The Importance of Exercise and Biological Youth for Longevity — Interview With Siim Land

By Dr. Joseph Mercola

Dr. Joseph Mercola:

Welcome everyone. Dr. Mercola helping you take control of your health. Today we're going to talk Siim Land who has written a new book, “The Longevity Leap”, and it is quite a monster. It's hard to imagine that in less than a year, he has compiled this book, but he has. It's over 500 pages and not 1,000 references, not two, not three, not four, not even 5,000 references, 8,000 references.

The reference list is longer than most books. He's backed it up and it's a lot of information. I've always been impressed with Siim. I think I've met him, when did I meet you Siim, first? It was like five, six years ago. I know exactly where it was and I know exactly where we were standing. We were standing in front of someone's booth.

Siim Land:

Quicksilver Scientific.

Dr. Joseph Mercola:

Quicksilver. That's what it was. Yeah, it was a good friend of mine.

Siim Land:

Bulletproof conference in-

Dr. Joseph Mercola:

Yeah, I said, "Oh yeah." Yeah, it was great. You've been extraordinary. You're a real leader in the field and not only in just explaining things but doing it. You're not a hypocrite. You actually implement these programs and you're a stellar example of taking good care of your biology. I think you've done your biological age, what are you, four or five years old?

Siim Land:

Yeah, I'm chronologically 29. I'm going to be 30 in two months. I did my organ age test, which was 17, and my liver, out of those markers, was nine, so that was the lowest. My liver is nine years old.

Dr. Joseph Mercola:

I wasn't too far off.

Siim Land:

Yeah.

Dr. Joseph Mercola:

Pretty extraordinary. I'm not sure that I believe those.

Siim Land:

Right.

Dr. Joseph Mercola:

Maybe we can start there, because there's one ways, there's a number of different ratios you can use. Certainly, early on we had telomeres, which are the end caps of the chromosomes. The theory at that time was telomere attrition is associated with a decrease in longevity. Maybe you can talk a little bit about that.

Siim Land:

Yeah, so there are these new epigenetic age tests and biological age tests that have been around for maybe 10 years. You're right, I wouldn't put a lot of emphasis on them. There's a lot of confounding variables that can affect those results. At the same time, we don't know necessarily what does it mean if you have a liver of a nine-year-old. Does it mean that you're going to live exponentially longer than someone else. We don't have that data yet.

It's kind of interesting tests and markers, but there's just not that much information about what's... The problem is also that a lot of these different tests use different algorithms to make and they look at different markers, the DNA methylation markers. Yeah, I wouldn't put a lot of emphasis on the tests themselves, much rather I would look at the traditional biomarkers, like glucose, inflammation, and cholesterol, and those other things. But yeah, regarding telomeres, then telomere attrition is one of the major hallmarks of aging.

It's much rather that the speed of how fast they shorten that's found to be linked to different health problems instead of the total length of them. The speed of the attrition is kind more important. The same with the biological age tests. DNA methylation is also one of those things that changes with age. It is like a legitimate hallmark of aging that these biological age tests measure, it might be too early to make a lot of conclusions about them.

Dr. Joseph Mercola:

Yeah, I agree. There's been many, let's call them kindly mistakes made about longevity and aging historically, and I think that might be an interesting place to start. What do you think about some of those mistakes? What would you highlight as some of the biggest ones?

Siim Land:

Yeah, so traditionally, longevity research has been focused a lot on things like calorie restriction and protein restriction and even carbohydrate restriction. The practical outcome would be that you're eating very small amounts of food and you are becoming very frail and skinny. But in the

actual world, we're starting to see right now is that frailty is a huge risk factor for early death and mortality and malnutrition itself also increases the risk of a lot of different diseases, all cause mortality and neurodegeneration and heart disease events.

Right now, I think the field has started to appreciate a lot more of these tangible, practical, functional outcomes, like muscle strength and body composition and VO2max and just these other biomarkers that move more from the theoretical side of biological aging, which is mostly done on these model organisms and mouse studies, which is where these calorie restriction and protein restriction studies are done on, and moving more towards into the idea of slowing down this age-related decline in physical function and cognitive function that does increase the risk of mortality. I think it's a good perspective, because we can't or we shouldn't talk about extending maximum lifespan with protein restriction or calorie restriction if we die to something like frailty in our 70s or 80s. First, we have to make sure that we don't die in our 70s and 80s before we can talk about extending lifespan beyond 100 and 120 years of age.

Yeah, I think right now we're at a point where many people aren't afraid of protein. Many people aren't afraid of calories either. The research about calorie restriction, I think it is good to not be obese and not be overweight. For men, it appears to be better to be on the leaner side, but if we are too skinny or too frail with too low muscle mass, then that is also a big risk factor for early death. The same applies to protein, like protein mechanistically could be linked to faster aging in animal studies, but in human studies is again, if you eat too low protein, then you're increasing the risk of frailty and low muscle mass.

With carbohydrates as well, it's very commonly thought that eating too many carbs is going to be bad for your health. At least in observational studies, it's the opposite. 40 to 55% of calories as carbohydrates is linked to the lowest risk, usually. I wouldn't say that eating less is inherently harmful, but it just contradicts the idea that eating zero carb is the best way to go for longevity. There's a lot of other reasons.

Dr. Joseph Mercola:

There's a common argument I think most accurately ascribed to by Tim Noakes, who I interviewed I think earlier this year, who's a legit scientist and a long distance runner and a low-carb advocate. What he believes and teaches is that your carbohydrates are not required for nutrition, because it's not essential for your health, because your body makes it. That is one of the most fatally flawed concepts of health I've ever heard. But they believe it truly that you can do this and you can survive without carbohydrates, but you will not thrive.

It is physically impossible. But before we go, I want to dive into the carbs because I think it's important that I would like to hear your perspective on it. I think, I know I did, maybe 10, 15 years ago, listen to one of the people who taught me about insulin resistance and sensitivity that I really appreciated Dr. Ron Rosedale, but he veered off into this mTOR fear and I think he was probably one of the main leaders of this fear of protein. I bought it, and after a while, I understood that that was not true after I adopted it and realized it was not producing health.

You need a certain amount of protein. I think you are accurate that most people are not afraid of protein, but there is a danger of taking too much protein. It's just as Goldilock's still, just like you as described mentioned with the carbs too little or too much is not good either. Are you of the belief that 0.8 grams of protein per pound, because mostly of an American audience, of course you can convert that to kilograms, but 0.8 grams of protein per pound for lean body mass would be close to your ideal, because there's not much benefit, especially an anabolic benefit if you're getting more. There's downside, because you can harm your kidney function.

Siim Land:

Yeah. With protein, the functional purpose of why you're eating protein is to maintain muscle mass and build it and slow down this age-related sarcopenia. That's pretty much the only reason or the primary reason you want to eat the right amount of protein. If you eat too much, then that could be problematic from the perspective of kidney health and homocysteine levels.

If you're eating too little, then that's the risk of the sarcopenia and frailty. I think the data is pretty clear that yeah, that anything more than 0.8 grams per pound or 1.6 grams per kilogram of lean mass isn't going to increase muscle mass more. That's the kind of maximum benefit you get for muscle growth. Now, is it the best for longevity? I think there's no specific data about that in such a long timeframe for longevity.

I think if you are someone who is, let's say worried about muscle loss and wants to maintain good fitness and good muscle strength, which are very important for longevity, then I don't think you can go wrong with the 0.8 grams per pound of lean mass. Now, yeah, the thing is that it's linked to lean mass, so that's the difference between total mass and fat mass and lean muscle tissue. In reality, so if you're 10% body fat and you weigh 180 pounds, then that 0.8 grams per pound of lean mass of that would be something, I can't do the calculation immediately, but-

Dr. Joseph Mercola:

162.

Siim Land:

Yeah, something like that. You don't need entire total body weight and the higher your body fat percentage, the less protein you technically need as well. But the argument at the same time is also that if you eat more, then that can help with satiety and you can lose weight faster with a high protein diet.

In the short term, I think it's probably fine, but maybe, chronically, for years and years of eating a diet that is two grams per kilograms or one gram per pound for no other apparent reason might not be the most optimal. I think something like moderate intake of protein and hedging your bets against this age-related sarcopenia by aiming for this 0.8 grams per pound of lean body mass.

Dr. Joseph Mercola:

Okay, good. Thank you for expanding on that. Interestingly, in the next month or so, I'm going to be launching my book too, which I started much later than September. I started mine I think in March or April, but it's not as long as yours, it's only 350 pages and has less than half the references.

But what I've done with the references is put links to full text articles, so that people can download the full text and when it's not available on PubMed, I've found other sources that you can get the full text. If you download all the articles, it's like 45,000 pages.

Siim Land:

Yeah, for sure.

Dr. Joseph Mercola:

Anyway, it's actually The Unified Theory of Health for Ultimate Longevity and Joy. In many ways it's similar to your book. We are writing the same book at the same time. We've been doing pretty similarly, we've not copied each other, clearly, but we're aligned pretty similarly on parallel paths.

What I wanted to discuss and get your insights is to what you believe is a single most important cause that contributes to optimizing longevity. If you can nail one factor down, what would you believe it is or what do you believe it is?

Siim Land:

Yeah, so as a single, I guess like a single point, I would say that maintaining biological youth would be my answer, because when you're young in your teenage years and your 20s, you have the lowest risk of all colon modality. You have the lowest risk of Alzheimer's, lowest risk of cancer.

Dr. Joseph Mercola:

How do you do that? How do you do that?

Siim Land:

Yeah, so that goes into the practical side. There's a lot of different methods. Some people age lower, some people age faster. Lifestyle is a huge factor to that as well. Genetics, of course, plays a huge role as well. I would say that, it's hard to say, the single activity to maintain this lower biological youth, but as a combination you would have to do the lifestyle, the diet, maybe some supplements that can help with that, sleep, stress management, those kinds of things. Probably the single most powerful thing for biological aging is moderate exercise.

Just maintaining physical activity, it just targets all the hallmarks of aging in a positive way. It improves all the organ function and it also improves the risk of all these chronic diseases as well. It targets everything that you need to do when it comes to slowing down biological aging. Of course, there is the problem of too much exercise, so you have to find a sweet spot for that. But

as a single activity, probably exercise. If you don't do anything else, but you exercise, you would see the majority of the benefits are from that.

Dr. Joseph Mercola:

Yes, I couldn't agree more. We've both been strong advocates of exercise most of our lives. I started exercising 55 years ago, which was well before you were born and have never stopped. I've never really taken more than a few days off for any reason and never had really any injuries, so I couldn't agree more. But I am really delighted that you focused on one word when you described exercise, and that was the word moderate, because there is a danger if you over exercise.

We shared some email dialogues back and forth last year when O'Keefe wrote his article about exercise and the J-curve and what happens when you over exercise. It is not just exercise, in general. He went down to very specifics, which is what I dialogued with you about, because I see you as a great embracer of resistance training. I was too, but I've really, after that review that he published, it lightened me up a bit to understand that excessive resistance training probably is not your best strategy. However, the converse is not true for walking. You can essentially walk like 10, 20 hours a week and be fine.

It's really hard to overdo walking. You can. You can overdo everything, almost anything, but most people are never going to overdo walking, but you can easily overdo resistance training. You're just a phenomenal biological specimen of mastering your muscle growth. You're just, not only muscle growth, but human performance. I think some of the people with the best bodies are gymnasts. They have that strength and they have the good body, but they have the mobility and the flexibility.

Siim Land:

Right.

Dr. Joseph Mercola:

I think you're qualify in that category, so why don't you give us your view on it?

Siim Land:

Yeah, the review that you mentioned by O'Keefe last year, that also changed a lot of my view on exercise that I've adjusted my workout plans accordingly. What they found, they looked at the biggest studies over the last few years and they gave rough estimates of the guidelines. What is linked to the lowest risk of all cause mortality and the lowest risk of heart disease. When it came to moderate physical activity. That's 40 to 60% of your max heart rate.

That can be walking, brisk walking, hiking, walking with a weighted vest and maybe slow jogging or cycling. They found that the association with all cause mortality and heart disease was linearly, the more moderate activity you did, the lower your risk, even to the point of 900 minutes per week. You can do like 10, 20 hours of moderate activity per week, and it appears to

reduce your risk in a linear fashion. When it came to vigorous exercise, that's something like 80 to 90% of max heart rate, that can be like HIIT cardio, interval work, resistance training technically is here as well, or there might be some nuances there.

But yeah, just higher intensity exercise, they found for heart disease mortality, at least, there was a J-shaped association, so not doing any resistance training and this vigorous activity was associated with an increased risk. The sweet spot was somewhere between like 140 to 160, maybe up to 200 at most minutes per week. After that, you started to see an increased risk of heart disease. In practice, that would entail something like three workouts per week for 45 minutes, something like that.

Dr. Joseph Mercola:

Can we stop here, because, and sorry for interrupting, but I think this is the challenge that most people have with this work is that it was really never understood. I interviewed O'Keefe on this and I don't think he really understood it either, but I'm wondering what your take is, because you probably know more about this than O'Keefe. You said the minutes, the range of 140 to 160, 180 maybe, 200, but you can be in the gym and work out continuously or you can take five-minute breaks between sets. What are you counting as minutes of working out?

Siim Land:

Yeah, I think that's a limitation of this study. Yeah, you could have five-to-10-minute breaks, like a powerlifter, and you can only lift, like three reps would take you one minute to do or you could do this short wrists and back to back the drop sets, super sets kind of a workout. It's hard to say, okay, which one applies here? Yeah, is the power lifting work out?

Is it categorized here or did the people who showed those associations where they actually literally working out 45 minutes in a row with weights? I think, yeah, that's a problem right now. I think we would need future trials to see to control for this, in my opinion, if you're doing a lot of rest in between sets, so you're resting five minutes in between your sets with a weightlifting, like these dead lifts and squats, then I would say that probably you'll be able to do a little bit more than this, 150 to 200 minutes per week, because you're resting so long in between those, workout in between those sets.

Your heart rate goes down to 50% probably by the end of that five-minute rest period. But if you are working out with shorter rest and you're doing a set every one to two minutes, then probably that categorizes as an entire period or in the high-intensity zone, because your heart rate pretty much stays at least 70% all the time, so to say. I think the way you do the weightlifting matters. For example, gymnasts, they also train for hours, they do the skill development, which is they do one skill on the rings or the parallel bars, but it lasts for 10 to 20 seconds where they are in the high-intensity zone or they have to do a somersault or a back flip, whatever they're doing.

It's like a very short period of high-intensity and the rest of the time they're resting and resting for 10 minutes almost. Yeah, it matters the kind of training you're doing. It's hard to say how

much you should do if you're training as a powerlifter, but maybe if you are having longer rest periods, then yeah, maybe it's like 250 minutes per week. But if you're having shorter rest periods, then yeah, 150 minutes probably is the sweet spot.

Dr. Joseph Mercola:

For most people it's not going to be a big issue, because they're not too concerned about over exercising. They're not even in the gym at all. But for those of us who are, it's a concern. With this new information, I used to work out five days a week. It's now down to three days a week for resistance training. That's it. Now, at least a full-blown hour workout. I do minor 10 minute just mostly stretching and maybe some pull-ups and dips, and that's about it. Nothing aggressive. It's about 180 minutes a week, I'd say, I think. How have you modulated your workouts?

Siim Land:

Yeah, I'm kind of the same. I'm doing about 180, maybe 150 to 180 minutes of resistance training, and I'm training three times a week and I'm cycling between upper body, lower body or push-pull leg split. I'm doing the main compound lifts or gymnastics, these calisthenics exercises. I still add once week, maybe once every two weeks, I'll add a high-intensity interval workout as well.

I'll do a four-minute interval at around this 80 to 90% max heart rate for four minutes, repeat for four rounds, rest four minutes in between. That's a 32-minute high-intensity workout. But I'm doing that to really boost my VO2max right now, as I'm trying to increase my VO2max, because that's also very powerfully linked to longevity. I'm not trying to milk the period where I have a high VO2max for as long as possible.

Dr. Joseph Mercola:

No, I think that's observation and read of the literature is spot on, but I don't agree with it. I don't think VO2max is as important as they make it out to be. I really don't. I think that's a mistake. I can't prove it yet, but I will probably in the future.

Siim Land:

Well, there is one study from a few years ago, UK Biobank on half a million people, and they looked at the differences between beginner, intermediate and high level of grip strength and cardio respiratory fitness. They found that for grip strength, the benefits maximized that intermediate level, whereas the benefits on cardio respiratory fitness were still evident with the high level as well. You pretty much max out the benefits of strength training with intermediate level of strength and with UK Biobank and cardio respiratory fitness, you can even gain more benefits by going to the elite level.

Obviously if you combine both of them, you have high cardio respiratory fitness and high muscle strength or intermediate muscle strength, then you can need the most benefits. But head-to-head, the high cardio respiratory fitness gives more benefits than high muscle strength. You maximize the benefits from muscle strength by being at the intermediate level, if that makes sense.

Dr. Joseph Mercola:

Yeah. I wanted to pivot back to what you believe was the primary driver of longevity, and of course, it's having a youthful appearance, biological, not appearance, but a youthful metabolism and biological characteristics. The key is how do you do that? You were also mentioning that many people, we've already discussed how they don't believe that low protein is the way to go, but you suggested or implied that many people don't believe that's true for low calories. I would mostly disagree with that.

I think some people do for sure, but there's a large number of people, and we see them left and right, of people who are trying to lose weight and they lower their calories. That is just a horrendous mistake, because they think it's the calories in, calories out. That is just so fatally flawed, it's not even funny. Because what that theory fails to integrate is that there's a metabolism going on here, there's a thermostat, and when you get less calories, your body doesn't want to die, so it shuts down your thermostat, turns down your thyroid, and essentially you burn less calories just to stay alive.

It's a protective mechanism and thank God we have it. But if you do that too long, you'll still gain weight on half the calories and then you won't have fuel to supply the repair and regenerative processes that your body requires to maintain youthful biology.

Siim Land:

Right. Yeah. That's a pretty common phenomenon that can happen in people who go on very low calorie diets. There's-

Dr. Joseph Mercola:

Not even very low, it could be 1,500, even 2,000 some people. If you were to go on a 2,000-calorie diet, you'd have a real big problem, really big problem.

Siim Land:

Well, I think I'm most days eating like 2,000 calories probably.

Dr. Joseph Mercola:

Oh, you are?

Siim Land:

Yeah, probably.

Dr. Joseph Mercola:

Well, how tall are you? How tall are you? I would think you'd been up by 3,000 by now.

Siim Land:

No, 5' 11", I think is the conversion. 5' 11".

Dr. Joseph Mercola:

Interesting.

Siim Land:

I weigh, last time I weighed, I was like 77.5 kilograms. That's something, yeah, 172 pounds or something like that. I'm below 10% body fat right now. To stay that lean, I would need to eating slightly less calories. I might have some days where I'm eating more. The weekly average is still maybe a slightly higher, but on a daily basis, I'll eat 2,000, 2,200, 2,300, and on some other days, I might eat 3,000 calories as like a refit day. I do believe that there are some, for weight loss, it doesn't matter that much if you are staying some days low and some days high, it matters over the course of weeks and months.

But from a biological aging side, I believe some periods of slightly lower intake and then super compensating for a refit or something like that, I feel, at least based on how I've interpreted the literature, is a good way to go about it. You're gaining the benefits of both. You're not staying in this starvation state, you're giving your body this energy, then boosting your thyroid function. But at the same time, you don't want to be constantly oversupplying the engine either, if that makes sense. I don't believe in over revving the engine on a daily basis.

Dr. Joseph Mercola:

Well, that's what a lot of people believe, and I don't think accurate. I'll just offer you some counter information to consider. My experience specifically. I'm just curious, you said you were 10% body fat. What assay or test did you use to determine that? Was it bio impedance?

Siim Land:

DEXA scan.

Dr. Joseph Mercola:

Oh, DEXA scan. Interesting. Okay. DEXA scan is one way to do it. It's not typically recommended, because of the high ionizing radiation exposure, but it is one way. There are BIAs, bio impedance assessments. That essentially sends a very small current of electricity through your system and can correlate that to DEXA scans, or an even better, more accurate way to measure body fat is MRIs, but 10% by DEXA scan is pretty good for sure.

I use a bio impedance measurement system called S-E-C-A, SECA, which is relatively inexpensive compared to most of the others, which run about 30,000. This is about a third of the price and it's correlated to MRI. All the rest use DEXA scans. They also have, I'm not sure if you're aware of this, but an important part of the equation, when they do your body fat assessment on DEXA, they have to get your height. Do you remember if they measured your height when you got your scan?

Siim Land:

Yeah.

Dr. Joseph Mercola:

They did. They actually measured you?

Siim Land:

Yeah.

Dr. Joseph Mercola:

That's good. That's really good because most of the people who do this do not measure your height, because that is probably more important than your weight when you're entering the equation is your height. You really need to get accurate within an eighth of an inch. The SECA does that. They have a laser scale that's accurate within an eighth of an inch. Anyway, the reason for this side trip is that I have typically a 3,000, 3,500 calories per day. I'm a little bit taller than you, but not much. Another inch. Might be two inches.

You're 5' 11", I'm 6'1" and I have 450 to 500 grams of carbs, and my body fat is 6%. It kind of goes against what you're saying with modulating the calories and the carbs to have a low body fat. I think you're probably exercising more than I or your activity level's higher. You're certainly in better shape, because I'm, you're 40 years younger than me too, but I used to be pretty good with some of the distance running, but now at 70, it's an issue. Anyway, what are your thoughts on what I just shared?

Because I think, my perception is that if you give your body the fuel, your body will regulate. I think it's really, really hard. Unless you have the wrong fuel types. If you're eating bad food, that's a nonstarter, it's not going to work. You're going to kill yourself prematurely. I think it's all about eating the right foods, which is another discussion we'll talk about, but I think you can have healthy calories, healthy carbs, and actually lose considerable weight.

Siim Land:

Right. Yeah, I mean-

Dr. Joseph Mercola:

Or not even weight. You can lose body fat, which is more important. It's not about the weight, it's a body fat, visceral body fat.

Siim Land:

Right. Yeah. I haven't measured my food precisely, so I don't know exactly how many calories I'm eating, but probably-

Dr. Joseph Mercola:

I think you're eating more than you believe. It's hard to imagine you eating 2,000 calories that just doesn't compute.

Siim Land:

Maybe. Well, I did measure my resting metabolic rate as well when I was doing the DEXA and my resting metabolic rate was 3,500.

Dr. Joseph Mercola:

Yeah, which makes sense, right. Yeah. At 2,000, you're going to lose weight at 2,000 and you're not going to be as healthy and as fit as you are.

Siim Land:

Yeah, so I haven't measured my food.

Dr. Joseph Mercola:

I think you have not measured your food accurately, and that's fine. I'm not criticizing you for that. I just don't think have, I think you're much closer to 3,000 calories.

Siim Land:

Right, perhaps. But yeah, to answer your point, then I do think that there are ways to lose weight by increasing carbohydrate intake and losing body fat, because I've experienced that myself as well when I was switching from different style of diets. But the key thing here, in my experience, that actually resulted in the body fat loss was resistance training.

I was adding resistance training at the same time, so my body was getting the signal, I'm going to use those carbs for muscle growth and fat oxidation rather than fat storage. It probably might have not worked if I was sedentary or not doing resistance training in that form. I was just-

Dr. Joseph Mercola:

I agree. Yeah, that's a very-

Siim Land:

building muscle and losing fat at the same time by eating more carbohydrates.

Dr. Joseph Mercola:

That's a very good point because as anyone who studies knows that whenever, when you increase your muscle mass, as you and I both have done, you have an increase in what's called the glucose receptors or GLUT4 receptors on the outside of your muscle cells, and they're essentially a magnet for carbs. They can suck in a lot of those carbs and you don't get the glucose spikes. You wouldn't normally if you didn't have that.

Siim Land:

Yeah. The thing, so the interesting point here is that you could make the argument then that if you're eating a high carb diet, that shuttles those carbs into the glycogen, then you're still in a calorie kind of semi deficit, because those carbohydrates aren't used as energy storage. They're used for glycogen replenishment.

Yeah, pushing it into a bucket, those carbs into a hole, that still creates a calorie deficit, because those calories aren't used for energy storage, if that makes sense. But yeah, it just goes to show that there's more than just the calories that go into your mouth. There's also how the body uses those calories. Is it using for muscle growth? Is it using it for glycogen replenishment, or is it using it for fat accumulation?

Dr. Joseph Mercola:

Yeah, so we talked about the, I don't think, well, forget the fats, because I think you don't want to go excessive in fats. A lot of people do on the low-carb keto, they do that. They have much more than 40%. There's 60, 70, 80% fat. I think that's problematic, because I totally agree with you. Your recommendation was 55 or what is it, 50 to 60% carbohydrates?

Siim Land:

Yeah. The studies find the optimal is like 45 to 55% of total calories, which is going to be something like 100 to 250, 300 grams, depending on the person.

Dr. Joseph Mercola:

Yeah, absolutely. Most people don't believe, I think the majority of people don't believe that. There's this fear about carbohydrates, and it's understandable. With diabetes, pre-diabetes, what is it, it's elevated blood sugar, so you villainize the consequence of it, but it's just an innocent bystander. It's kind of like accusing firemen of causing fires. They just show up every time there's a fire.

That means firemen must be responsible. No, no. It's how your biology is able to process those calories. If it's impaired as is in most people. As I was putting my book together, Cate Shanahan, who's a real pioneer in leading the health community to understand the dangers of seed oils and has come across some literature. I don't know if you've heard of this assessment for insulin resistance called HOMA-IR. Have you heard of that before?

Siim Land:

Yeah, I talk about it in my book. Yeah.

Dr. Joseph Mercola:

Okay, good. I'm sorry, I didn't read your whole book. What's your take on HOMA-IRs, because if you use that data and she's looked at this, you can justify, the NHANES most recent statistics that were 99%, 99% of the population is insulin resistant. What's your take on it?

Siim Land:

Yeah, I think it's a useful marker to use, for sure. Just looking at your fasting blood sugar and making conclusions about diabetes is not the most accurate way to go about it. Insulin alone as well can be changed quite rapidly. I like the hemoglobin A1C, that's a very good marker for longer time horizon for blood sugar levels and not just a snapshot. With the HOMA-IR, then I think it's also a pretty useful marker for insulin sensitivity. You want to look at multiple markers.

Dr. Joseph Mercola:

Yeah, let me just explain what it is. What is it? It stands for homeostasis model assessment of insulin resistance, and it was discovered in '85. What they did is they hooked up people to IVs and they did what's called a euglycemic and hyperglycemic glucose tolerance test. They had insulin in one arm and the sugar going to the other. They do all these careful calculations. I don't know what the specifics of it, but it's a long time. It takes hours and obviously got IVs coming in probably multiple sites.

They do this very carefully. It's my understanding it's the gold standard for measuring insulin resistance. There's no finer way to figure that out, but who's going to do that test? They basically did that test and they did the fasting insulin and the fasting glucose, and they did correlations, and they give you a simple number. Anyone can do this. You can figure out your HOMA-IR by just two simple tests, probably under $20. It's your fasting blood glucose, which you can do at home, and then a fasting insulin level, which is an inexpensive test.

You multiply those two numbers, and if you're in the US, you divide by 405, and if you're in Europe, like you, I think you divide by 22. The number, if it's below one, you're not insulin resistant. The lucky less than 1% of the population does not have insulin resistance. Almost everyone else, the higher you are, the worse it is. It's a really powerful, simple, inexpensive tool that people can use and find out exactly how metabolically flexible or metabolically useful their biology is.

Siim Land:

Yeah. With this test, they're doing the glucose challenge. I guess the one big misconception about diabetes and blood sugar is that insulin is kind of the bad guy here and you want to keep your insulin low. But yeah, the thing is that if you're ingesting this oral glucose challenge or whatever, large amounts of carbohydrates, then the higher, so the robust insulin response to that meal is actually a healthy thing because it means your body's producing the insulin. In type one diabetes, your body isn't producing any insulin at all, so therefore your blood sugar level stays elevated.

With type two diabetes, the insulin isn't working properly to unlock the cells to let the glucose in. Yeah, the insulin is not inherently the bad guy. It's like producing a robust insulin in response in response to a larger amount of glucose is a healthy thing. Recently, they found last year, they found in one study that the people who produced the greatest insulin response to a glucose challenge, those people had the lowest risk of metabolic disease in 10 years. Producing a lot of insulin isn't the problem. It's the insulin resistance that you're, yeah, your blood sugar is elevated, because of insulin not working properly.

Dr. Joseph Mercola:

Yeah. Have you had your fasting insulin measure recently?

Siim Land:

Yeah, it was, if I'm not mistaken, it was like 88 or 89.

Dr. Joseph Mercola:

Oh yeah, we can't compare them, because you're using European units.

Siim Land:

It's still in the low risk category, so-

Dr. Joseph Mercola:

Oh, it's very low. I can't remember the conversion. It was 80? I'll have to look it up after this interview, see what the numbers show. I had mine done, it obviously was pretty low. It was down to 1.2. I forget the units, but it's American units. Normally, anything below three is considered very good, so I got it down pretty low. That's a powerful test that people can use to see exactly where they are in the metabolic spectrum.

The danger is most people don't have enough carbohydrates. That's the key. I think that's a key for a number of reasons, because it's the optimal fuel for your mitochondria. It really isn't, there's certain cells that absolutely have to have fat, your muscle cells, your heart cells, your colonocytes in your colon, they require beta-oxidation, but the rest of the cells probably thrive on glucose, especially your brain.

It's so important that if you don't have enough glucose, ideally stored in, actually the glycogen stored in your muscles is not used systemically. It's only in your liver. It's great to store them in your muscles, but you got to have the glycogen in your liver. If you're going to provide fuel to your brain, your muscles won't work. It's not released, it stays in the muscles, used locally.

Siim Land:

Yeah, I think with all the foods, my standpoint with foods and macronutrient ratios and stuff is I think you should base it on your blood work. There are short-term changes you need to make to your diet based on your blood work, and then are long-term aspirations with your diet based on their blood work. In the short term, someone might have pre-diabetes or insulin resistance, then in the short term, it makes sense for them to maybe control the carbohydrate intake slightly to regain some of that insulin sensitivity.

But chronic ketosis, chronic low-carb does impair long-term insulin sensitivity as well. It depends a lot on the individual, how many carbohydrates and what macro macros do they eat. But in the long term, a healthy metabolism should be able to tolerate a few hundred, maybe 200 grams of carbs per day. In the long term, you want to kind of, because yeah, healthy metabolism should be able to do it. You're trying to end to that point by improving your insulin sensitivity with exercise, weight loss, and eating the right diets, and eventually you'll be able to get there.

Dr. Joseph Mercola:

Yeah, I think that you've accurately hit the nail on the head there, if they're healthy. My premise is that the vast majority of people, perhaps 99% of the population is not, they're not metabolically healthy at all. The question becomes what contributes to that? You mentioned 200 grams of carbs. I think most adults need at least 200, maybe 250 as the bare minimum. The bare minimum.

If you're exercising like you or I, you've got to be close to 400. Otherwise, you're just not going to have enough fuel. You just won't. Now you can survive, but you're going to run short and your body has a very clever mechanism of compensating for that shortage, and that's activating your stress hormones, like glucagon and insulin and adrenaline, and that sacrifices your muscle, contributing to sarcopenia. It also has oxidative stress complications. It's not the most efficient way to fuel your body is to break down protein and create glucose.

No bueno. You want to make sure you have enough healthy carbs. But the problem is, and here's the problem, you accurately assess this, that many people, health does improve when they go low-carb. I couldn't agree more. There's a reason for it. Have you ever thought what that reason might be?

Siim Land:

I think it probably has to do with thyroid and I insulin sensitivity. When we are young, we could eat all the candy and they fit in healthy. But with age, there are some changes in the metabolism, because of unhealthier diets and this age rated accumulation of waste material that probably disrupts that. That's a common reason why people, when they get older, their glucose tolerance decreases.

Dr. Joseph Mercola:

I would disagree with that. I think the thyroid is a consequence, it's not the cause. The cause more likely is related to the target. I believe one of the central reasons why most people are sick, because they have mitochondria. I think that the reason you optimize your longevity is when you increase your mitochondrial function. That fuels everything. If you don't have fuel, you cannot regenerate and repair.

It's biologically impossible. If you don't have enough fuel in your tank, it's just not going to work. The problem is that we have these mitochondrial poisons. I think there's a few, estrogen would be, not estrogen, estrogen receptor molecules, which are more generically called EDCs, endocrine disrupting chemicals, things like plastics, microplastics, BPA, phthalates, industrial poisons, like pesticides, fluoride molecules, PBDs. There's a whole variety of them, but they essentially activate estrogen receptors.

Then you've got seed oils, which are also causing a similar problem in EMFs. But what those do, they destroy your mitochondrial function. Ultimately, they wind up in creating high levels of reactive nitrous species called peroxynitrite. When that happens, they start killing your colon cells. When the colon cells don't work, specifically the colonocytes, they don't work. These are

cells that have beta oxidation. One of the reasons they do that is because beta oxidation requires the use of oxygen and they deplete the oxygen in your colon.

They create a very low to almost no oxygen environment if you are healthy, as I believe you are, for the most part. You're one of the rare people who are healthy, but for most people, they don't. This mechanism to deplete oxygen, the colon is activated, is deactivated. If oxygen levels build up and you have a transition to unhealthy bacteria, pathogenic disease causing bacteria, sometimes called oxygen tolerant or facultative anaerobes. They have a very virulent endotoxin and the endotoxin destroys your health even further.

The reason I believe that most people benefit from low-carb diets, benefits significantly. Their life is turned around. I am not disputing the miraculous results people have from low-carb diets, but it's a short term, it's short-sighted, and long-term, it's a disaster that will kill them prematurely, I believe, strongly. Because when you're on low-carb, you're not feeding those pathogenic bacteria and they're not multiplying, reproducing and producing endotoxin, which gets into your system and just destroys your health.

It contributes to autoimmune diseases and everything else. That's why it helps. Then that's secondarily that destruction and further loss of mitochondrial function is what destroys the thyroid. There's other variables that estrogen could cause thyroid dysfunction too. Thyroid is clearly involved and not disagreeing with that. But I don't think it's a causal factor. I think it's sort of an end target for all the pathology that's going on.

Siim Land:

For sure. Yeah, there are gut dysbiosis is also one of the newest hallmarks of aging that they're recognizing, and-

Dr. Joseph Mercola:

It's the emerging one, Siim. There's no question that is going to be the primary one. You've got to fix it. If you don't, it's almost, I've created a term for it. It's like the black hole spiral of death, because it just gets worse and worse and worse unless you fix it. It's almost physiologically impossible to ever get healthy unless you fix that.

You just can't get better, because it just gets worse and worse and worse. You never improve. Now you can maintain yourself, but you'll die prematurely as a result of that. That's what I believe. The black hole spiral of death is a messed up microbiome.

Siim Land:

Yeah. Fortunately, improving your health and some aspects of weight loss and exercise themselves also have been found to improve gut health and the gut diversity. There's many things you can start with and maybe even just a small minor changes, changing your dietary, whichever direction that goes, even that small change can have a positive effect.

Starting to exercise or changing some of the exercise, or sunlight and sleep, removing some of these environmental toxins from your life. All those things add up and you need to start with some of the small changes and see how you respond. Those will already kind of mount up.

Dr. Joseph Mercola:

Well, I've got a good question for you, because we're in alignment with almost everything that we teach. We've virtually disagreed about nothing, which is unusual in my experience. I applaud your brilliance. The question becomes though, we both wholeheartedly agree about exercise and you mentioned sun.

I think sun is one of the most important, probably pretty comparable to exercise. I think it's almost biologically impossible to be healthy if you don't have enough good sun exposure, which gives you a massive handicap, because you live so far north. Estonia is where you live?

Siim Land:

Right now. Yeah.

Dr. Joseph Mercola:

Okay. That's what I thought. What's your latitude up there? It's pretty high. 50, 60?

Siim Land:

Yeah. Well, we're in the same height as Sweden, so it's pretty high.

Dr. Joseph Mercola:

Yeah, so you have a massive handicap. You get a lot of sun in the summer, but still, because of the latitude, it's not that intense. How do you compensate for this handicap? It's a serious handicap.

Siim Land:

Right.

Dr. Joseph Mercola:

I'm sure there's no doubt the answer you're going to give is probably the best that you could in your circumstances, and many people will benefit this. I'm really curious what your answer is.

Siim Land:

Yeah, so I think there is evidence that sun exposure is important for health. If you look at Mediterranean countries, then they get more sun and they have higher life expectancy than Estonia. For the record, I've never had a vitamin D deficiency from my blood works of getting pretty high amounts of sun in the summer, and I'm eating vitamin D foods in the winter and maybe taking a supplement if I'm getting on the lower end.

Dr. Joseph Mercola:

What's your vitamin D levels? I know it's in nanomoles per liter, probably. It's 2.5 times higher than the US rates.

Siim Land:

Right. I haven't measured it in the summer right now. I measured in February, I think it was.

Dr. Joseph Mercola:

Well, that's the lowest it's going to be all year, in February.

Siim Land:

I guess it was something like 85 or something like that. I don't recall exactly. I can look it up quickly if you-

Dr. Joseph Mercola:

Okay, so that's 40. That's in the 30s, probably low 30s, four nanograms per milliliter, which is not ideal, but it's definitely, it's not deficient.

Siim Land:

Right.

Dr. Joseph Mercola:

That's pretty good, considering you're not taking a supplement. If I was you, I'd probably do a supplement, but how do you get outside? How do you get sun exposure on your skin?

Siim Land:

No, it was 68 nanograms per milliliter.

Dr. Joseph Mercola:

Okay, so that's even less, because you're probably in the high 20s. That's low. That's too low.

Siim Land:

Okay.

Dr. Joseph Mercola:

It's shocking that you, it's a big deal, and I'm not a fan of taking to oral vitamin D. I have not taken it 15 years. Do you know what my vitamin D level was, just last week, it was, take a guess. We'll go in nanomoles per liter. It was almost 300.

Siim Land:

Okay. Wow.

Dr. Joseph Mercola:

300. Yeah, it was 130 in nanograms per deciliter. But nanomoles per liter, I think, is 300. That's pretty high and I didn't swallow any vitamin D. Now, one of the things you can do to enhance, especially in low vitamin D areas of the world like yours, is you can put lanolin on your skin. Especially for those who are concerned about photoaging. That's appropriate concern, because the sun can certainly accelerate photoaging.

It does it because of all the seed oils people are eating, the seed oils that cause the damage. It's not the sun, it's the seed oils. Lanolin can, you know what lanolin is commercially, it is what is used to make vitamin D. You can put it on your skin and if you get sun exposure, it will turn that lanolin into vitamin D and absorb it over your skin. Isn't that clever?

Siim Land:

Yeah, interesting,

Dr. Joseph Mercola:

It helps your skin, especially the skin that's exposed to the sun, it's going to prevent drying your skin and cracks and fissures and things like that. Wrinkles. So it's simple and it's not terribly expensive at all. I think for few dollars, you can get a month's worth.

Siim Land:

Right. Yeah. I use the red light therapy as well to get some of the infrared light.

Dr. Joseph Mercola:

Yes.

Siim Land:

Red light therapy.

Dr. Joseph Mercola:

What frequencies are you using of red light?

Siim Land:

610 to, however it goes, like 750 nanometers. Yeah, something like that.

Dr. Joseph Mercola:

Near infrared too.

Siim Land:

Yeah, I have the near infrared as well.

Dr. Joseph Mercola:

Yeah. Yeah. Well, that's good. That reverses a lot of damage. I'm sorry, I kept interrupting you. How are you compensating for the, because that is pretty low. I would encourage you to consider some remediative strategy to compensate, because that is a handicap, and actually the cool thing about vitamin D, it's an anabolic steroid. It is an anabolic steroid. That if you have enough, it's going to be pretty similar to taking things like testosterone. It will build muscle mass, there's no question it will. If you're at low, you're going to be-

Siim Land:

Well, at least based on the reference ranges that I've seen, 68 nanograms per liter isn't a deficiency. It's actually pretty high.

Dr. Joseph Mercola:

No, nanograms, were you giving, I thought you were giving me nanomoles.

Siim Land:

No, no nanograms.

Dr. Joseph Mercola:

Oh, I apologize. 68 is spectacular. I assumed it, because you were in Estonia, it was nanomoles.

Siim Land:

Right. Yeah, well-

Dr. Joseph Mercola:

I was dividing by 2.5 and then it was too low.

Siim Land:

Yeah, well, yeah, I was taking some-

Dr. Joseph Mercola:

I am so sorry, I misunderstood you.

Siim Land:

No, that's fine. Yeah, for sure, 65 nanomoles, 68 nanomoles would be deficient.

Dr. Joseph Mercola:

That's deficient. Yeah, but not nanograms. That's golden. As long as you're over 60, you're fine. That's why I was concerned about you, because that didn't equate with you and health, because you're so healthy and having be vitamin D deficient would be crazy.

Siim Land:

Right. Yeah, yeah. I usually just use a supplement. If I'm starting to see in the winter that I'm going low, I'll take it with two magnesium and boron as well for the other-

Dr. Joseph Mercola:

Perfect, perfect.

Siim Land:

... synergistic effects. But yeah, how do we counteract that? We're planning to move to Spain with my wife in a few months.

Dr. Joseph Mercola:

Really? Is that a permanent move? We don't know.

Siim Land:

We're just going to go there for a few months initially and see how it goes. She has some mold issues from past earlier adulthood, and Spain is a lower mold than Estonia. Estonia is very moist and they're quite moldy. That's the primary reason we're going. I guess the sunlight is also a good change.

Dr. Joseph Mercola:

Oh my gosh, yeah. You can survive in the cold winters, but it's hard to thrive.

Siim Land:

Yeah, well, but-

Dr. Joseph Mercola:

It's hard.

Siim Land:

It's interestingly, life expectancy and things, like Iceland is super high. It's higher than-

Dr. Joseph Mercola:

Why do you think that is? You'd be really qualified to comment on that.

Siim Land:

Well, I'm going to check quickly the number of the 83.12 is Iceland in 2021, and Norway is 83.16 as well. I think it's probably because of the wealth and affluence of these countries. They're wealthy countries and they have good healthcare. Life expectancy is mostly about healthcare in a lot of cases. I haven't heard a lot of centenarians, so maximum lifespan people from Norway or Iceland.

But you do get a lot of people from Spain and France and those kinds of sunnier countries. I think for the average person, they're not going to live shorter because of the lower sunlight as long as they have good healthcare, in my opinion. The quality of life might be somewhat

different. Interestingly, like Finland has the highest happiness in the world, so they're categorized as the happiest country in the world, and they're also pretty wealthy and affluent.

But most Fins, at the same time, Fins also have the highest rates of suicide or something like that. It's kind of funny, how do we get the happiness and the highest suicide at the same time? It's probably related to sunlight or some depression side that maybe the quality of life might not be the highest if you're in a darker country. But the life expectancy at least suggests that you're not going to live very short, even if you're in Iceland, which is super dark.

Dr. Joseph Mercola:

Yeah. You know what it is, the life expectancy is for the US?

Siim Land:

It's starting to increase right now. For the last year, it's starting to take a U-turn, but it was like 79, I think, and now it's starting to increase slightly.

Dr. Joseph Mercola:

What's your take on the influences that the culture and the media have on longevity? It seems that they're continuous promotion of products that is highly counterproductive to their health, has some profoundly serious negative impacts.

Siim Land:

I think right now, longevity is still looked upon as, in the mainstream, it's looked upon as something weird or something that, okay, you have this Bryan Johnson and other rich people trying to live longer, like Peter Thiel and Jeff Bezos investing into these longevity startups that I think, my perception is that that's the view of mainstream media on longevity as a field. Of course, they're starting to be more interested in it, so they're like, okay, there's actually some science.

You can actually control your speed of biological aging. But there's a lot of also misinformation even online from different people who are spreading some sort of information about longevity that's not maybe backed up by science or studies. The mainstream media, I don't think it has that much power in terms of the longevity right now. They're just more of spectators off the field and trying to comment.

Dr. Joseph Mercola:

No, I was really taking it from a different perspective, not with respect to longevity promotion, but just promoting their own agenda, which is anti-longevity. Not by design, but maybe by design, but the primary emphasis on convenience and processed foods and technologies like EMF, which is just absolutely not integrating the consequences on biology. From that perspective, because the other component is that longevity, it's not like we're trying to live as long as we can, although that's certainly a goal, but the consequence of living long is you have to be healthy.

Healthy has the benefits. It usually gets you free of pain, free of disease, and free of taking any medications. These numbers are skewed, but the average person in the United States is taking, if you look at the number of prescriptions sold in the most recent year, it was six over six billion prescriptions. We only have 330 million people. If you do that number, that calculation, it's 19 prescriptions per year per person. 19.

Siim Land:

Wow. Wow, wow.

Dr. Joseph Mercola:

Most people are taking drugs, and that's by design. Over a century ago in the United States, we had Rockefeller and he established Rockefeller Medicine, which is a focus in essentially eliminating all of the natural medical strategies from medical schools and replacing them with pharmaceutical strategies. That's a consequence. It's those types of things, the absolute capture of the entire medical system by the pharmaceutical industry and the teaching and the focus on drug-based solutions that only alleviate symptoms and do absolutely nothing ever to treat the foundational cause of the disease.

I think what you're doing in longevity medicine. Anyone who's authentically interested in increasing longevity is seeking to focus on the reasons that keep you healthy, because they absolutely prevent disease. You can't have disease and health in the same place. It's like having light and dark, they don't coexist. You're either healthy or you're diseased.

Siim Land:

Right.

Dr. Joseph Mercola:

The focus on longevity is a focus on health, which I absolutely applaud your work. You've identified a lot of strategies, compiled so many of them in your book, over 500 pages. That's two normal books. That's two normal books.

Siim Land:

Well, I covered a lot of specific, these chronic diseases. I have a full chapter on kidney disease, metabolic syndrome, heart disease, three chapters on heart disease, actually, neurodegeneration and inflammation. I'm going into a lot of these deep dives with a lot of these conditions. Full chapter on exercise, full chapter on sleep and on nutrition protein. Yeah, a lot of different chapters. That's why it's so long.

Dr. Joseph Mercola:

Yeah. You've done a lot of deep dive research and you're really good. I love the many of the videos that you make. I put them up on my site in our articles, because they really, you're ahead of the curve in most areas, and I applaud your efforts for identifying glycine is a really important

amino acid. Maybe we can touch on this for a moment too, because I think this is something that most people miss. We talked about protein requirements, but what I should have pivoted to was that one, I believe, and I suspect you do too, certainly with your endorsement of glycine, is that one-third of your protein should be collagen or connective tissue.

It's a foolish mistake not to do that, because one-third of your protein, one-third of your entire protein in your body is collagen. If you don't give it those amino acids, they're not called essential, because your body can make them, but they're conditional essential amino acids. That means your body can make it, but only a limited amount, very small amounts. You bring this up in your work too. If you're not getting them and you can only make so much, then you're going to be deficient.

They should be essential, but they're not classified that way. There's really no companies that actually provide these. Things like hydroxyproline, neurophroline, we're putting together collagen supplement and we couldn't even find those amino acids, because there's no demand for them. No one has recognized that these are important amino acids. Give us your take on the importance of collagen and protein and health in general.

Siim Land:

Yeah, yeah, exactly. The glycine is causing not essential, but that's because, yeah, your body makes three grams of glycine per day, but those three grams would be used for things, like glutathione and creatine synthesis. But then you have 12 grams of glycine for collagen turnover, like optimal collagen turnover. You're still deficient in about, you might eat maybe two to three grams on an average diet, this kind of a regular diet, and then you're still deficient in nine grams.

Dr. Joseph Mercola:

I think you're being very generous. My review of the statistics is somewhere between zero and one gram of collagen that people are eating per day.

Siim Land:

For sure, it depends on the person.

Dr. Joseph Mercola:

Zero to one. In the US-

Siim Land:

On the standard American diet, it's like one gram, probably.

Dr. Joseph Mercola:

Yeah, 100%. So you are radically deficient, and unless you're assiduous and understand this, that's why people get so many injuries when they work out, because how can you possibly have healthy connective tissue if you don't have the raw material to make it? You can't.

Siim Land:

Yeah. The demand for collagen turnover could even be up to 36 grams. We covered in our previous book with Dr. James, The Collagen Cure, and there's like 12 grams is the conservative estimate needed for collagen turnover. But that's presuming that the glycine has the same recycling rate as cysteine, which is 95%. But glycine could also have a recycling rate of 85%, so slightly lower. In that case, you would need up to 36 grams of glycine for optimal collagen turnover. They don't know exactly what is the recycling rate of glycine.

Dr. Joseph Mercola:

It depends on your body mass too, right?

Siim Land:

Right.

Dr. Joseph Mercola:

A child is going to be different than an adult.

Siim Land:

Yeah, yeah, exactly. But generally, yeah, you could theoretically need even 30 grams of glycine per day and there's no harm to getting 30 to 50 grams. Even 90 grams of glycine per day hasn't been found to have any.

Dr. Joseph Mercola:

Well, I wouldn't go that far. 90 grams of glycine. Then you run into the same issue of having excessive protein.

Siim Land:

For sure.

Dr. Joseph Mercola:

It's still an amino acid.

Siim Land:

You don't want too much, but-

Dr. Joseph Mercola:

90 grams is a lot. I don't know that anyone should ever take 90 grams of glycine.

Siim Land:

At least in the studies have shown that it has shown no negative side effects. You don't want to do like in the long term-

Dr. Joseph Mercola:

I’m shocked if you get the study approved past the IRB. If I was on the IRB board, I wouldn't approve that study.

Siim Land:

Right. But it's virtually impossible to reach that as well, unless you're taking massive amounts of supplement. But yeah, you definitely want to add some collagen to your diet. There's also a lot of clinical trials in collagen peptides and skin antiaging and the reversal. Yeah, definitely a healthy source to add.

Dr. Joseph Mercola:

Do you shoot for a third of your protein as collagen.

Siim Land:

Something like that, yeah. It also depends on how much methionine you're getting. If you're eating less methionine, then your demand for glycine is also somewhat lower.

Dr. Joseph Mercola:

Yeah. Do you consciously restrict methionine and other amino acids like tryptophan and cysteine?

Siim Land:

I don't deliberately restrict them. I'm compensating for that with increased glycine, if that makes sense. But I'm not-

Dr. Joseph Mercola:

That's for methionine. But glycine doesn't have anything to do with tryptophan and cysteine, which have also been negatively correlated with longevity.

Siim Land:

Yeah, well, I'm not eating a lot of muscle meat.

Dr. Joseph Mercola:

The correlation with tryptophan is actually more than calorie restriction.

Siim Land:

Right. I'm not eating a lot of muscle meat, which is where you get most of them. I'm eating-

Dr. Joseph Mercola:

That's good. That's interesting. How much muscle meat do you eat?

Siim Land:

I guess I'm eating maybe 200 grams every few days or 200 grams once a week, twice a week, something like that.

Dr. Joseph Mercola:

Okay, that's good. I eat about 200 grams a week too. I go through a pound of ground beef, which I think is one of the best meat, because it has connective tissue in it, every 10 days.

Siim Land:

Yeah, that's great.

Dr. Joseph Mercola:

It's not a lot. It's like three ounces a day or every other day. Three ounces every other day. Ounce and a half a day on average. That's enough to get some of the nutrients. You don't want to stop. I think everyone should benefit from meat, but you certainly don't need a lot of it, because of the methionine and other things and balance it with organ meats for sure.

Siim Land:

Yeah, just enough is enough.

Dr. Joseph Mercola:

I'm glad to hear you're not eating that much meat. I'm not surprised. You're so smart.

Siim Land:

Right.

Dr. Joseph Mercola:

Your book is 'The Longevity Leap' and it's on sale now. Your website, why don't you give us your website and any social media platforms you have?

Siim Land:

Yeah, so you can buy the book at thelongevityleap.com. I decided to print and ship it myself this time.

Dr. Joseph Mercola:

Great.

Siim Land:

Yeah. That's going to be, you can order it from there and it will ship you the book.

Dr. Joseph Mercola:

Does it ship from Europe, does it ship from Europe or the US?

Siim Land:

I have a warehouse in US and Europe, so both parts. And Siim Land on all the social media platforms.

Dr. Joseph Mercola:

Okay. S-I-I-M Land, L-A-N-D.

Siim Land:

Yeah.

Dr. Joseph Mercola:

Okay, good. All right. Well, congratulations on an epic effort at compiling all this information and I'm sure it's going to help a lot of people.

Siim Land:

Thank you much.

Dr. Joseph Mercola:

All right.

Siim Land:

I'll see you around.