nelson: Awesome. So where's the best place people could get in touch with you then?

Dr Rick Cohen: Yeah, Rick at pure clean performance. Okay. Yeah. That works and be happy to chat and dial in on what people's interests are.

And, I'm gonna still stick with, it's a spinoff, my passion, if there's a particular area that, needs to be addressed, but ultimately it's like you said, it needs to be a more holistic, comprehensive approach. And maybe not everything, there's some big pieces that someone may be overlooking and that's the important point not to miss.

Dr Mike T Nelson: Yeah.

Awesome. Cool. Thank you so much for all your time today. We really appreciate it. And for sharing so willingly on the podcast. That's awesome.

Dr Rick Cohen: Yeah, appreciate it. Great. It was a pleasure. And hope to talk again soon. Yeah. Thank you so much. Okay. Thanks Mike.

Dr Mike T Nelson: Thank you so much for listening to the podcast today. Big, thanks to Dr. Rick Cohen for coming on the podcast and giving us all the great information and all of his time. Make sure to check out his links below, and you can also check out pure clean performance. There also. If you are interested in

another way to increase true longevity, increase your body's ability to be more antifragile, resilient, and just generally much harder to kill.

Check out the physiologic flexibility certification. Once you have the basics down of nutrition and exercise what would be the next level of things? You could implement to take your physiology even farther. This ranges from breath work to true high intensity interval training, temperature changes even the use of some other supplements and about 20 plus hours, more of information provided to you in a context.

So you'll understand why those areas are important. How do they fit into the big. Super hardcore dive into all the research on it explained in a way that you will understand it. And then also 40 action items this way, you will understand exactly what it is you would need to do for either yourself or for your clients.

And if you are a personal trainer, my bias is. Being able to do longevity work in addition to sets and reps and nutrition is gonna be pretty much the new standard going forward. And how do you incorporate those things? What things would you need to do? And the nice part is a lot of them from the physiologic flexibility certification, they don't take a ton of extra time since they're not usually incorporated in most clients program.

And most people just haven't done much work in those areas. The benefit then is the amount of time you would need to invest is on the smaller side then, which is great, cuz it also makes it more practical. As I mentioned, the top of the show, the physiologic flexibility certification opens again on a Monday, September 5th, 2022.

It'll be open for one week until September 12th, 2022 for all the information and much more go to physiologicflexibility.com. If you're listening outside of that time period still go there and you'll be able to get on the wait list, which will put you on the newsletter. You'll get all the latest and greatest information.

And then I also have a couple cool bonus items that will go out only to people on the newsletter. So go to [a physiologicflexibility.com](https://physiologicflexibility.com). Thank you so much to Dr. Rick Cohen for being on the podcast today. And if you enjoyed the podcast. Please leave us a review. Some stars, whatever stars you think are appropriate.

We appreciate you listening. Thank you so much. And I will talk to you next week.