David Roberts (00:02):

Hey, everybody. It's David Roberts and this is the Mara Labs Podcast, and with me today are Dr. Martin Katz and Dr. John Gildea. Today we're going to be discussing health span and it's contrast against lifespan, which is a bit more commonly used term, and last week on our podcast, Martin was sharing about health span and that was intriguing to me and so I wanted to talk more a bit about what health span is. Maybe we can start off with defining the terms. Before our podcast, I mentioned quality of life and Martin was quick to correct me, and rightly so. So let's dive in and just talk about health span. Martin, why don't you start and give us some definitions?

Martin Katz (00:52):

Sure. So we'll start with lifespan and lifespan is exactly that, how long you live. The awesome thing is we have extended our lifespan in the last century, approximately, we'll say, about 20 years. So we're now at about 73 years, 73.6. We were at 73.9. We've gone down a little bit. Then in contrast that to health span, which is the amount of years you live healthy without a disease process. Now, that becomes a little harder to define because everybody's definition of health is different and disease free doesn't mean healthy. So that is where it becomes a little bit tricky. There are people definitely working on the definition of health. It certainly needs to compromise of both physical, mental, and community health. If you look around, some people are not as fortunate as others and so we have to encompass all those terms to truly understand health and to drive a population and a community towards that I think is tremendously important. Certainly where I live. In my practice, I have people come in, I've talked to you about this before, they look like tomorrow they may have a heart attack. So we would consider them metabolic. Certainly just look a little edematous, maybe a little swollen, maybe a little red in the face, have a little more truncal obesity. They walk from their car into the office and they're short breath and breathing a little heavier. Their pulse rate goes up. Their blood pressure is quick to respond, not in a good way, but their blood pressure goes up and they say, "Oh, I normally don't have blood pressure problems." Well, actually that's not true. In this case a quick to respond blood pressure to any limited amount of stress is a very poor sign, one that we use with stress tests all the time.

Martin Katz (02:45):

So again, the absence of disease is certainly not health, so we definitely need to understand where we are. I like to sort of talk about what's under the hood and so if you're in a car racing against a bunch of other people and you're all going downhill and racing downhill fairly quickly, you have about the same amount of horsepower, you're only going to be able to tell what's under the hood when you challenge the car a little bit, maybe put some turns in, maybe put some uphills in. If there's any deficits in the car, the engine isn't quite running right, the brakes aren't running right around those corners, the car is just not accelerating well, whatever the problem is, the chassis, the engine, when you start challenging it, you'll notice that maybe the car is not so healthy.

Martin Katz (03:32):

That's what a lot of us are doing. We're sort of just gliding downhill. We're going from work to home to the couch and back, and we never really challenge our body. As soon as we increase that resistance, we want to play with our kids or jump to a freezing cold water and return a bunch of blood to the heart quickly, we start seeing heart attacks. Remember, 25% of heart attacks, the first sign is death. Not to be depressing, but that left anterior descending is unforgiving. You got to be able to get blood to that heart. If you have a quick ischemic event or infarction, you're done for. Very hard to recover from that. So

again, point being we really need to understand health and what it is that's driving health and how to be healthy would be incredibly important to me.

David Roberts (04:19):

I agree. Those are some good points, Martin. So you mentioned the physical, the mental and the communal, and I just want to kind of unpack each of those. So maybe John, we were talking about your physical therapy earlier. You're probably a bit more aware, and I am too. I just got over COVID. Can you talk about health span in terms of the physical from your perspective?

John Gildea (04:44):

Yeah, I mean, I was thinking a lot about that as Martin was talking. I think there definitely are metrics that can indicate whether you're healthy. I don't think that's really incorporated into the sort of medical model of health. So I think all the biohackers out there that are trying to improve their health have the right idea, that they want to get their handle on what are the metrics and try and quantitate it and see how you can biohack it. You can try things and see how it gets better. I guess the modern athlete would be that way. How can I decrease my time if I'm competing in some way? So we need to develop those tests, some common metrics that we can quantitate health span. I think that would be really interesting.

John Gildea (05:37):

Anecdotally, a lot of those kind of things where ... one of mine that I just have in the back of my head is whether I put my clothes on standing up.

Martin Katz (05:50):

That's true.

John Gildea (05:50):

Put your socks on when you're standing up. When I'm in good shape and healthy, I'll stand there and completely dress myself. But as things deteriorate a little bit, when my back is bad, I'm more likely to sit down. If I'm in that stretch for long enough time, I'll notice when I'm finally feeling well enough again, I'm like, "Oh, look, I'm standing to get completely dressed again." So there are a lot of those things like that, like metrics of ... if you can go onto the ground completely and get up from the ground without using your hands is a metric that's been used in papers, which seems so simple, but everyone should figure out their own health metrics.

David Roberts (06:36):

I'm resisting the urge to get up from the chair and see if I can do that.

Martin Katz (06:40):

Yeah. I mean, and that's true. Getting up from the chair without pushing up with your arms is another metric that's been used.

John Gildea (06:45):

Some really interesting animal studies just off the top of my head are you can stratify a lot of species of rodent. There are test beds for figuring out species of rodent that is applicable for your model system to see if it works. One of the ones that is very well correlated with health span or lifespan in rodents is VO2

max. So it's very proportionate to that and that kind of all makes sense, is can you withstand a stress, which is a good metric of a lot of health considerations. Is your body adaptable to a stressful environment and successfully make it through that?

Martin Katz (07:33):

Yeah, it's interesting, John, just speaking about that. In modern medicine, we ... well, in American Western medicine, we have almost no metrics that we use consistently to measure. I mean, doing a Medicare physical, we do the steady fall risk, but that almost seems a little bit too late at that point. We're not asking, "Can you get up off a chair?" We're asking, "Are you falling?" Which, again, we're waiting a little bit too long in that case. Certainly, we do talk about depression and we monitor depression, and that's certainly a mental health thing, but there are other causes of mental distress. So simple things like, "Are you sleeping? How well are you sleeping?" is another metric. A lot of times when we're under mental duress, or even physical duress, if something's painful, we're not sleeping well, so it's another metric that we can use as far as health goes.

Martin Katz (08:22):

Certainly we're not checking telomere lengths or anything like that in current medicine as a metric, but if you're lucky enough to be able to get a coronary calcium score, again, not a true indication of what may or may not happen, but it's some insight, no question, as to what we should be doing with your blood pressure, cholesterol, et cetera, et cetera. If your coronary calcium score's high or CIMT, or again, telomere lengths, if you look like you have metabolic syndrome, there are certain things that we can look at. How's your blood pressure doing? How's your pulse rate? Another one that's fairly easy, I think it gets fairly complex the deeper you go into it, but heart rate recovery and the velocity that is going-

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Martin Katz (09:03):

... [inaudible 00:09:01] by the heart rate recovery and the velocity that is going up or down how quickly do you recover from a workout, which we just did. So you do a workout. you see how high your heart rate gets. And more importantly, I would argue is how quickly can you recover from that.

David Roberts (09:17):

So what's a good recovery on that?

Martin Katz (09:19):

I don't-

David Roberts (09:19):

The percentage.

Martin Katz (09:20):

I would say with within a certain period of time, 20%. I can't remember, but obviously, the greater decrease you have, the better. And I don't remember the exact metrics on that.

David Roberts (09:34):

We'll try to have something in the notes here.

Martin Katz (09:37):

Should be something. Yeah. We should have something on that, but you have an idea of how well you're recovering. Certainly if you get up to per 15 seconds, 30, so 120 beats per minute, and you're recovering to 110 after a minute, probably not that great, but if you get to below 100, so that would be roughly 20%, probably much better after two minutes.

David Roberts (09:57):

The workout we just did, Martin... One day we'll show you Martin's seven minute workout, but we just did workout and I was 28 and went down to 22. I don't know how long you timed us [crosstalk 00:10:08]-

Martin Katz (10:08):

15 seconds.

David Roberts (10:09):

15 seconds?

Martin Katz (10:09):

Yeah.

David Roberts (10:09):

So is that good?

Martin Katz (10:11):

Yeah. I mean, I would say that's a decent recovery. Obviously you want [crosstalk 00:10:14]-

David Roberts (10:14):

It's respectable?

Martin Katz (10:15):

It's respectable, yeah. But the fun thing about it that I like to look at, if you're not recovering, how are you sleeping? How are you eating? How well are you hydrated? Have you been over-training? There is such a thing as over-training where your heart rate just does not recover and you stay too high. So these athletes who are also workaholics, so they're working out excessively, doing triathlons, maybe even Ironman triathlons or numerous marathons and they're also working really hard, and so they're burning the candle at all ends, including the middle, and their heart rate does not recover. That can be another sign that you're over-training. So just because you're exercising doesn't mean you're doing it right.

David Roberts (10:52):

Yeah. And thinking about this and thinking about last week what you said is that you want to be active for your kids. And so when I think of that, I think of mobility, so being able to move around, get on the floor, get up, and then also close cousins to that are pain. And we've alluded to both of those, but I don't

think we've talked... We talked some about mobility, getting up from the ground, but a pain. How has that encompassing with health span?

Martin Katz (11:26):

Yeah. I mean, again it's really defined as this ability to be disease free. The absence of disease is not necessarily health, but certainly if you're in chronic pain and having an issue with chronic pain and now on a bunch of meds that may affect your system in some other way by very definition, you're now in the chronic disease phase and you're not healthy. And anybody who's had chronic pain, whether it's shoulder or knee from possibly shingles or zoster, knows it's a unpleasant experience and certainly affects your wellbeing and your health. And so being as healthy as you can be, again it's this idea of this car that's running down the hill and if we're all running and once we get the stress, how are we able to recover from that? And that's what's under the chassis.

Martin Katz (12:14):

So ensuring that you're eating the best foods, exercising, your immune system is running and sleeping in a good community. So your immune system can function in a way that is functional. So not only can you respond to the stress or the infection or the injury, but you can also limit that response with the T suppressor cell, so you have a good balance. And that's a system that's working really well that again is in a good balance. So you're feeling you can respond to a stress and you can find recovery afterwards because what's under the chassis is really good. You've been taking care of your body. John, I don't know if we want to get into the quagmire of what is a healthy diet or not, but do you have some thoughts on what people should be considering? And really, I mean, what is your thought as to what is the biggest focus as far as health? Is it exercise? Is it nutrition? Do you have a... I know I have a lot of thought on that.

John Gildea (13:07):

Just taking very big view of what is ideal health. some components of it is... It might come from technology, development of better supplements as you're approaching that age where you may see some decline or in the population studies once you get in your 50s. You want to start way before that. But start mitigating those effects early is really important. One of my big things is nutrient density and what you're eating. I think a lot of people are hyper-focused on whether something is organic or not. And that's really important to be free of toxins because those are things that damage DNA, makes for accumulation of altered proteins and lipids and things that mimic aging.

John Gildea (13:59):

But one of my big things is nutrient intensity is that as you're aging, you're not going to be as active as you were when you were young. And I think as you're young, you're eating so much and exercising so much that it's easier to get all the nutrients you need because you're eating more. But as you're aging and you're not moving as much, you have to adjust your caloric intake. And in that case, it's more important to eat nutrient dense food, to go seek out your composted vegetables in garden, going to your local outdoor markets where you can get food by people that are crazy about producing exceptional food. Same with the meats that you get. Being beyond organic, I guess, would be a category that is important to try and strive for. But I really love that it's always paired with movement. You have to move a certain amount because we're designed that way. We have to be stressed in order to adapt to that stress. And so to have all the nutrients that are especially in the areas of stress tolerance is really important. A good example of it is vitamin D. Vitamin D is for sure a stress nutrient. The more stressed

you are, the more you use up. The more overweight you are, the more you need. And so there are a lot of nutrients that are that way. I was just thinking of another thing what you're saying that sparked some thoughts was that there are some modern technologies that might help in this regard, is there's a technology called Dam Age, D-A-M, A-G-E, that is methylation status of your whole genome, where they can map how old you are biologically and your chronological age versus your biological age. If they're asynchronous, meaning you're aging faster than your chronological age, it will show up in these tests and what's interesting is it's known that those can move. So if you do things that dramatically improve your health, you'll age slower.

John Gildea (16:06):

And then another technology called Grim Age is another set of readouts from your genome since we're interested in epigenetics and [inaudible 00:16:15] compounds is... Grim Age is the chance of having a chronic disease in the future. So it's predictive of that. And so there's a lot of supplements that should be able to move the needles of those. And I think in the future that's going to be something that I'm hopeful will be part of your yearly examination that you can really set your sights on saying, "In the next year, I'm going to do this," and have real feedback as to whether you're improving your health or are you sliding down that slope that is such a good analogy or...

David Roberts (16:51):

What are your top three supplements for... Yeah. I got to ask you. Top three supplements. Doesn't have to be any of ours.

John Gildea (17:00):

I mean, for...

David Roberts (17:01):

Arresting. Improving the...

John Gildea (17:03):

Epigenetics?

David Roberts (17:04):

Yeah.

John Gildea (17:05):

Things like that? I'm very into the sauna, especially when you're really quantitating, whether you're getting your body temperature rising enough so that your heart rate increases, your actual core temperature may increase. So that would be a good one. Certainly VO2 max, which would be any exercise where you're really challenging that, where you go beyond what your body can deal with oxygen carrying capacity-wise. So that would be two things that are non-nutrition. And I think nutrition, you have to put NAD, some NAD boosting things, which is a number of supplements there along with a supplement that has proven to work in the epigenic arena for a long time, resveratrol or pterostilbene. That's purposefully trying to avoid ours-

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John Gildea (18:03):

... there still be. That's purposefully trying to avoid ours. [crosstalk 00:18:04]-

David Roberts (18:04):

Good man. Feel free to just be honest. But both of those are good ones. I want to ask you, Martin, the question on the supplements. Before we move on, what's your favorite nutrient dense food, John?

John Gildea (18:21):

Excellent Eggs.

David Roberts (18:23):

Excellent Eggs. All right. Martin, same question and then question on the top epigenetic supplements.

Martin Katz (18:32):

Yeah. It's hard to get away from the eggs quite honestly, but increasingly in a rush, I just love a well made smoothie. It's just really, really good.

John Gildea (18:44):

Do you put a bunch of things in it?

David Roberts (18:45):

Does Sarah make a good smoothie?

Martin Katz (18:47):

I'm primarily in charge of making the smoothies.

David Roberts (18:49):

You're the smoothie man. Can we get a Dr. Katz smoothie recipe to share?

Martin Katz (18:53):

Yeah, I think at some point that'd be good, yeah. So I like smoothies, but supplements, gosh, that's a much, much more difficult question. I love John's idea of sauna.

David Roberts (19:04):

Do you guys sauna? Do you guys get in saunas?

Martin Katz (19:07):

I just had a steaming. I don't have access to a sauna. At some point, I'd like to.

David Roberts (19:11):

You do, John? Do you guys have-

John Gildea (19:12):

Yeah, we built our own.

David Roberts (19:14):

Oh, you do the red lights?

John Gildea (19:15):

Mm-hmm (affirmative)

Martin Katz (19:16):

Yeah, that's pretty big, nice. Thumbs up on that one. And like the idea of VO2max, but I'm going to challenge that a little bit and go with Phil Maffetone studies on exercise, but in a different way. And Phil Maffetone has increasing evidence out there that exercise is certainly extremely, extremely important, but a little bit different where he does not want you to get close to your VO2max. He's actually going to keep you basically the easy equation that is 180 minus your age, and you're not to get your heart rate any higher than that. And this is for aging, this is not for... If you're a competing, very different. But this is specifically for aging and health span.

Martin Katz (20:04):

So if you're competing it's not an equation that you're going to come anywhere close to. And it's intriguing, some people start off and they walk, so you say 10 minutes, I'm going to keep my heart rate at this 180 minus that age, and you do that walk. It's a disciplined exercise for sure. And what you'll notice is can go further and further and faster and faster and harder and harder while still keeping your heart rate in that same period for that same amount of time. It's pretty impressive if you're good about it. The other thing that I really like that, again, just sort of fresh off the book markets is Breath Work. I'm just more and more impressed with this whole idea of what are you doing more than anything else?

David Roberts (20:49):

Breathing.

Martin Katz (20:49):

And breathing is one of those things, your heart rate, but it's much, much harder to control your heart rate. As it is, you can't do it through breath work, but much, much harder to do. But sitting there and really thinking about breath can really help, especially for my patients. And I just have so many of them right now that are just so stressed, but if you do an alternate nose breath or a specific count breath, you're really focused on the breath and it can take you out of that intense stress that you're in and can really help relax you. You can feel your heart rate going down and it can be really impressive. I do like NAD as something for aging. And again, I think sulforaphane has to be mentioned and just-

David Roberts (21:32):

It has to be.

Martin Katz (21:33):

It has to be. So many uses. Such a great product for a lot of things that create oxidative stress, which creates a significant amount of aging. So I think that needs to be up there.

David Roberts (21:45):

So we've talked a lot so far about physical, but we also, what you mentioned at the beginning, there's the mental, and then there's the communal. So let's shift, talk a little bit about both of those starting with mental. What does health span look like mentally?

Martin Katz (22:04):

Yeah, I for sure think that it's an incredibly important part of it because mostly from, if I'm working with a lot of people that are battling cancer, just, seeing people face to face, you can almost put people into categories early on as whether they have a group of people that they're super supported for or not. And if not, it has to be one of the big things that they work on is to work on your mental state of being able to really dig deep and find forgiveness in places where it's readily obvious. If you just say, "Is there anything that you regret? Are there any relationships that you know are affecting you now? To dig in there where it's uncomfortable, but that's also the place where I think you could see the biggest benefits because you have to want to live a healthy lifespan.

Martin Katz (23:16):

You have to manage those thoughts that are also chronic bad thoughts. And it definitely affects you. The other end of the spectrum where you are anxious and you know you're anxious a lot of the time, that raised epinephrine and cortisol and things are associated with so many disease states. It would be like the other side of exercising. Exercise seems to be good for everything relating to health. So the opposite, having your mental state and emotional state in check would be similar to that and the bad version of that is it exacerbates everything. And we often talk about sleep too that same way is that it's so universally important, but hard to quantitate as well. But yeah, that mental state, and I think we've all in the last couple years seen versions of barriers being put up between family that has made everything harder.

David Roberts (24:33):

Yeah, I love how you're [crosstalk 00:24:37]. You just really masterfully blended mental with communal. That's actually incredibly impressive because they really are connected. And I always say we're whole beings and we're physical, mental, spiritual, and all those aspects can combine to look at who we are, how healthy we are. In terms of mental, a thing that comes to mind, which I'm also interested that you didn't mention, John, but maybe one of you guys can jump in on this, is cognition.

Martin Katz (25:16):

Well, that's where I was thinking John was. I was fascinated by that, where John went with that, which is brilliant. But yeah, my mind was totally on this whole idea of Alzheimer's, which tremendous stress on, again, the community being the family. But you look at Alzheimer's, I don't know, 10 years ago, was the 8th leading cause of chronic disease and death in this country. And again, Alzheimer's is not really causing death, but it will lead to death. And it does take some time, so these folks will be around for some time. And it is very difficult on the healthcare system, on family, on friends.

Martin Katz (25:54):

And again, now it's the 3rd leading cause, which is another very important idea to understand about this whole lifespan, health span thing is as we've increased lifespan, health span has stayed the same for all this time. We have not seen a tremendous jump in health span, which is this whole understanding we're staying alive, maybe through chemicals and through procedures. And there's some people out there

that say, "If I'm not healthy after 75, I don't want the procedures because it's really not improving my health span."

David Roberts (26:26):

So have there been studies on health span so that that's documented?

Martin Katz (26:30):

Well, again, it's how you define it. So that's a difficult one, but as they're defining it currently, there has not been a tremendous increase in health span. Which, again, is a shame. We're not fully understanding what it takes to be preventive, to really take care of our bodies. And that's because nobody's talking about it. Or not enough people are talking about it. And the people who are out there, if you look at the whole medical model, it's not about measuring health, it's not about talking about health, it's about measuring disease and how to treat disease. When you come into the-

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Martin Katz (27:03):

It's about measuring disease and how to treat disease. When you come into the doctor's office, we're not interested necessarily in how to keep you healthy, we just want to make sure you don't have a disease. And if you have a disease, here's your med or here's your surgery or here's your procedure. That's how the entire system works.

David Roberts (27:15):

Present company excluded.

Martin Katz (27:17):

Right. Possibly because the insurance companies don't want us... I mean, I'm getting into conspiracy and I apologize, but the reason insurance companies want you staying insured is, if you're unhealthy, you're more likely to want insurance. And so it makes a ton of sense. I don't think it's necessarily malicious, but it's the system, so there's no big rush to change it. Again, I don't think it's a malicious thing, but it's a status quo thing where they're getting paid a lot of money to not change the system. And we're paying them day in and day out and getting things denied, which again, boggles my mind. But anyway, we're getting into an area I don't necessarily want to get into, but-

David Roberts (27:58):

Let's drop back.

Martin Katz (27:59):

Right. Right. So dropping back, cognition-

David Roberts (28:02):

What do you do?

Martin Katz (28:04):

What I tell my patients to do, or what do I do?

David Roberts (28:06):

Both.

Martin Katz (28:07):

Both. I mean, I guess what I tell my patients to do is exactly what I do.

David Roberts (28:12):

Good.

Martin Katz (28:12):

Yeah. So, again, eating healthy, I think is imperative. This nutrient idea of John's is just incredibly important. So apple juice, sodas with high sugar, you're getting a ton of calories and there's absolutely no nutrients in there. And it just does not belong on the dining room table or anywhere really in your kitchen or in your pantry. And so really understanding what is it that you're choosing to put in your mouth that's going to support your cognitive health and your physical health, again, we're talking about cognition.

Martin Katz (28:44):

Exercise is imperative BDNF, we've talked about it. Sulforaphane certainly helps, but exercise really helps brain derive neurotrophic factor. So I'm a big fan of exercise and I'm a big fan of exercising in a different way. So holding a ball, bouncing it against a wall, catching with the other hand, table tennis is a great thing that's easy to put in your house, just doing something that is different. Again, my kid just took up sculling, really difficult sport to balance in the boat, to row the boat down in a way that makes sense. Again, not all of us have access to a single scull or even a double, but just something different that you're learning to do that you haven't done. Going out and playing lacrosse and just juggling a ball and throwing against a wall, both right and left handed to increase cognition.

Martin Katz (29:34):

Sleep is imperative. It seems sleep is absolutely imperative before 20, as you're growing. Do we get a little bit of a break between 20 and 40 during those child raising years? Possibly. I mean, I think sleep is still imperative. If you don't get sleep, you're more cranky. Your relationship with your kids isn't going to be better, but maybe we can be a little bit outside of that eight hours strictly. But after 40, there's no question sleep has to happen and it has to happen on a consistent basis.

Martin Katz (30:04):

And then community, if you look at the blue zones, the folks that did really, really well were people who were in communities, where they felt very comfortable and can talk and can laugh and can cry. You know, you look at, again, the area in Loma Linda, you look around Cyprus, I think it was, all these areas-

David Roberts (30:25):

Italy.

Martin Katz (30:26):

... and Italy, just incredible community where people identify and people help each other out, I think, is pretty important. So many thoughts again, but again, we really need to be understanding the importance of this prevention and really giving ourselves the time.

Martin Katz (30:43):

You mentioned, David, you talk about whole, what'd you say whole health?

David Roberts (30:48):

We're whole beings.

Martin Katz (30:48):

Whole beings, whole beings. So when a person comes into my office, I say, "Do you want to be healthy," and obviously, hopefully, everybody says, "Yes." And if you want to be healthy, you need to think outside of yourself, hopefully, because again, if your family's not healthy, if you're struggling as a family, if the community you live in is not healthy and you're struggling with that, it's going to be much harder to be healthy.

John Gildea (31:11):

I was just thinking about that one question that was brought up of, are there studies? I think the first time I really became aware of health span was with Dr. Long and his Fasting Mimicking Diet, when he was doing it in mice. That was a really clear example of that, where the mice weren't living longer, at least not statistically. I think they were a little bit longer, but what was very obvious is that they were active in many ways until they died. So they were not dying... they didn't live any longer, but a large percentage of them lived right up to the end and then they died. And a big part of that turned out to be immune related and the cancer rate on these mice was so low, so that combination of immune health and anti-cancer was very eminent in those studies where they didn't find nearly as much cancer in the younger animals. So that wasn't how they were... the slow attrition of how mice normally die in a longevity study.

Martin Katz (32:26):

Yeah. And that's actually another hack. Again, if my patients are unable to exercise because of whatever pain, or whatever they're experiencing, and feel exercise is not a part, even though I think you can pretty much exercise any part of your body, and again, you're a system, so these things move around. But if you, for some reason, find yourself in a position you can't exercise, fasting is fantastic.

Martin Katz (32:48):

And are we do going to do another fast at some point?

David Roberts (32:51):

We will be doing a fast in January, yes.

Martin Katz (32:55):

Stay tuned.

David Roberts (32:56):

Stay tuned.

David Roberts (32:57):

Last question, and we're going to wrap it up. Try to keep it short. We have gone a little longer than we usually do. What does genetics play in a healthy man, how does genetics play the part or does it? What percentage of importance are genetics, if any?

Martin Katz (33:13):

I'll get back to you on this one. I'm reading Siddartha Mukherjee's book right now on THE GENE and he'll have some important things to say, I'm sure. I think most people would agree, it's about 20% is genomic. The rest is epigenomic and your environment. Yeah.

David Roberts (33:29):

John?

John Gildea (33:30):

Yeah. And I would probably echo that and the majority of it is epigenetic. And what I see is the hope, when you're talking about genetics is, say you're caught in a really bad, super stressful scenario, eating really poorly, extend that out a number of years and you'll probably find out what your genetic predisposition disease will be. So be heartened because whatever it is, most of the time, it can be masked by excellent health.

David Roberts (34:04):

Thank you, John. Thanks Martin.

David Roberts (34:06):

So wrapping up, health span is different than lifespan. Lifespan is the number of years you live. Health span, not necessarily how long you live, but how well you live. And the elements involved in those are physical, so pain, mobility, how you're able to recover from stressors, brain in terms of cognition. And John did a nice interplay between the mental aspect of health span and the communal aspect. Your community, what is your support system? How well are you living in community with others? And then we talked a little bit about genetics, but this has been helpful for me. I've learned a lot today. So thank you guys so much for joining and sharing your thoughts on health span and stay tuned, we'll be back next week.

Martin Katz (35:01):

Thanks for giving us the opportunity. And people, take care of your body. It's worth it.

John Gildea (35:05):

Bye-bye.

David Roberts (35:05):

Bye-bye.

PART 4 OF 4 ENDS [00:35:08]